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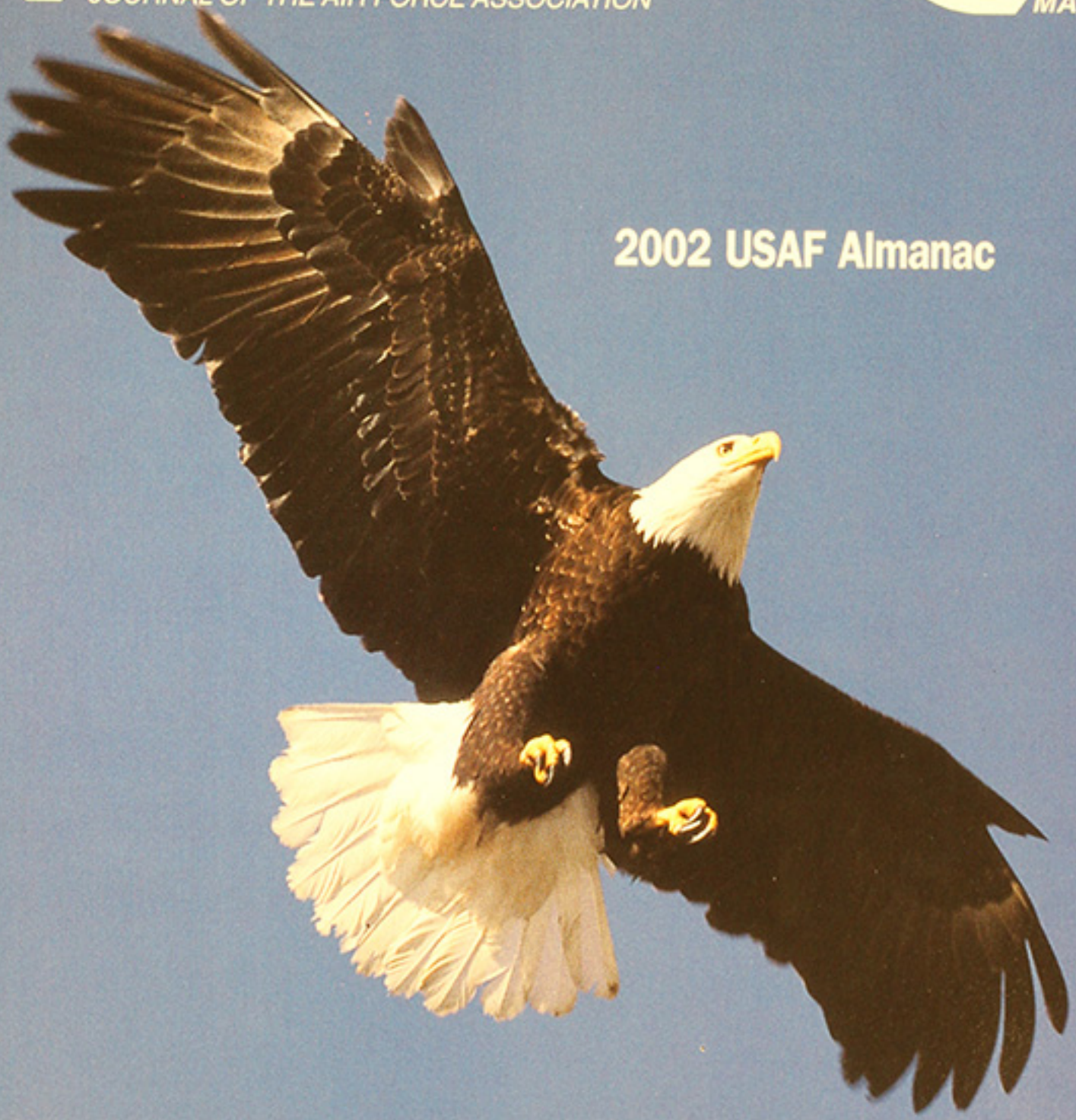
JOURNAL OF THE AIR FORCE ASSOCIATION



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AIR FORCE Magazine (ISSN 0730-6784) May 2002 (Vol. 85, 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. Copyright 2002 by Air Force Association.

Editorial

By John T. Correll, Editor in Chief

Rumsfeld's List

It's a good thing that Secretary of Defense Donald H. Rumsfeld is forceful. He has a staggering job on his hands, and a leader with less steel in his spine would have little chance of success.

As Rumsfeld describes it, the challenge for the Department of Defense is to accomplish three difficult objectives at once:

- Win the war on terrorism.
- Restore the vitality of the armed forces, worn thin by a decade of neglect.
- "Transform" the services to prepare for the future.

"Each of these tasks must be done," Rumsfeld told Congress in February. "None can be put off."

The situation was bad, even before Sept. 11. By the turn of the century, the defense program had been cut 15 years in a row. The force was a third smaller than it had been during the Cold War, but it was employed and operating at a rate four times greater.

The services were stretched and threadbare. Their readiness and mission capable rates were down. Facilities were dilapidated and deteriorating. Spare parts and munitions were in short supply.

Equipment was not replaced as it wore out. Force modernization was postponed. The depots filled up with aging airplanes in need of extensive maintenance and demanding considerable time.

Against that backdrop, the Bush Administration had come to office pledging to "transform" the armed forces to meet new threats of the future.

Rumsfeld and his team spent several months studying how to approach transformation, but they were hampered by a fundamental problem: They started in a deep hole because of the requirements backlog left over from the 1990s.

The Congressional Budget Office had reported earlier that it would take about $50 billion a year in new funding to keep the armed forces from slipping any further behind. The cost of transformation would be extra.

Then came the war on terror, with an additional expense of $30 million a day. Overnight, a big job became an enormous one.

Lately, Rumsfeld has been taking flak for the proposed 2003 defense budget, which incorporates the largest increase since the Reagan Administration.

However, a large portion of the increase goes for the war on terror. Most of the budget is allocated to current programs and to keeping the force from sliding deeper into the hole. The amount available for new ventures, including transformation, is not that much.

The Pentagon has three difficult tasks. All must be done at once.

Eventually, as Rumsfeld proceeds with the objectives he has assigned himself, he will encounter both financial and deological resistance. So far, he is holding his own.

Of the three tasks on his list, popular support is strongest for the war on terror, where President Bush's personal commitment is highly visible. Opinion polls find consistently that 90 percent of the American public are in favor of military action abroad to fight terrorism.

There is an undercurrent of anti-war sentiment from the political left, but these views have not spread to the mainstream. The issue, in the near term at least, is mostly financial.

The armed forces have an excellent chance of winning the military part of the war on terrorism if the nation is willing to sustain the effort. Any question of that would disappear in a flash if the United States is attacked again. Otherwise, it will take some work by Bush and Rumsfeld to hold the consensus.

The odds are longer on the other two goals—recovering from the decade of neglect and moving on to transformation—and on these, Rumsfeld will have to carry more of the load himself.

Last summer, before the war on terror began, the White House backed the Office of Management and Budget in cutting Rumsfeld's funding request for 2002. The constituency for more military spending was pretty slim.

Much has happened since then, of course. Opinion polls find strong endorsement, 76 percent of the public supporting a general increase in defense spending.

All three of the tasks on Rumsfeld's list are imperative.

We did not start the war with terrorism, but we cannot call it off. The only way out of it is through it. Losing is not an option.

In Afghanistan, the inventory of precision guided munitions fell to dangerously low levels. This is the kind of thing that happens when the provisions for readiness are insufficient.

The war on terror will be fought with the weapons and forces we have today. Transformation will develop capabilities for use by another president and another secretary of defense, just as the successes in conflicts of the past 10 years were attributable to investments made in the 1970s and 1980s.

Transformation is not a simple matter of dumping traditional military forces and adding futuristic ones, though.

Unmanned Predator drones were useful in Afghanistan, but so were bombers, tankers, airlifters, and spotters on the ground. Air superiority and long-range precision strike forces will be as important in the future as they are today.

Transformation must be in addition to, not instead of, current capabilities. In some cases, such as leading edge global strike systems, there is considerable overlap.

Counting the Bush increase, we will be spending 3.3 percent of the Gross Domestic Product for defense. That is less than half the average percentage of GDP allocated to defense over the past 50 years.

Rumsfeld's list is difficult. It is far from impossible. ■

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Letters

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Nuclear Views

I found this article *["Bush's Nuclear Blueprint," March, p. 26]* to be most interesting and very informative. Between the US and Russia, there exists enough nuclear weapons to destroy all life on this Earth many times over.

President Putin of Russia and President Bush want to reduce their respective nuclear arsenals significantly, which could have been accomplished years ago. The Russian experts are saying that the US is merely removing warheads and storing them in a warehouse and this does not meet the agreements set forth in the nuclear reduction plan. Perhaps Russia is doing the same.

Regardless of how the reductions are going to be accomplished, the problem of storage and security of the nuclear materials will be a major concern for many years to come. Over the years, Russia has produced far too much high-grade plutonium for nuclear weapons. What will become of their humongous stockpile of weapons-grade plutonium?

When people write about nuclear weapons and the Nuclear Posture Review analysis and the reduction from 6,000 warheads to 2,200, no one ever mentions the magnitude of the nuclear warhead arsenal. Both Russia and the US have numerous warheads in the range of 20 megaton yield, and this is potentially the most devastating weapon of today. Just one 20 megaton nuclear weapon detonated at midpoint and five miles or greater in the atmosphere over the United States would virtually disrupt all communications across the country, and the fallout would be most serious for millions of people.

Past presidents of this country have seriously considered deploying nuclear weapons in conflicts, i.e., Korea and Vietnam. Though these types of weapons have been a deterrent since World War II, I believe there will come a time when such nuclear weapons will be used and this will be devastating to millions upon millions of people around the world. I also believe if Saddam Hussein had the capability of deploying nuclear missiles, he would surely attempt to destroy Israel and perhaps launch the same toward this country.

I'm certain that in the future, more devastating weapons will be deployed—from sticks and stones to mass laser weapons.

Lt. Col. Donald E. Evett,
USAF (Ret.)
Bountiful, Utah

I'm writing to express my grave concern relating to President Bush's new nuclear policy. I believe it is wrong to reduce the nuclear stockpile to such a low level, and the directive should be opposed by Congress and the public alike.

The country has been down this road many times before, but we never seem to learn the lesson. After World War I, the armistice placed limits on German war production, and the Naval Treaty was supposed to restrict Japanese shipbuilding. Yet these failed and, because of our weakness, World War II resulted.

Again, the US unilaterally disarmed, and the Korean conflict occurred. The same story played out for the entry into Vietnam. Why in the world would we follow the same path when the fate of our country is involved?

We should have all learned on Sept. 11 that those agencies which have been designed to alert the country of pending attacks cannot adequately do their job. If this had been a nuclear attack we could have said good-bye to perhaps two legs of the triad (bombers and land-based missiles). Having more warheads automatically implies more delivery vehicles which become survivable in case of a surprise attack.

This country is passing through one of the most dangerous periods in world history. Alliances come and go, and it is not possible to know what may transpire in the future.

For many years this country has had a "hang-up" with weapons of mass destruction, even to the extent of compromising our security needs. Yet is it more humane for those fighting a war to use sticks and stones? If we're going to get involved in war, then use the most powerful weapons we can to get it over quickly and save the precious men (and women).

Former President Clinton was no friend of the armed forces, and his 40 percent reduction in our capabilities along with increased operational commitments has led to many of the problems we now see in the services. Our Constitution states that the government should "provide for the common defense" and raise money to do so. Nowhere does it say this country should reduce defenses to demonstrate leadership in controlling and reducing nuclear weapons worldwide.

There is no doubt that our country needs a missile defense system, and why we apologize for wanting to set one in place is beyond me. Reducing nuclear warheads sends the wrong message to would-be aggressors and promotes uncertainty.

Charles W. McConnell
Rose Hill, Kan.

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

"Drum-Thumping Exhortations"

Although my active duty years with Strategic Air Command are long over, and despite my fond memories of former service years, I am not yet entirely blind to the partisan expressions of hawkish opinion that frequently find their outlet in *Air Force* Magazine's editorial content. John Correll's remarks in the March 2002 issue are an excellent case in point. *[See "The Nation at War," p. 2.]*

Immediately prior to the present Administration's ascent to power, our military establishment, long accus-

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AIR FORCE
JOURNAL OF THE AIR FORCE ASSOCIATION MAGAZINE

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BPA Circulation audited by Business Publication Audit

Letters

tomed to the cozy profligacy of pork-barrel defense spending policies in the Cold War era, was finally accepting the need to take budget constraints seriously and accept the need for more balanced defense prioritizing. Regrettably, with the events of 9/11, the present Administration seized what they regard as a near God–sent opportunity to once again open the floodgates of unconstrained defense spending. What more perfect cover for this executive reversal of prior policy than the wonderfully effusive tidal wave of superpatriotic jingoism that those events released?

To date, the catalytic events of 9/11 have continued to serve as the unassailably justifying argument for continued efforts to expand defense spending by the political–military–industrial triad. AFA, through *Air Force* Magazine as well as through organizational activities, has enthusiastically joined the queue that exhorts the need for bolstered military funding, apparently thrilled to find the flow of defense dollars now restored for the first time in a difficult decade or more.

Not uncharacteristically, Mr. Correll unleashes his own flood of drum-thumping exhortations to divert a large amount of this renewed defense spending into accelerated aeronautical systems development and procurement. These arguments, predictably, are at best patently delusional at every level, at worst emotional word-mongering of the most abject sort. They presuppose that the entire nation of over 300 million people (or at least the entire membership of AFA) stands firmly united behind his opinions, which is almost as ludicrous as assuming that the nation voted the current President into office by an overwhelming majority. They also assume that it is America's proper role to act as the world's "enforcer," by virtue of its superior military technology and armed might (oh, and moral rectitude).

At every turn of phrase in Mr. Correll's soapbox expostulations, the recurrent themes of terrorism, weapons of mass destruction, and misguided fanatics permeate the florid rhetoric to serve as rationalizations for expanded defense spending. Perhaps to people with lopsided reasoning processes, such arguments might seem unassailable. To anyone who correctly understands that America's self-chosen role as savior of the world is highly questionable (if not blatantly contentious), this assumption of righteous verisimilitude would be vastly amusing (if it didn't pose an insult to reflective intelligence).

Mr. Correll ignores the fact that while our present aeronautical systems are getting a bit long in the tooth, no other country in the world exists with half the formidable offensive might that our military forces possess. As for the need to develop ever newer, more intelligent, and highly sophisticated systems, where is the possible foe with enough technical capability to pose a threat of proportionately advanced substance? As for the argument, "War is expensive. This one is costing $30 million a day": Where is the national consensus that a $30 milllion per day war is warranted or even worthy of sanction by America's taxpayers? Any reasonable vindication of this assumption certainly isn't to be properly found in some odd *USA Today* or *LA Times* straw poll alone.

Perhaps the most telling statement in this editorial is the closing remark: "Fifty years ago, Americans were equal to the commitment required of them in wartime. Now history is about to take its measure of our own generation." This convenient blandishment overlooks the fact that America of today is a far better informed, far more complex society than it was in the 1930s, 1940s, or even 1950s. The average individual is generally substantially better informed than was the norm in the past, although one curious status predominates: Those with the strongest admixture of red, white, and blue blood in their veins are considerably more prone to euphemistic hype than their nonconsanguineous peers of more peaceful persuasion. Sad as it may be to conservative right-wing hawks, the age of simple-morality based issues is forever over and done with; today, issues are far more convoluted and considerably more complex than ever before. Therefore it is unfathomably and impermissibly simplistic to regress to the archaic "If you're not with us, you're agin us!" paradigm, in the style manifested by Mr. Correll's remarks.

The genuine task facing America's armed forces and hungry commercial defense consortiums—all smoke and mirror obfuscations and spin doctoring aside—is how to more carefully control what has traditionally been the most loosely monitored and casually accounted for distribution of existing defense funds in the history of the world. Instead of mounting editorial soapboxes, citing terrorism and fanciful "axis of evil" adversaries as a mandate for greatly expanded defense spending, Mr. Correll should be responsibly calling for more pains-

taking introspection into the unacceptably loose logistics of the present defense development and procurement processes—a system that abjectly wastes as much money as it actually turns into functional defense hard- and software. The US Air Force undoubtedly is no better able to withstand close fiscal accountability scrutiny than any other service, and with its disproportionate surfeit of horrifically expensive "advanced technology" projects, perhaps even less so.

Finally, the present barrage of spin-doctored generalizations about weapons of mass destruction and evil terrorists that is emanating from many outspoken, right-wing defense advocates should not blind us to the fact that our present thorny international problems are indeed not a simple matter of good guys vs. bad guys. Anyone who insists on saddling the American public with simple 1870s frontier west ethics, as we continue to deal with the intricacies of the terrorist issue, should be sent to spend a few months of reflective meditation on the nearest local Native American reservation (and not for converting it into a new federal target range, either).

Chris Carey
Sacramento, Calif.

■ *You aren't going to like the editorial this time, either. That's something that both of us will just have to live with.*—JOHN T. CORRELL

Notes for Mr. Roche

I am appalled that the Secretary of the Air Force refers to the KC-135 as a "707." *[See "Roche Sorts It Out," March, p. 38.]* Here we go with the facial tissue thing again. Almost everyone calls any facial tissue a Kleenex. After all, it is white, soft, and looks like Kleenex, so who cares? Kleenex cares.

So, when I hear people refer to a KC-135 as a 707, I care! Mr. Secretary, learn something about the forces for which you are Secretary! A KC-135 may look like a 707, but it is not a 707. It is an entirely different airplane that uses some of the same loft lines, and that is where the similarity ends.

The 707 started life being called the 367-80—a phony name that supposedly related it to the old prop-driven Stratocruiser, a ploy to confuse the competition into thinking that Boeing was working on an advanced "double-bubble." The "Dash 80" is the real 707, and the next model to come along was the 717, a military tanker cargo design that, when it was purchased by the Air Force, became the KC-135.

The KC-135 was designed for a long and tough life at fairly high Mach numbers and a gross weight that approached 300,000 pounds. It was designed to cart a bunch of fuel in the fuselage as well as the wings so the landing gear was heavy and the max landing weight was high. The wing structure was heavy for obvious reasons. There was a provision in the 41 Section for the crew to bail out behind a spoiler that they could deploy. The fuselage diameter was designed for medium-size cargo and not to provide butt space for passengers.

The 707 (model number applied to commercial airplanes that followed the Dash 80) displayed none of the above mentioned attributes. It was much lighter; therefore, the airframe had thousands of different parts. It has a larger upper fuselage diameter and subsequently has a crease at passenger deck level. It has turbo compressors on three of the four engine struts that you can spot on the upper part of the nacelles.

I could go on and on detailing the differences since I spent my young life working on these two airplanes. I suppose to those who don't take the time to differentiate the details, a tissue will always be a Kleenex and a jet will always be a 707.

Robert Parks
Auburn, Wash.

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P. 40 of the March issue mentioned a long term buy of C-130s. It seems that it would also be prudent not only to "stretch" the 500-plus C-130s we now have in service but to add in-flight refueling capability.

Since the stretched C-130-30 was approved for airdrops many years ago and all customers (outside of the US military) buy the -30 version, no new tooling would be required. The -30 is in production and the in-flight refueling modifications are currently available for special forces aircraft. These modifications would be similar to what was done to make the C-141B from the C-141 and would be very cost effective. Range and cargo capacity would be substantially increased.

Roy P. Gibbens
Meridian, Miss.

Before the AWACS and More

The article on the AWACS seemed to imply that the AWACS, the E-3, is an outstanding airplane doing an outstanding and unique job. *[See "A Quarter Century of AWACS," March, p. 42.]* I, too, admire the abilities of the crews and the capability of the E-3 AWACS, but to imply that the AWACS is the first aircraft to do this kind of airborne radar control role is misleading.

We should not forget the role of the EC-121D and H throughout Vietnam (not to mention the Navy's use of the same basic aircraft to provide radar coverage of the Atlantic). Nor was the mission new to Air Force Reserve Command which for years flew the EC-121T. And, of course, the Navy flew the E-1B and currently the E-2C which are, in effect, mini–AWACS aircraft.

No, the E-3 is a great AWACS, but it is hardly the first airplane to do the miss on. Ask anyone who was in the 551st Airborne Early Warning and Control Wing or the 552nd AEW&C Wing during the 1950s and 1960s.

Arnold Swanberg
Seattle

I noted with a little sadness that there was no mention of the preceding quarter century when the forerunner of AWACS was getting off the ground. I served as a radar crew chief in the 551st AEW&C Wing, 960th AEW&C Squadron, at Otis AFB, Mass., 1955–56. We had the venerable RC-121D aircraft and were just starting to do what the author mentions in the article: getting the radar up in the air to extend the range and reduce the ability of the potential intruder to come in low, able to escape detection by ground radar.

We were primitive by today's standards, of course, but we had search and height-finding capabilities and a whole planeload of radios to keep NORAD informed about what might be lurking just over the horizon. It seems to me that someone saw the heritage of today's AWACS from AEW&C since even the unit numbering system has been continued.

Perhaps you could find space in a future issue for a story about the "Super Connie" RC-121D. It and the units that used it deserve some recognition, also.

Richard J. Warren,
Van Nuys, Calif.

Peter Grier's article was enlightening and comprehensive except for one fact—he never mentioned a thing about AWACS's predecessor, the EC-121D Warning Star, nor the men and women of the 551st and 552nd AEW&C Wings.

The concept for a USAF airborne radar platform didn't just suddenly take root in the 1970s. On the contrary, it took root in the halls of Air Defense Command during the early 1950s.

The 552nd AEW&C Wing was born as an offspring of defense necessity. The Air Force C-121 Super Constellation [was equipped] with radar and communications equipment which could maintain an air defense barrier several hundred miles off the shores of the United States. The new defense concept was designed to provide greater early warning time in case of an enemy attack upon the nation.

In November 1974, the Defense Department announced that the 552nd AEW&C Group would be scheduled for deactivation during the summer of 1976. The new 552nd [Air Control] Wing inherited the 552nd unit designation on July 1, 1976.

Today, 49 years after the activation of the first USAF airborne radar surveillance organization, the men and women of the 552nd ACW and the E-3C continue to carry on the proud traditions of the 552nd AEW&C Wing and the EC-121D "Super Connie" Warning Star aircraft.

CMSgt. Ken Witkin
USAF (Ret.)
Geilenkirchen, Germany

While I found the article interesting, I also found the presentation of the inception of AWACS to be somewhat misleading.

It is presented in the article that the AWACS effort was born in 1965 under Air Force Systems Command. The initial mission was to provide aid to the air defense of North America. The facts, as presented, may be true; however, there was an aircraft in place already carrying out the stated initial mission.

As early as the 1950s, Air Defense Command had two wings under its control: the 551st AEW&C Wing and the 552nd AEW&C Wing. The wings utilized Lockheed RC-121D Super Connies (later designated EC-121D). The aircraft were fitted with an upper and lower height finder radar. Direct communications with NORAD facilities was accomplished by radio and Dualex teletype. The mission of both wings was to provide early detection and warning in defense of North America. This was accomplished while flying continuous missions on stations established off both Pacific and Atlantic coasts.

In addition, the wings were tasked to "plug temporary holes" where existing ground radar was down and participated in several manned orbital flights. Hurricane/storm information was provided and, on occasion, control and assistance to overwater flights. During the Cuban Crisis, the 966th AEW&C Squadron was formed from existing aircrews and based at McCoy AFB, Fla., where it flew missions in support of operations in and around Cuban airspace.

Granted, over the years the mission has changed, the aircraft has changed, and the capabilities greatly enhanced, but give the old Super Connie and its beat-up crews its due—the mission of air defense was accomplished. The article would have been better titled "A Half Century of AWACS."

MSgt. Steven D. Beauchesne,
USAF (Ret.)
Concord, N.H.

I was the project officer for the AWACS program at Air Force Systems Command from 1969 to 1973. Of particular note, and not widely known, was the fact that the original design for the winning Boeing 707 was that it was to be powered by eight TF-34 engines, the same engines as in the A-10 and the Navy S-3A. Ultimately, the decision was made to go to a four-engine configuration using the same basic engine as the C-141.

Col. Harvey Taffet,
USAF (Ret.)
Indian Harbour Beach, Fla.

The engineering and integration marvel that US and NATO AWACS so proudly, and justly, tout becomes a high-demand operational force multiplier only when combined with the highly skilled, worldwide qualified, and mission-centric aircrews. Air battle management crews and their worldwide network of maintenance, logistics, and computer support are the decisive power behind sensors, scopes, and radios.

I salute the engineers, program managers, aircrews, and especially the maintainers who put one of the most complex weapon systems into the air everyday, when and where they are needed. Their most respected Air Force core value is "Mission Before Self." The sun never sets on AWACS operations, and these people make sure of it!

Lt. Col. David Huss,
USAF
Pentagon

Cannibalization

It was with great interest that I read your assessment of cannibalization in today's military service. *[See "Cannibalization," March, p. 66.]* Cannibalization is certainly not new but is rather an ongoing necessary evil. In the early 1960s, I was the aircraft inventory manager in the Office of the Director of Materiel, 5th Air Force. During that period, most of the fighter aircraft were of the Century Series, and they did have their share of "Hangar Queens"—those ships that had been cannibalized to ensure that others were kept in flying status.

Only one aircraft in our inventory had an enviable record of no cannibalization. That particular aircraft was the Martin B-57 Canberra assigned to the 3rd Bomb Wing at Johnson Air Base in Japan. The B-57s established a no AOCP [Aircraft Out of Commission for Parts] record of 509 days during my tenure there.

TSgt. Jesse R. Callahan,
USAF (Ret.)
Brookeland, Tex.

The Value of Airpower

Concerning the value of airpower in conflict: Perhaps some might consider that in the spring of 1942, eight obsolete P-40s flown by [David L.] "Tex" Hill and seven other AVG (American Volunteer Group—"Flying Tigers") alone stopped the Japanese Red Dragon Division at the Salween Gorge. *[See "Flying Tiger, Hidden Dragon," March, p. 70.]* In doing so, they prevented the fall of China. Additionally, the minuscule Fourteenth Air Force, covering an area larger than the European and African Theaters of Operations combined, kept the Japanese in check. After the war, the Japanese commanding general stated had it not been for the Fourteenth, he could have taken any objective in China he wanted and still released half of his 1.2 million troops to fight elsewhere.

I thank Rebecca Grant for doing what few other writers on [Lt. Gen. Claire Lee] Chennault have done—she got it right. Tacair is his legacy and testimony to his leadership.

Lt. Col. Wallace H. Little,
USAF (Ret.)
Fort Walton Beach, Fla.

While the piece is generally accurate, it suffers from several flaws and lapses. I.B. Holley [Jr.] is one of America's leading military historians and a retired Air Force Reserve major general. Referring to him as a "doctrine guru" is both slovenly and unfortunate.

Chennault's beliefs were clearly not "indistinguishable from those of a typical Douhet–quoting strategic bombing advocate." Chennault could not have been awarded the rating of "fighter pilot" in 1919—maybe "pursuit pilot," but probably "military aviator." He never advocated fighter escort of bombers. He always believed bombers were vulnerable to fighters and advocated aggressive air defense, alerted by an early warning system of the kind he used successfully in the early 1930s exercises and later in China.

He disapproved of tying up "pursuit" with "bombardment" and negating the flexibility and aggressiveness of the fighters. He was a great fighter tactician and fought—sometimes literally—with his faculty colleagues who later wrote AWPD-1: [Haywood S. Hansell Jr.], [Harold L.] George, and [Kenneth N.] Walker. He was right more often than he was wrong, and he probably would eventually have come around on long-range fighter escort.

That's what I wrote in the Military Employment text chapter on [the Air Corps Tactical School] during my tenure on the Air War College faculty, 1981–83. I am still persuaded that I had it right.

Lt. Col. Frank Howe,
USAF (Ret.)
Denver

Your article became mandatory reading for my cadets. In January 2002, my cadets provided the honor guard at the memorial service for [retired] Col. Gail L. Stubbs in Longwood, Fla. After flying for Chennault in China, Stubbs joined the Army Air Corps and flew another 39 combat missions over Europe, including three over Normandy on June 6, 1944. Stubbs is survived by his wife and daughter.

After my cadets performed the memorial service honors and met Stubbs's family, your article is more than just another lesson in aviation history. This history is now real and relevant. They better realize and appreciate the sacrifices that generation made to our great country.

Maj. Joseph M. Chiofolo,
USAF (Ret.)
Aerospace Science Instructor
AFJROTC unit FL-0954

Frank Andrews

During [Lt. Gen. Frank Andrews's] tour at Langley, I was the radio operator assigned permanently to his airplane—a commercial DC-1, an Air Force C-32, tail #6001—for several years. I was on most of the trips mentioned in Mr. [H.O.] Malone's article *["The Influence of Frank An-*

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To explain these needs to the American people.

drews," February, p. 84] and considered that assignment the highlight of my military career as an airman (technical sergeant). Many flights (C-32 and B-18) were also made with members of his staff who later held important posts during World War II. These officers were the real pioneers of the Air Force as it developed prior, during, and after World War II.

[Andrews's] untimely death in May 1943 was a terrible shock to all (officers and airmen) who were privileged to serve with him. He may not have been a replacement for [Gen. Dwight D. Eisenhower] for the invasion, but it's almost certain that his role would have been one of great importance. To me, this article brought back memories of a great general who had a major impact on my military career.

Col. Robert F. Sladeck Sr., USAF (Ret.)
Huntingtown, Md.

Typical Clark

Why does it not surprise me that Ramsey Clark would bring suit to help the terrorist detainees at Guantanamo Bay? *[See "Aerospace World: Ramsey Clark and Friends Bring Suit on Behalf of al Qaeda Prisoners," March, p. 14.]* After all, this is the same Ramsey Clark who visited North Vietnam along with Jane Fonda in an attempt to aid the cause of the enemy that killed over 55,000 of our military men. Even former North Vietnamese Col. Bui Tin who received the unconditional surrender of South Vietnam stated in a *Wall Street Journal* interview, "Visits to Hanoi by Jane Fonda and former Attorney General Ramsey Clark and ministers gave us confidence that we should hold on in the face of battlefield reverses."

Mr. Clark is truly a person who represents the worst this nation has to offer. On the other hand, I feel truly blessed because America's freedom allows fools such as him to show their true colors. In another country (Iraq, for example), Mr. Clark just might be summarily shot for attempting to undermine the government.

Lt. Col. James V. Kelso III
Peachtree City, Ga.

Not So Ugly

Bravo for Lt. Col. [Martha] McSally! I hope she keeps after it until we quit kowtowing to the Saudi government. During the 1980s, I served at Elf One in Riyadh [Saudi Arabia]. Our female crew members then were not required to wear an abaya, but were encouraged to wear a scarf covering their head, the longer the scarf the better. And of course they had to ride in the back of the bus, backseat of cars, etc. It was ludicrous then and it is ludicrous now to believe clothing added any safety or security. During my service, I served all over the world and I could routinely pick Americans out of any crowd regardless of how they were dressed. The requirement for our female forces to dress differently was never about anything but appeasement, otherwise males would also have been required to dress differently.

The Saudi government should smell the roses. The American government should diplomatically "help" them smell the roses.

Donald Hilburn
Farmerville, La.

And Even More on the C-46

Regarding the alleged operation of at least one C-46 *["Letters: More on C-46," March, p. 11]* by the RAF: [I] have spent considerable time researching the history of the C-46 over the years, [and] I am not aware of any documentation that any C-46s were ever operated by either the RAF or British civil operators, unless the prototype CW-20/C-55 operated by BOAC from 1941–1943 as G-AGDI is considered. The RAF did operate large numbers of C-47s as Dakotas on the Berlin Airlift, and also had received 10 C-54s in 1945, but these had returned to the US as USN R5Ds by 1946–47, prior to the Berlin Airlift. The RAF also operated the Handley Page Hastings during the airlift, this having some resemblance to the C-46 in nose and tail contours and being a low-wing, tail-wheel configuration, although having four radial engines rather than two as on the C-46. Perhaps the latter or an RAF Dakota was mistakenly identified as a C-46.

T.J. Gibson
Mesa, Ariz.

Castle, Not March

Thank you for including my letter about Col. [Patrick D.] Fleming *["Letters: More on the B-52," March, p. 10].*

I should also tell you that Fleming was assigned to Fifteenth Air Force, which had its headquarters at March Field (where I thought he was based), but the 93rd Bomb Wing, which was his wing, was actually based at Castle Air Force Base at Merced, Calif.

Maj. Gen. Gerald K. Hendricks, USAF (Ret.)
Alexandria, Va.

Aerospace World

By Suzann Chapman, Managing Editor

USAF Presses On With B-1B Cuts

Last summer's controversial proposal by the Air Force to reduce its B-1B fleet by one-third and consolidate the remaining B-1Bs at just two bases will take effect this year, according to a report USAF officials provided to Congress.

USAF plans to reduce its combat-coded bomber fleet to fewer than 100 aircraft. The move, the service said, "incurs some risk."

Air Force officials insist, however, that any risk "will be mitigated by modernizing the remaining B-1 aircraft."

Service officials wanted to make the B-1 cuts last year, but that plan was thwarted by a Senate budget amendment that prohibited using 2001 funds for that purpose.

The B-1 fleet was running $2 billion behind in modernization funding across the Future Years Defense Program. By trimming the fleet, USAF said, "Our new long-range strike force will be more effective, survivable, and supportable."

According to the report, USAF plans to make changes to the current total fleet of 207 bombers throughout 2002. It also identified 18 B-52s as excess to requirements.

USAF plans to reduce main B-1B operating bases from five to two. The Guard will lose its B-1 missions at Robins AFB, Ga., and McConnell AFB, Kan., and B-1s will be removed from Mountain Home AFB, Idaho. Dyess AFB, Tex., and Ellsworth AFB, S.D., will be the only two remaining B-1 bases.

The Air Force projects a total savings of nearly a billion dollars from these changes. The service said it would provide additional funds to bring the total for B-1 reinvestment across the FYDP to $1.37 billion.

The Guard unit at McConnell will pick up an air refueling mission, flying KC-135R tankers, and the unit at Robins will become an air control wing, transitioning to E-8C Joint STARS radar aircraft.

USAF photo by SSgt. Krista M. Foeller

USAF plans to cut the B-1B bomber fleet by one-third this year. Overall, the service said it will take the long-range strategic bomber force—B-1Bs, B-2s, and B-52s—down to fewer than 100 aircraft.

Bush Seeks $27.1 Billion To Continue the War on Terror

President Bush asked Congress for $27.1 billion in Fiscal 2002 emergency supplemental funding for counter-terrorist efforts at home and abroad.

Of that, $14 billion will go to DOD and the Intelligence Community, as follows:

- $6.7 billion to conduct day-to-day military operations, primarily the domestic Combat Air Patrols and operations in Afghanistan;
- $4.1 billion to pay National Guard and Reserve personnel who are on extended active duty;
- $1.4 billion for critical command, control, communications, and intelligence support;
- $0.9 billion for various programs, such as for the detention facility at Guantanamo Bay, Cuba, information operations, and US Special Operations Command requirements;
- $0.5 billion to buy precision munitions, unmanned aerial vehicles, and unique special operations weapons; and
- $0.4 billion for coalition support.

The new request comes on top of $40 billion approved by Congress last year. The defense portion of that was $17.5 billion.

US Repositions Forces in SWA

The Pentagon has been shifting its resources within Southwest Asia.

Proposed Total Bomber Force in Fiscal 2002

Aircraft	Combat	Training	Test	Backup/Attrition Reserve	Total
B-1	36	16	4	4	60
B-2	16	0	1	4	21
B-52	44	12	2	18	76
Subtotal					**157**
B-52*	0	0	0	18	18
Total	96	28	7	44	**175**

*Excess B-52s

Various news reports have speculated that declining relations with Saudi Arabia was the reason.

By invitation, the US has had a major presence in Saudi Arabia since the Gulf War in 1991, and just last year opened a major, state-of-the-art Combined Air Operations Center at Prince Sultan air base.

However, Saudi statements recently have indicated they would not want the US to use Saudi facilities should the US launch operations against Saddam Hussein in Iraq as part of the ongoing war on terror.

Army Gen. Tommy R. Franks, who is in charge of operations in the region, told reporters March 29 that he was aware of reported frictions. "I will say that Saudi Arabia has been cooperative with us in Operation Enduring Freedom," said Franks.

He noted that the US began repositioning some munitions left over from the Gulf War about 18 months ago. He went on to say that the US had been increasing or improving its command-and-control capacity in the region.

"I would not be at all surprised if we are changing the location of some of the assets that we have," said Franks, adding that he wanted to have redundant communications inside the region.

"I have no plans to move the CAOC from its current location," said Franks, when pressed. "That does not say that I don't have plans to replicate it some place."

DOD Stations A-10s at Bagram

USAF A-10 attack aircraft were deployed to Bagram air base, north of the Afghan capital of Kabul. This marked the first time the US has stationed fixed-wing aircraft within Afghanistan.

The move emphasized what US officials have been saying, that there is a long way to go in fighting terrorism within Afghanistan. A-10s have participated in operations there but, like other fixed-wing aircraft, were flown from outside the country. Having the "Warthogs," as they are called, within the country will speed their response times to targets as coalition forces continue to root out al Qaeda elements.

Army Gen. Tommy Franks, commander in chief of Central Command, speaking on NBC's "Meet the Press," said the US and its allies must "be sure that we've completed what we started out to do, and that's to assure ourselves that the al Qaeda network inside Afghanistan is destroyed."

DOD Adapts CAPs to Threats

Administration officials made clear that, news reports to the contrary, some level of Combat Air Patrols will continue over both New York City and Washington, D.C. For security reasons, they said, what form those CAPs will take would not be revealed.

Homeland Security Director Tom Ridge told New York elected leaders reports that the round-the-clock CAPs would end over New York but continue over Washington were wrong.

News reports in mid–March proclaimed that the Pentagon was going to stop the New York CAPs.

"It's not appropriate to talk about one place vs. another," DOD spokeswoman Victoria Clarke told reporters. "What we are looking at is a different mix of Combat Air Patrol, strip alerts, those sorts of things that will change and adapt as the circumstances change and adapt."

Air Force Brig. Gen. John W. Rosa Jr., Joint Chiefs of Staff deputy director of current operations, said, "We've made it a point to never tell you [reporters] or tell folks exactly where we're going to be, when we're going to be. It only makes common sense."

When queried, senior White House spokesman Ari Fleischer said the issue "will always be reviewed to provide the greatest protection for the American people, wherever they are."

He said the CAP role is based on intelligence information, threat analysis, and "a whole series of items, including the fact that since September 11th, domestic security—as any traveler can tell you—has been changed."

Those changes, he added, include strengthened cockpit doors, the presence of federal air marshals, and improved ground security procedures at airports.

Defense officials said the improved domestic security environment prompted them to review the use of CAPs, which have taken a heavy toll on military forces, predominantly the Air Force. From Sept. 11 through mid–March, the services flew more than 19,000 CAP sorties for Operation Noble Eagle. The operation requires some 13,000 personnel and 250 aircraft, including fighter, transport, air refueler, and surveillance aircraft. The cost, reported the Pentagon, from Sept. 11, 2001, through Jan. 31, 2002, was $503 million.

"Over time, as we become more efficient and we learn more about the threat, we want to become better stewards of the taxpayer's dollar," said Rosa. He noted, though, that the decision on use of CAPs is made with "security and safety first—nothing else."

Anaconda Ends, Enduring Freedom Continues

"Operation Anaconda is complete, but Operation Enduring Freedom and operations in Afghanistan still continue," said Brig. Gen. John W. Rosa Jr., Joint Chiefs of Staff deputy director of current operations.

US and coalition military members launched Anaconda March 1 against several pockets of Taliban and al Qaeda forces in the mountains south of Gardez in Afghanistan. The operation involved the largest ground activity to date in the war against terrorists and included hundreds of sorties flown by bombers, tactical aircraft, AC-130 gunships, and attack helicopters.

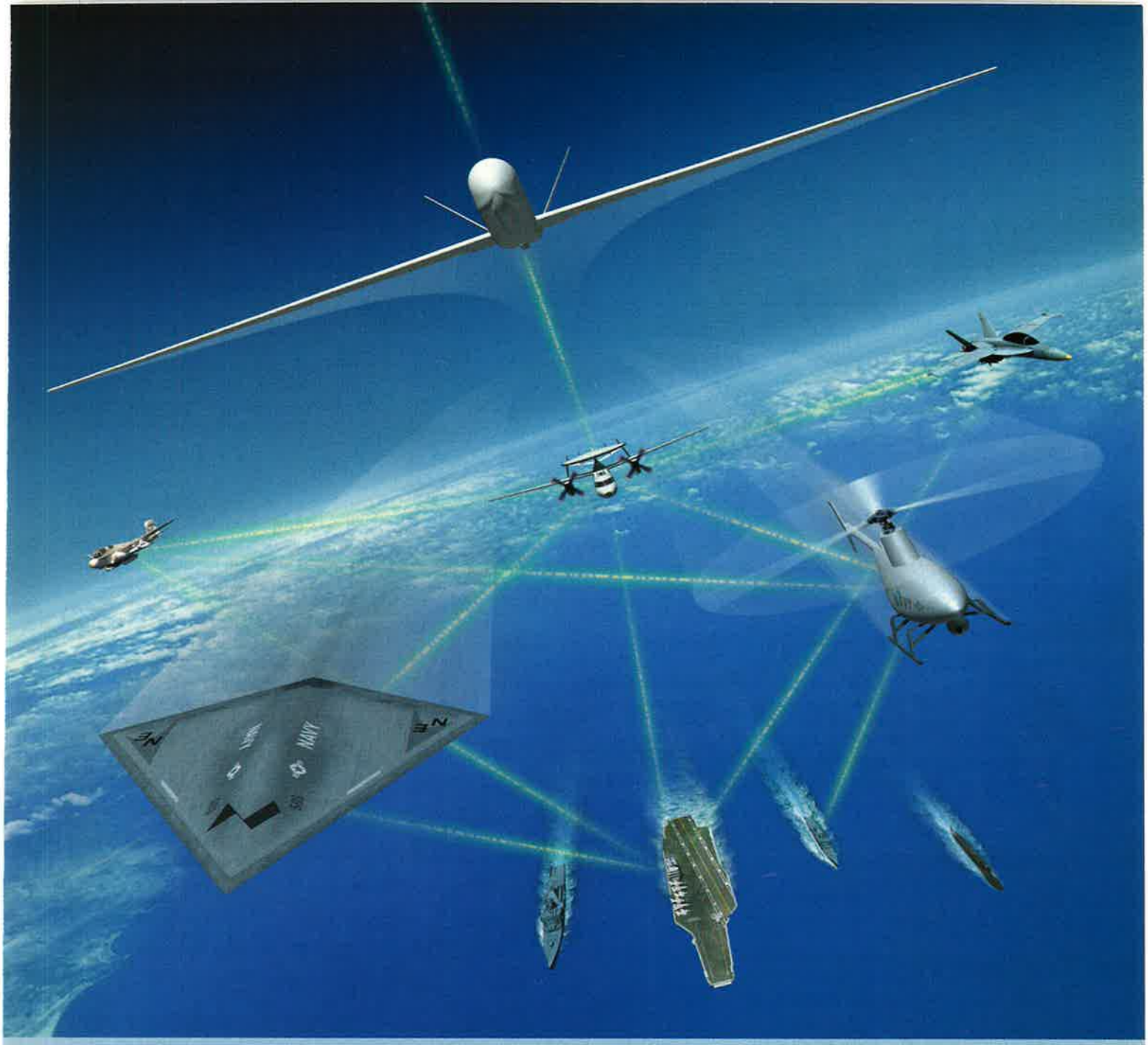
"While this particular operation is over," Rosa told reporters March 18, "we're still actively pursuing al Qaeda and Taliban personnel throughout Afghanistan, and we're preparing for any subsequent missions that may be needed."

CENTCOM Probes 10 Cases of Alleged Friendly Fire

Out of 36,000 aircraft sorties and the release of 21,737 weapons in the first six months of Enduring Freedom, said CENTCOM's Gen. Tommy Franks, his command is investigating only 10 alleged friendly fire incidents caused by US or coalition forces.

"We are not ever going to be able to absolutely eradicate the loss of life, and in some cases the loss of the wrong life, when we're engaged in this kind of operation," said Franks. "Regrettable, but true."

The point of the investigations, he said, is to help determine if the same type of incident can be avoided in the



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USAF photo by MSgt. Michael A. Kaplan

Airmen from the 608th Communications Squadron at Barksdale AFB, LA., assemble a Quick Reaction Satellite Antenna for the only Blue Flag—normally a quarterly wargame exercise for commanders and staff—to be held this year.

future "by simply modifying our tactics, techniques, procedures, and approaches."

The 10 incidents under review include the coalition bombing of International Red Cross facilities in Kabul, Afghanistan. The Red Cross buildings were within a compound known as the Kabul Army Storage Depot North, a compound used by Taliban forces, said a CENTCOM statement. CENTCOM had previously asked the Red Cross to provide coordinates for all of their facilities in Afghanistan, but this depot was not included in the Red Cross data.

Coalition aircraft bombed the facility Oct. 16, 2001, and following that attack, CENTCOM learned the Red Cross had facilities there. Despite the new information, coalition aircraft struck the compound again Oct. 26.

According to the CENTCOM statement, the command passed results of its preliminary inquiry on the Kabul incident to the Air Force on Nov. 30, 2001. At the time of these two bombings, Lt. Gen. Charles F. Wald was directing Enduring Freedom air operations. He is now the USAF deputy chief of staff for air and space operations.

CENTCOM also reported it had closed five of the 10 incidents, including the alleged aerial bombing of a UN convoy. The command statement said the convoy was not traveling on the days for which it received clearance and was not visible to the aircraft. It was, in fact, not the target of the air strike but was hit by flying debris.

Rumsfeld: Iran, Iraq, and Syria Finance Murderers

Defense Secretary Donald Rumsfeld specifically cited Iran, Iraq, and Syria as countries that encourage and equip terrorists to go kill innocent people.

"Murderers are not martyrs," Rumsfeld told reporters April 1. "Targeting civilians is immoral, whatever the excuse. Terrorists have declared war on civilization, and states like Iran, Iraq, and Syria are inspiring and financing a culture of political murder and suicide bombing."

He said Saddam Hussein had announced that Iraq is offering stipends—$10,000—to families of suicide bombers. "I would suggest that that is very actively trying to kill innocent men, women, and children," said Rumsfeld.

On Iran and Syria, the US defense leader said it is well-known that they are sending "their folks right into Damascus and down into the Bekaa and then down into southern Lebanon and committing terrorist acts."

"The truth is that a whole generation of young people are being taught something that is totally inconsistent with [Islam], and they're being encouraged to go out and kill themselves as they kill innocent people in other countries," said Rumsfeld.

No End Strength Increases, Yet

Military officials have gone on record saying their personnel are overstressed by current operations. For now they are looking at other means to relieve the pressure than simply increasing the number of personnel.

The reason, as military personnel officials told Congress recently, is that the Pentagon first wants to see if transformation can alleviate the pressure.

"Secretary Rumsfeld has chal-

Coalition Captures an al Qaeda Chieftain

The Administration confirmed April 2 that Pakistan authorities, supported by US officers, captured a senior al Qaeda official March 28.

Abu Zubaydah is known to be a terrorist recruiter, operational planner, and a member of Osama bin Laden's inner circle, said a White House press statement.

Defense Secretary Donald Rumsfeld told reporters April 2 that since Zubaydah is "a very senior al Qaeda official who has been intimately involved in a range of activities for the al Qaeda, there's no question but that having an opportunity to visit with him is helpful."

"Sometimes I understate for emphasis," he added.

In a later press conference, Secretary Rumsfeld revealed that Zubaydah is now under US control and will remain so for interrogation.

Zubaydah was injured during his capture by Pakistan and US officers, but Rumsfeld said, "He is receiving medical care, and we intend to get every single thing out of him to try to prevent terrorist acts in the future."

Some news reports said the US planned to turn Zubaydah over to another country for interrogation and possibly torture, but Rumsfeld said the reports were "wrong and irresponsible."

"He will be properly interrogated by proper people who know how to do those things," said Rumsfeld.

The US defense leader said he hoped "every single thing that this very senior al Qaeda operative knows would ultimately come out of him." However, Rumsfeld said that may not be the case. Some, he said, "prefer to disgorge a good deal," while others "have not uttered a word for years."

"I'm without expectation but not without hope," said Rumsfeld.

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lenged us to pursue innovative solutions to offset the need for end strength growth," said Lt. Gen. Richard E. Brown III, USAF's personnel chief.

To meet the current surge in operations, the Air Force employed two primary options: increased use of reserve forces and Stop-Loss, both for active duty and reserve personnel.

Stop-Loss is not a long-term solution, said Brown, and neither is expanded use of reserves.

The Air Force has the greatest number of reservists who have either volunteered or been called to active duty to help in the war against terrorism. "In some mission areas, the Guard and Reserve perform 100 percent of the total Air Force mission," said Brown. "They own 83 percent of the air medical evacuation, more than 55 percent of our air refueling, and 33 percent of our security forces."

Extended active duty for large numbers of reserve forces is "a huge concern to the Air Force," emphasized Brown.

"Our No. 1 priority this year is to meet the increasing demand of our warfighting skills," he said. To do this, Brown said, the service's "long-term strategy is to shift resources from tail to tooth through the transformation of the force."

US Airman Convicted of Rape in Okinawa

A Japanese court convicted Air Force SSgt. Timothy B. Woodland, 25, of raping a 24-year-old woman in Chatan, Okinawa, on June 29, 2001, on the hood of a car in a parking lot.

Woodland had pleaded not guilty, saying the woman consented to having sex.

The incident followed several others involving US servicemen, including the rape of a 12-year-old Japanese girl by three US servicemen, and caused additional protests and calls for reduced presence of US forces in Okinawa.

Woodland was sentenced to 32 months in a Japanese prison near Tokyo.

Nunn–McCurdy May Strike up to 10 Programs

Among programs cited by Pentagon acquisition chief Edward C. Aldridge that may run up against the Nunn–McCurdy law is the Space Based Infrared System High.

SBIRS High is the high-altitude early warning capability destined to replace the Defense Support Program satellite system.

The Nunn–McCurdy law requires Aldridge to certify to Congress programs that are exceeding their cost estimates by 25 percent or more. SBIRS High, said Aldridge, is one of eight to 10 programs having that problem.

The Pentagon announced late last year that it had canceled the Navy Area Missile Defense Program because of excessive cost growth. When faced with the Nunn–McCurdy test, Aldridge said he could not certify the program.

The law requires the acquisition chief to answer four questions about a program in jeopardy:

- Is it essential to national security?
- Is there a cost-effective alternative?
- Are costs under control?
- Is management in place to keep costs under control?

"If I can't answer those questions, I will not certify," said Aldridge. "I think the message is pretty clear now."

Aldridge said he had to certify the SBIRS High program to Congress this month.

It was up to the Air Force "to convince me that those four criteria can in fact be met," he added.

Coalition Uncovers Possible Anthrax Lab

Coalition forces uncovered near Kandahar, Afghanistan, what may be lab equipment that al Qaeda planned to use to develop anthrax or other biological weapons.

No precursor chemicals were found, just the equipment, some of which apparently the terrorists tried to destroy, said USAF Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff.

CINCs Call for More Forces in Europe and Pacific

Air Force Gen. Joseph W. Ralston, Commander in Chief, European Command and Supreme Allied Commander Europe, and Adm. Dennis Blair, CINC, Pacific Command, bluntly told Congress that their commands need more personnel to continue to wage the war on terrorism.

When asked if they had adequate forces to accomplish the missions they now have and those they may have, both Ralston and Blair said they do not.

"I do not have the forces in EUCOM today to carry out those missions," Ralston responded to a direct question from Rep. Ike Skelton (D–Mo.).

Blair said the same for PACOM. He also put a number on his shortage—"more than 5,000 additional billets are needed throughout the Pacific Command to wage this war on terrorism indefinitely."

Even without extending the war on terrorism, the two CINCs said they are short right now in conducting current operations. Each pointed out that they have had to shift forces and rely much more heavily on reserve elements.

Should EUCOM pick up a new operation, Ralston said, "I would come back to the Chairman of the Joint Chiefs and the Secretary of Defense and ask for additional forces."

"They are confronted with a choice," he added.

Skelton called their testimony "very frank and forthright," but "very troublesome."

At the Pentagon, Defense Secretary Donald Rumsfeld assured reporters that if the US "decides to undertake an activity, that we will be capable of doing it."

Air Force Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff, said the Pentagon had made some prioritization decisions that distributed forces differently than before Sept. 11. "Some unified commanders might feel they don't have everything they need," he said.

Rumsfeld said that Ralston was "quite right."

"No one person is necessarily going to have every single thing they need at any given moment, unless they ask for it and then a judgement's made as to how you want to balance those risks and what priorities you think are appropriate," he said. "And, that's what General Myers and I do."

Trying to destroy the equipment shows their intent since so much equipment that could be used to produce biological weapons has common uses, according to DOD officials.

For example, said Lisa Bronson, deputy undersecretary of defense for technology security policy and proliferation, equipment to dry anthrax spores is typically used to make powdered milk. Drug and cosmetic industry equipment can mill dried anthrax to the right size—one to 10 microns—for use as a weapon, she added.

Defense Secretary Donald Rumsfeld said, "We have so much evidence in writing of the desire to develop capabilities, chemical and biological capabilities, that the fact that [the equipment's] dual use is saying a pistol's dual use—it can shoot at a target or it can shoot at a person."

Some US officials have said that Russian entities are the first source for materials to produce biological weapons; however, Bronson said it's more widespread. Countries like Iran, Iraq, Libya, North Korea, and Syria have consciously over the last seven to 10 years been developing biological weapons, she said.

"They have it, and we can't turn a blind eye to the fact that they have it," Bronson added.

F-16 Pilot Killed in Crash

Capt. Luke A. Johnson, 26, was killed when his F-16 fighter crashed near Lanscheid, Germany, March 20.

He was on a nighttime training mission from the 23rd Fighter Squadron at Spangdahlem AB, Germany, when air traffic controllers said they lost radio and radar contact.

Johnson, who was from Tucson, Ariz., crashed in a flat, wooded, unpopulated area along a logging road. At the time, visibility was five miles with a light rain and fog, according to the Air Force.

A board of USAF officials will investigate.

Navy May Cut Fighter Purchases

The Navy and Marine Corps are reviewing a study that calls for the Navy to cut planned buys of the Joint Strike Fighter and E/F-18E/F Super Hornet.

The Navy was directed by the 2001 Defense Planning Guidance to reexamine its tactical air situation with a view toward what greater capabilities the new technology brings.

Adm. Vern Clark, Chief of Naval Operations, said the Navy needed to challenge every assumption to maximize limited resources.

Edward Aldridge, Pentagon acqui-

Markey Cites Alleged Nuclear Security Gaps

Democratic Rep. Edward J. Markey (Mass.) issued a report on the Nuclear Regulatory Commission's oversight of the nation's nuclear reactor sites that reveal "troubling black holes in homeland security."

Markey, who is a senior member of the House Energy and Commerce Committee, posed questions to the NRC following the Sept. 11 terrorist attacks to determine the extent of the nation's ability to handle a terrorist attack on a nuclear power plant. He found the NRC's responses—contained in more than 100 pages of correspondence—lacking.

"There is little comfort to be found in the agency's response to my questions," Markey said in a news release. "Black hole after black hole is described and left unaddressed."

The report, titled "Security Gap: A Hard Look at the Soft Spots in Our Civilian Nuclear Reactor Security," drew several negative conclusions, including:

- The NRC does not know how many foreign nationals are employed at nuclear reactors and does not require adequate background checks.
- Twenty-one nuclear reactors are located within five miles of an airport, but 96 percent of all US reactors were designed without regard for the possibility of impact from even a small aircraft.
- The NRC has rejected placing anti-aircraft capabilities at nuclear facilities, even though other countries have chosen to do so.

Foreign nationals. NRC requirements limit employee background checks to criminal records within the US. Nuclear facility operators "determine access to the facility regarding foreign applicants on a 'best effort' basis," said the report. Because of this practice, the report concluded, "Terrorists may now be employed at nuclear reactors in the US just as terrorists enrolled at flight schools in the US."

Aircraft impact. The report noted that none of the licensees that operate the nation's 103 active nuclear reactors have "considered the possibility of a deliberate aircraft impact." The possibility of an accidental impact was not considered at 43 reactors, while at another 56 reactors, the probability was considered too low for facility design changes.

As a result, only four reactors have any design features that would withstand an airplane impact. And only two—the reactors at Three Mile Island in Pennsylvania—were designed with the impact of a large airliner in mind.

Anti-aircraft capability. The NRC rejected deployment of anti-aircraft weaponry at nuclear facilities after consultation with DOD, the FAA, and the new Homeland Security Office. The conclusion was, according to the Markey report, that "there would be enormous command-and-control problems and a large potential for unintended consequences and collateral damages if such weaponry were deployed."

The commission did impose no-fly zones around the facilities after Sept. 11 but removed the restrictions within one week, said the report.

The NRC told Markey that "the proper way to deal with the potential hijacking of large commercial aircraft by suicidal terrorists is through the measures on airline security now well under way."

The DOD perspective is much the same. Defense Department spokeswoman Victoria Clarke, responding to a question about the Markey report, said, "Clearly, since Sept. 11, there's a heightened state of awareness and security and sensitivity to homeland security, to making sure important facilities such as those are adequately protected."

"We are confident that they are being adequately protected," she added.

However, the Markey report pointed out, despite the discovery of information about US nuclear reactors in captured al Qaeda documents, the NRC "failed to impose legally binding security requirements on its licensees until Feb. 26, 2002"—almost six months after the terrorist attacks in the US.

Additionally, the report noted that no force-on-force security exercises have been conducted at nuclear reactor facilities since Sept. 11 because the NRC believes they might pose safety hazards. The Department of Energy, though, did resume force-on-force exercises at nuclear weapons facilities.

The report also noted that, in the past, US nuclear reactor sites had failed security exercises "about 50 percent of the time."

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Air Combat Mission Systems

AMRAAM

EGBU-15 Guided Bombs

HARM, HARM Targeting System (Export)

Joint Standoff Weapon

Maverick

Paveway Laser Guided Bombs

Sidewinder

Sparrow

Towed Decoys

Airborne Jammers

Missile Warning Systems

F-4 Phantom: Radar Upgrade

RF-4: Navigation Attack Radar

F-15 Eagle: Radars

F-16 Falcon: Mission Computers

F/A-18 Hornet: Radars and Radar Warning Receiver

F-22 Raptor: Radar (Joint Venture) and Processor

F-111: Terrain Following Radar

F-117 Stealth: Targeting System

Joint Strike Fighter: Avionics and Weapons

B-2 Spirit: Radar

C-130 Hercules: Talon-1 Navigation Attack Radar

AC-130 Spectre Gunship: FLIR and Fire Control Radar

CV-22 Osprey: Radar and Infrared Systems

HISAR™ Integrated Surveillance and Reconnaissance System

LANTIRN: Radar and Processor

Tornado: Navigation Attack Radar

Advanced Targeting FLIR for Fighters

Situation Awareness Data Link

Miniaturized Airborne GPS Receiver

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Electronic Systems

sition czar, said the study implies the Navy "could get by with fewer fighters because of the performance of the aircraft."

However, one of the many questions raised by the study, said Aldridge, was the potential impact on unit cost. Since no assumptions were made on the number of international partners for the JSF, Aldridge said the international buy might offset any Navy cuts. He said any decision on the JSF would have no effect on the development program or on production until roughly 2012.

And, said Aldridge, the potential cuts to tactical air "will not have any impact upon the force structure of the Navy–Marine Corps until the year 2020."

"I'll tell you, I have no idea how many planes you're going to buy in the year 2020, and neither does anybody else," he added.

Rumsfeld Says Nuclear Review Doesn't Specify Targets

Defense Secretary Donald Rumsfeld told reporters at a joint press conference with Russian Defense Minister Sergei Ivanov that the classified version of the Nuclear Posture Review does not provide a target list of countries.

News reports had proclaimed that leaked portions of the classified NPR revealed the US was targeting Russia with nuclear weapons.

"Without getting into the classified details of the report, I can say that the review says nothing about targeting any country with nuclear weapons," said Rumsfeld.

Russia was briefed on the NPR in January, he said, adding that Ivanov had been personally briefed during his Pentagon visit in mid–March.

Responding to a question about the leaks, Ivanov said, "Secretary Rumsfeld briefed you on the true situation."

Reformer Bill Lind Proposes Instant Nuclear Response to Terror Attacks

William S. Lind, one of the founding fathers of the "military reform" movement in the 1980s, is again attracting attention, this time on a different front.

In March, following up on the concepts of the reformers, *New York Times Magazine* cited Lind's first recommendation for response to the terror attacks on the United States: "Within 48 hours, we should have wiped Taliban–held Afghanistan off the map, using nuclear weapons."

The full text of Lind's views, published in a bylined article in *Marine Corps Gazette* in February, went further. "The purpose would not have been merely to exterminate Osama bin Laden and his base, but to make an example of them for others: This is what happens when you seriously anger a superpower."

The opportunity may recur, he said, when America is attacked again.

Another proposal was to "Reunite Christendom as the first step in defending the West in a world of cultures in conflict." Lind said that "Islam is today on the strategic offensive, expanding outward in every direction. That expansion must be halted."

Lind first rose to prominence as a member of the military reform "inner circle" when he was a legislative assistant to Sen. Gary W. Hart. He and colleagues tried to head off development of high-technology weapon systems in favor of simpler systems, such as a cheap, slow-moving airplane dubbed "The Mudfighter." Shorthand for the controversy, which raged in Washington, D.C., and in the armed services, was "quality vs. quantity."

In 1985, Hart and Lind wrote a book, *America Can Win: The Case for Military Reform.*

A prime target for the reformers 30 years ago was the Air Force's F-15 fighter. The reform movement lost considerable credibility when the F-15 and other high-tech systems turned out to be not just good but great. In August 1991, on the eve of the Gulf War, Lind warned of an "unrealistic faith in airpower."

Even so, Lind and others of the surviving reformers have enjoyed something of a cult status in recent years, freshened by current interest in lighter and leaner forces.

Lind is presently director of the Center for Cultural Conservatism for the Free Congress Foundation in Washington, D.C.

DOD Outlines Basic Rules for Military Commissions

Pentagon head Donald Rumsfeld revealed the rules the department will follow in trying suspected international terrorists before military commissions. President Bush authorized the commissions for non–US citizens in a Nov. 13 order.

Since that time, Rumsfeld told reporters March 21, the Pentagon consulted with a number of experts around the country, both in and out of government, to develop the procedures.

He stressed that the commissions "will conduct trials that are honest, fair, and impartial." Yet, at the same time the military commissions will allow the use of classified information, said Rumsfeld.

The rules provide for open proceedings unless the presiding officer closes them to protect classified information, intelligence sources and methods, national security interests, or the safety of trial participants.

The standard for conviction will be "beyond a reasonable doubt" and will require a two-thirds vote of the commission, said Rumsfeld. The imposition of a death penalty will require a unanimous vote. There will also be an automatic post-trial appeal and review process.

The commissions will consist of at least three but no more than seven members, with one or two alternates. The secretary of defense may appoint members or assign the responsibility to an appointing authority.

Each defendant will have a military counsel appointed and may select another military or civilian lawyer.

US To Send Search Team to Iraq

The Pentagon drafted a reply to a formal offer from Iraq to allow a team to investigate the status of a Navy pilot shot down during the Gulf War, according to the *Washington Times.*

The news followed weeks of press reports about an offer allegedly made by Iraq in early March that would permit the US to search for Lt. Cmdr. Michael S. Speicher. The Pentagon initially reported he was killed in 1991 when his F-18 was shot down. How-

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USAF photo by MSgt. Rod Thornburg

Capt. Jose R.D. Cabrera of the 146th Medical Squadron gets a blood pressure reading on a woman from a village in Belize. During the humanitarian operation, USAF personnel treated more than 3,600 patients.

ever, last year DOD changed his status to missing in action, based on new information.

US officials said they were stymied when press reports of the invitation surfaced because they had received no official offer. It wasn't until April 5 that Iraq sent a formal offer to the International Committee of the Red Cross. The Pentagon received it April 8.

More Countries To Buy JSF

Italy and the Netherlands are in the final stage of approving participation in the Joint Strike Fighter program, said Edward Aldridge, Pentagon acquisition chief. They join a growing list that Aldridge said could send the international buy into the thousands.

Other countries involved or slated to enter the program soon include Great Britain, with an announced buy of 150 fighters, Canada, Denmark, Norway, and Turkey.

Aldridge also said that Singapore has expressed interest.

Missile Program Has Three Hits

The Missile Defense Agency reported that it was successful with the most recent ballistic missile interceptor test—marking three successes in a row. The next test is slated for this summer.

In the March 15 test over the central Pacific, the prototype interceptor hit a target missile during the midcourse phase of the target's flight.

Vandenberg AFB, Calif., launched the target missile—a modified Minuteman ICBM—at 9:11 p.m. EST. About 20 minutes later, the Ronald Reagan Missile Site on Kwajalein Atoll, about 4,800 miles from Vandenberg, launched the interceptor.

Officials said the interceptor, known as an Exoatmospheric Kill Vehicle, vaporized the mock warhead on impact more than 140 miles above the Pacific. The EKV had to distinguish between the target and decoys.

Pilot At Fault in Helo Crash

Air Force officials said the Oct. 14, 2001, crash of an HH-60G helicopter near Patrick AFB, Fla., was caused by pilot error. They cited his overconfidence as a contributing factor.

The helicopter, which was the lead in a two-ship formation from the 41st Rescue Squadron at Moody AFB, Ga., hit the Kissimmee River and fully submerged shortly after impact. The aircraft were participating in a combat search and rescue exercise at the time.

The four crew members received only minor injuries.

According to the accident investigation report, the pilot, Capt. David Fuqua, entered "a right, steep banked turn at low altitude, which resulted in an uncontrolled descent from which he could not recover prior to impacting the river and surrounding terrain."

The report also stated there was substantial evidence the pilot's "aggressiveness" and "general overconfidence" in his ability, along with his and his crew's loss of situational awareness, prevented them from correcting the problem.

Enlisted Retirees Can Return to Service

Under a new program, airmen who retired from the regular Air Force within the past three years can return to active duty for a period of 24 months.

"People have asked how they can serve again and we certainly have a need—so here we go," said CMSgt. Al Diaz, chief of the skills management branch at the Air Force Personnel Center.

Air Force officials hope the program, which is called the Voluntary Retired Enlisted Airman Extended Active Duty program, will help offset shortages of trained airmen in hard-to-fill skills. Retirees must have served

And Now, Reporting From the Grassy Knoll ...

It had to happen. Many Arabs refuse to believe that most of the Sept. 11 hijackers were Saudi Arabian nationals. Now, a book published in France says the airliner that was driven into the Pentagon did not exist.

Thierry Meyssan's book, *L'Effroyable Imposture,* which has been variously translated as *The Frightening Fraud* and *The Appalling Fraud,* is a best-seller in France. It says that there was no American Airlines Flight 77. It does not offer an alternative theory on what caused the damage at the Pentagon.

Meyssan, who is president of a left-wing think tank, says that witness accounts are contradictory, and the few photographs show no aircraft debris. He also asks why the Pentagon's facade did not immediately collapse and what became of the passengers of Flight 77.

He says the Pentagon attack was a government plot.

To their credit, French news media quickly denounced the book. They pointed out holes in Meyssan's theory. *Le Monde* and *Liberation* tracked down passengers' relatives and photos that do show debris. They also criticized the US for not being more forthcoming with official information about the event.

Force Structure Changes Spell End for ABCCC Platform

The Air Force announced its Fiscal 2003 force structure changes and signaled the transfer of EC-130E Airborne Battlefield Command-and-Control Center aircraft missions to other platforms.

Picking up the ABCCC mission will be the E-3 Airborne Warning and Control System and the E-8 Joint Surveillance Target Attack Radar System aircraft.

The force structure changes, which impact active duty, Air National Guard, and Air Force Reserve Command elements, will result in an overall increase of 299 military, 142 civilian, and 29 drill authorizations. Some of the major changes by state are:

Alaska. ANG will take over the mission of the 611th Air Control Squadron at Elmendorf Air Force Base.

Arizona. At Davis–Monthan Air Force Base, the 355th Wing will lose six EC-130E ABCCC aircraft, along with 506 military and six civilian positions. The wing will also convert six OA-10 forward air control aircraft to A-10 close air support use, gaining 16 military authorizations. Luke Air Force Base will gain 151 military positions for an increased aircraft maintenance workload.

Arkansas. The 314th Airlift Wing will gain 77 military positions because of an increased aircraft maintenance workload. A consolidation of command and control will reduce the 463rd Airlift Control Squadron by 42 military slots.

California. The 9th Reconnaissance Wing at Beale Air Force Base will gain two Global Hawk unmanned aerial vehicles, which will result in an increase of 72 military and four civilian positions. At Edwards Air Force Base, 59 military positions will convert to civilian slots, and the base will lose 70 military positions as a result of workload realignments. A realignment of mobility maintenance specialists at Travis Air Force Base will bring an increase of 43 military positions, but the base will lose 14 military slots in other actions.

Florida. Eglin Air Force Base will gain 50 military slots based on a command restructure of the air control mission and one military position for migration of the ABCCC mission. At MacDill Air Force Base, the 6th Air Mobility Wing will lose 61 military and one civilian positions because of removal of the AWACS mission.

Georgia. The 93rd Air Control Wing at Robins Air Force Base will gain 32 military positions for the Joint STARS, as a result of the migration of the ABCCC mission.

Guam. Actions at Andersen Air Force Base will result in an overall increase of 22 military and a decrease of one civilian authorizations.

Idaho. Mountain Home Air Force Base will gain 245 military positions based on the restructure of the air control mission and one military position for migration of the ABCCC mission.

Illinois. Scott Air Force Base will have a total increase of seven military and 47 civilian authorizations for various actions.

Iowa. The 185th Fighter Wing (ANG) will convert from 15 F-16C/D fighters to eight KC-135E tankers, with an accompanying increase of three military and a decrease of 29 drill authorizations.

Maryland. Andrews Air Force Base will lose two C-20 aircraft and 20 military positions when the aircraft transfer to US Air Forces in Europe. At Ft. Meade, USAF's 694th Intelligence Group will lose 122 military slots because of directed reductions in support of the National Security Agency and other higher mission requirements.

Nebraska. Offutt Air Force Base will gain 38 military authorizations for the growth in the RC-135 Rivet Joint mission. The 55th Wing will gain a TC-135 aircraft for RC-135 training and 32 military positions.

Nevada. Nellis Air Force Base will gain four F-22 test aircraft along with 84 military positions. It will also gain 86 military slots for aircraft maintenance.

New Jersey. At McGuire Air Force Base, the 621st Air Mobility Operations Group will gain 74 military positions because of command-and-control consolidations.

New Mexico. Kirtland Air Force Base will have an overall decrease of 57 military and an increase of 21 civilian authorizations for various actions.

North Dakota. The 119th Fighter Wing (ANG) will replace its 15 F-16A/B fighters with 15 F-16C/D and reduce military slots by five.

Pennsylvania. The 193rd Special Operations Wing (ANG) will replace three EC-130E aircraft with three EC-130Js.

South Carolina. The 16th Airlift Squadron at Charleston Air Force Base will gain nine C-17 airlifters, and as a result, Charleston will gain 271 military positions and the 315th Airlift Wing (AFRC) will gain 12 civilian and 81 drill positions. At Shaw Air Force Base, one F-16 fighter squadron will be inactivated to plus-up two other fighter squadrons with a resulting decrease of six F-16s and 337 military authorizations.

Texas. Dyess Air Force Base will have a total decrease of 40 military and one civilian authorizations for various actions.

Utah. Hill Air Force Base will gain 50 military positions because of a command restructure of the air control mission and one military position for the migration of the ABCCC mission.

Virginia. Hq. Air Combat Command at Langley Air Force Base will gain 21 military positions in a transfer from Air Intelligence Agency elements. The 74th Air Control Squadron will inactivate and 125 military positions will be transferred because of the restructure of the air control mission.

Washington. The 141st Air Refueling Wing (ANG) at Fairchild Air Force Base will replace its 12 KC-135E tanker aircraft with eight KC-135Rs, along with a decrease of nine civilian positions. At McChord Air Force Base, the 62nd Airlift Wing will receive two C-17 airlifters and gain 56 military positions.

in one of the designated specialties and not be within two years of the high-year-of-tenure restriction for their retired rank.

Additional information is available through the "Want to rejoin the Air Force?" link at the AFPC Web site (www.afpc.randolph.af.mil), by calling 866-229-7074, or by sending an e-mail to afpc.dpsfm@randolph.af.mil.

Partial Concurrent Receipt Gains Approval

The House included funding in its Fiscal 2003 Budget Resolution for some money to offset concurrent receipt of military retired pay and veterans disability compensation.

The Senate Budget Committee passed its own version March 21.

Both versions provided full concurrent receipt of the two pays for veterans who are 60 to 100 percent disabled as a result of military service, to be phased-in beginning in 2003 and fully in place by 2007.

The House version established mandatory funding for five years, while the Senate Budget Committee established funding for 10 years.

The full Senate was expected to approve the measure late last month.

The Air Force Association, along with other Military Coalition members, is pushing for full concurrent receipt for all disabled military retirees, regardless of the percentage of the disability.

UK JSF Tests Slated for Edwards

The United Kingdom recently decided to conduct its operational tests of the UK version of the Joint Strike Fighter at Edwards AFB, Calif.

Edwards is not slated to receive

the first JSF test aircraft until October 2005, but the integrated test force is already five months into a 10-year system development and demonstration program, said officials.

Initial plans call for two UK aircraft and support crews to be based at Edwards during the later portion of the demonstration program.

The US Air Force and Navy will be conducting testing on the USAF, Navy, Marine Corps, and UK versions of the new strike fighter.

Current plans call for five USAF versions to be based at Edwards, as well as three transient aircraft from the Navy's test facility at NAS Patuxant River, Md. Another 18 strike fighters will arrive at Edwards once the program moves into operational testing in 2010.

USAF photo by SrA. Shaleata Johnson

USAF airmen participate in a joint services color guard at a ceremony in Savannah, Ga., honoring veterans who fought in the Korean War.

USAF Museum Gets 1924 Trophy

The 1924 Robert J. Collier Trophy, presented to the US Army Air Service for the first aerial flight around the world, has finally found a home at the Air Force Museum at Wright–Patterson AFB, Ohio.

A civilian employee, Neil R. Planzer, discovered the trophy when he was searching through some art work at the Pentagon. Planzer, the Pentagon's associate director for civil aviation, arranged to have it turned over to the museum.

The 175th Wing of the Maryland Air National Guard flew the trophy to Ohio.

The National Aeronautic Association awarded the 1924 trophy for the successful round-the-world flights by the *Chicago* and *New Orleans* Douglas World Cruiser biplanes. They, along with two others, *Boston* and *Seattle,* began the trip from Seattle on April 6, 1924.

Seattle crashed in Alaska and *Boston* in the North Atlantic. *Chicago* and *New Orleans* touched down again in Seattle after 175 days and 27,533 miles. They had stopped in 61 cities.

Report Calls Anthrax Vaccine Safe, but "Not Optimal"

The Institute of Medicine, a private, nonprofit organization, found that the current vaccine used by the Pentagon is safe and effective. However, the group noted that the vaccine is "far from optimal."

The report, released March 6, said the current regimen, which calls for six shots over 18 months to produce maximum immunity, makes the vaccine hard to administer properly. It called on DOD, the National Institutes of Health, and other organizations to develop a better vaccine now made feasible by improvements in vaccine technology.

Congress directed DOD to seek independent examination of the vaccination program in 2000 because service members had raised concerns about its safety. DOD had instituted a mandatory vaccination program in 1998.

The Institute of Medicine convened the Committee to Assess the Safety and Efficacy of the Anthrax Vaccine in October 2000.

The committee found no evidence that the vaccine was responsible for reported long-term ills, noting the vaccine would likely cause immediate short-term reactions like most vaccines. It did suggest, though, that data are limited on long-term effects

Could "Lost" Plutonium Fuel Terrorist "Dirty Bomb"?

The Energy Department has lost track of small amounts of nuclear material that were loaned to 33 foreign countries, including Iran, under the 1954 Atoms for Peace Program, according to a DOE Inspector General report.

So-called "sealed sources," which were packaged in environmentally safe capsules and were to be used for calibration of radiation measuring and monitoring instruments and nuclear research, were provided to foreign countries from the 1950s through the 1970s.

At one time, these sources were tracked by the Atomic Energy Commission, a predecessor of DOE. However, the report said, "The sealed source registry was discontinued in 1984."

The lack of reliable oversight revealed in the IG investigation "raised concerns regarding the possible misuse of these radioactive sources, including the potential for the development of radiological dispersal weapons," the report said.

The IG found through the old registry that 536 US–owned sealed sources, which contained plutonium, had been provided to 33 countries. DOE did report publicly in 1996 that the US had provided approximately 4.4 to 6.6 pounds of plutonium, mostly in the form of sealed sources, to foreign countries since the late 1950s.

The IG report, which was released in late March, also said that while most of the sealed sources were loaned, some were transferred outright, further obscuring accountability and making it nearly impossible to trace current location and condition.

"While the quantities of nuclear materials in sealed sources are small, in the wrong hands, these sources could be misused," stated the IG.

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a big lift in performance.

for all vaccines, not just the anthrax vaccine.

AFIT Projects Funding Shortage

A report for Congress by the Air Force Institute of Technology states that AFIT funding has remained constant in recent years, although overall requirements have increased.

AFIT expects to run a budget shortfall in the next few years and has identified $4 million to $8 million in annual unfunded requirements.

The report said the institute had been able to continue its mission by introducing efficiencies such as merging two schools—the Gradu-

Senior Staff Changes

NOMINATIONS: To be **Brigadier General:** Chris T. **Anzalone,** Dana T. **Atkins,** Thomas S. **Bailey Jr.,** Philip M. **Breedlove,** Bruce E. **Burda,** Bradley W. **Butler,** Robert E. **Dehnert Jr.,** Charles J. **Dunlap Jr.,** Delwyn R. **Eulberg,** Maurice H. **Forsyth,** Patrick D. **Gillett Jr.,** Sandra A. **Gregory,** Gregory J. **Ihde,** Kevin J. **Kennedy,** Russell J. **Kilpatrick,** Lyle M. **Koenig Jr.,** Ronald R. **Ladnier,** Stephen L. **Lanning,** Erwin F. **Lessel III,** Michael N. **Madrid,** John W. **Maluda,** Mark T. **Mathews,** Gary T. **McCoy,** Kimber L. **McKenzie,** Stephen J. **Miller,** Richard Y. **Newton III,** Thomas J. **Owen,** Richard E. **Perraut Jr.,** Polly A. **Peyer,** Douglas L. **Raaberg,** Robertus C.N. **Remkes,** Eric J. **Rosborg,** Marshall K. **Sabol,** Paul J. **Selva,** Mark E. **Stearns,** Thomas E. **Stickford,** Johnny A. **Weida,** Thomas B. **Wright,** David G. **Young III.**

PROMOTIONS: To **Lieutenant General:** Thomas B. **Goslin Jr.,** William R. **Looney III,** Duncan J. **McNabb,** Steven R. **Polk.**

CHANGES: Brig. Gen. (sel.) Chris T. **Anzalone,** from Exec. to Dir., Strat. P&P, Jt. Staff, Pentagon, to Vice Cmdr., Air Armament Ctr., AFMC, Eglin AFB, Fla. ... Lt. Gen. John R. **Baker,** from Asst. DCS, Air & Space Ops., USAF, Pentagon, to Vice Cmdr., AMC, Scott AFB, Ill. ... Brig. Gen. (sel.) Philip M. **Breedlove,** from Sr. Mil. Asst., SECAF, Pentagon, to Cmdr., 56th FTW, AETC, Luke AFB, Ariz. ... Lt. Gen. Bruce A. **Carlson,** from Dir., Force Structure, Resources, and Assessment, Jt. Staff, Pentagon, to Cmdr., 8th AF, ACC, Barksdale AFB, La. ... Maj. Gen. Kevin P. **Chilton,** from Dep. Dir., Politico–Mil. Affairs (Asia–Pacific and Middle East), Jt. Staff, Pentagon, to Dir., Prgms., DCS, P&P, USAF, Pentagon ... Maj. Gen. (sel.) Scott S. **Custer,** from Dir., P&P, AETC, Randolph AFB, Tex., to Dep. Dir., LL, OSAF, Pentagon ... Brig. Gen. Duane W. **Deal,** from Cmdr., AF Recruiting Service, AETC, Randolph AFB, Tex., to Cmdr., 21st SW, AFSPC, Peterson AFB, Colo. ... Brig. Gen. Kenneth M. **Decuir,** from Dep. Cmdr., Canadian NORAD Region, NORAD, Winnipeg, Manitoba, Canada, to Cmdr., Cheyenne Mountain Ops. Ctr., NORAD, Cheyenne Mountain AFS, Colo. ... Brig. Gen. (sel.) Andrew S. **Dichter,** from IG, PACAF, Hickam AFB, Hawaii, to Dep. Cmdr., Canadian NORAD Region, NORAD, Winnipeg, Manitoba, Canada ... Maj. Gen. Gary R. **Dylewski,** from Cmdr., JTF Southwest Asia, CENTCOM, Prince Sultan AB, Saudi Arabia, to Spec. Asst. to Cmdr., AETC, Randolph AFB, Tex. ... Brig. Gen. Douglas M. **Fraser,** from Cmdr., 3rd Wg., PACAF, Elmendorf AFB, Alaska, to Cmdr., Space Warfare Ctr., AFSPC, Schriever AFB, Colo. ... Lt. Gen. (sel.) Thomas B. **Goslin Jr.,** from Cmdr., Space Warfare Ctr., AFSPC, Schriever AFB, Colo., to Dep. CINC, STRATCOM, Offutt AFB, Neb. ... Maj. Gen. (sel.) Michael C. **Gould,** from Cmdr., Cheyenne Mountain Ops. Ctr., NORAD, Cheyenne Mountain AFS, Colo., to Dir., Operational Plans, DCS, Air & Space Ops., USAF, Pentagon ... Maj. Gen. (sel.) Michael A. **Hamel,** from Dir., Space Ops. & Integration, DCS, Air & Space Ops., USAF, Pentagon, to Cmdr., 14th AF, AFSPC, Vandenberg AFB, Calif. ... Brig. Gen. Peter J. **Hennessey,** from Dir., Log., AMC, Scott AFB, Ill., to Dir., Resources, DCS, Instl. & Log., USAF, Pentagon ... Maj. Gen. Kenneth W. **Hess,** from Cmdr., 3rd AF, USAFE, RAF Mildenhall, UK, to Chief of Safety, USAF, Pentagon ... Lt. Gen. Robert C. **Hinson,** from Dep. CINC, STRATCOM, Offutt AFB, Neb., to Vice Cmdr., AFSPC, Peterson AFB, Colo. ... Brig. Gen. William J. **Jabour,** from Dir., F-22 Sys. Prgm. Office, ASC, AFMC, Wright–Patterson AFB, Ohio, to PEO, Fighter & Bomber Prgms., Asst. SECAF (Acq.), Pentagon ... Lt. Gen. Leslie F. **Kenne,** from Cmdr., ESC, AFMC, Hanscom AFB, Mass., to DCS, Warfighting Integration, USAF, Pentagon ... Maj. Gen. (sel.) Claude R. **Kehler,** from Cmdr., 21st SW, AFSPC, Peterson AFB, Colo., to Dir., Space Ops. & Integration, DCS, Air & Space Ops., USAF, Pentagon ... Brig. Gen. (sel.) Ronald R. **Ladnier,** from Cmdr., 22nd ARW, AMC, McConnell AFB, Kan., to Cmdt., ACSC, AU, AETC, Maxwell AFB, Ala. ... Maj. Gen. Edward L. **LaFountaine,** from Cmdt., Jt. Forces Staff College, NDU, Norfolk, Va., to Cmdr., Tanker Airlift Control Ctr., AMC, Scott AFB, Ill. ... Brig. Gen. (sel.) Erwin F. **Lessel III,** from Asst. Dir., Air & Space Ops., USAFE, Ramstein AB, Germany, to Cmdr., 86th AW, USAFE, Ramstein AB, Germany ... Lt. Gen. William R. **Looney III,** from Cmdr., 14th AF, AFSPC, Vandenberg AFB, Calif., to Cmdr., ESC, AFMC, Hanscom AFB, Mass. ... Brig. Gen. (sel.) William T. **Lord,** from Dir., Comm. & Info., AMC, Scott AFB, Ill., to Dir., Comm. & Info. Systems, ACC, Langley AFB, Va. ... Lt. Gen. Duncan J. **McNabb,** from Dir., Prgms., DCS, P&P, USAF, Pentagon, to DCS, P&P, USAF, Pentagon ... Brig. Gen. Roosevelt **Mercer Jr.,** from Cmdr., 81st Tng. Wg., AETC, Keesler AFB, Miss., to Cmdt., Jt. Forces Staff College, NDU, Norfolk, Va. ... Maj. Gen. Michael C. **Mushala,** from PEO, Fighter & Bomber Prgms., Asst. SECAF (Acq.), Pentagon, to Spec. Asst. to Cmdr. for Transition, AFMC, Wright–Patterson AFB, Ohio ... Brig. Gen. Gary L. **North,** from Cmdr., 18th Wg., PACAF, Kadena AB, Japan, to Dep. Dir., Politico–Mil. Affairs (Asia–Pacific and Middle East), Jt. Staff, Pentagon ... Brig. Gen. John G. **Pavlovich,** from Dep. Dir., Ops., AFSPC, Peterson AFB, Colo., to Cmdr., 45th SW, AFSPC, Patrick AFB, Fla. ... Maj. Gen. Timothy A. **Peppe,** from Chief of Safety, USAF, Pentagon, to Spec. Asst. for AEFs, Vice C/S, USAF, Pentagon ... Brig. Gen. Michael W. **Peterson,** from Dir., Comm. & Info. Sys., ACC, Langley AFB, Va., to Cmdr., 81st Tng. Wg., AETC, Keesler AFB, Miss. ... Brig. Gen. (sel.) Polly A. **Peyer,** from Dir., Propulsion, Oklahoma ALC, AFMC, Tinker AFB, Okla., to Vice Cmdr., Oklahoma ALC, AFMC, Tinker AFB, Okla. ... Brig. Gen. Anthony F. **Przybyslawski,** from Cmdr., 509th BW, ACC, Whiteman AFB, Mo., to Asst. Dir., Aerospace Ops., ACC, Langley AFB, Va. ... Brig. Gen. (sel.) Douglas L. **Raaberg,** from Cmdr., 71st FTW, AETC, Vance AFB, Okla., to Cmdr., 509th BW, ACC, Whiteman AFB, Mo. ... Brig. Gen. (sel.) Jeffrey A. **Remington,** from Cmdr., 27th FW, ACC, Cannon AFB, N.M., to Cmdr., 18th Wg., PACAF, Kadena AB, Japan ... Brig. Gen. (sel.) Robertus C.N. **Remkes,** from Dep. Dir., P&P, ACC, Langley AFB, Va., to Cmdr., 3rd Wg., PACAF, Elmendorf AFB, Alaska ... Brig. Gen. Edward A. **Rice Jr.,** Cmdr., 28th BW, ACC, Ellsworth AFB, S.D., to Cmdr., AF Recruiting Service, AETC, Randolph AFB, Tex. ... Brig. Gen. Stephen T. **Sargeant,** from Cmdr., 56th FW, AETC, Luke AFB, Ariz., to Dir., P&P, AETC, Randolph AFB, Tex. ... Maj. Gen. Randall M. **Schmidt,** from Dir., Aerospace Ops., USAFE, Ramstein AB, Germany, to Asst. DCS, Air & Space Ops., USAF, Pentagon ... Brig. Gen. (sel.) Paul J. **Selva,** from Cmdr., 62nd AW, AMC, McChord AFB, Wash., to Vice Cmdr., TACC, AMC, Scott AFB, Ill. ... Brig. Gen. (sel.) Mark D. **Shackelford,** from Dir., F-16 Sys. Prgm. Office, ASC, AFMC, Wright–Patterson AFB, Ohio, to Dir., F-22 Sys. Prgm. Office, ASC, AFMC, Wright–Patterson AFB, Ohio ... Brig. Gen. William L. **Shelton,** from Dir., Rqmts., AFSPC, Peterson AFB, Colo., to Dir., P&P, AFSPC, Peterson AFB, Colo. ... Brig. Gen. John T. **Sheridan,** from Cmdt., ACSC, AU, AETC, Maxwell AFB, Ala., to Dir., Rqmts., AFSPC, Peterson AFB, Colo. ... Maj. Gen. Charles N. **Simpson,** from Dir., Plans & Policy, EUCOM, Stuttgart–Vaihingen, Germany, to Dir., Air & Space Ops., USAFE, Ramstein AB, Germany ... Maj. Gen. (sel.) Kevin J. **Sullivan,** from Vice Cmdr., Air Armament Ctr., AFMC, Eglin AFB, Fla., to Dir., Log. Readiness, DCS, Instl. & Log., USAF, Pentagon ... Brig. Gen. Mark A. **Volcheff,** from Cmdr., 86th AW, USAFE, Ramstein AB, Germany, to Dep. Dir., P&P, AMC, Scott AFB, Ill. ... Brig. Gen. Richard E. **Webber,** from IG, AFSPC, Peterson AFB, Colo., to Dep. Dir., Ops., AFSPC, Peterson AFB, Colo. ... Lt. Gen. Joseph H. **Wehrle Jr.,** from DCS, P&P, USAF, Pentagon, to Asst. Vice C/S, USAF, Pentagon ... Maj. Gen. (sel.) Stephen G. **Wood,** from Dep. Dir., LL, OSAF, Pentagon, to Cmdr., Air Warfare Ctr., ACC, Nellis AFB, Nev. ... Maj. Gen. Michael W. **Wooley,** from Cmdr., TACC, AMC, Scott AFB, Ill., to Cmdr., 3rd AF, USAFE, RAF Mildenhall, UK. ■

ate School of Acquisition and Systems Logistics and the Graduate School of Engineering and Management. However, the report also said AFIT could expect no further mission efficiencies.

Additionally, the report highlighted difficulties AFIT has encountered in filling scientific and engineering student requirements. Part of the problem is that the Air Force has been having manning problems in science and engineering career fields.

Air Force Secretary James G. Roche told Congress in Fiscal 2003 budget testimony that recruiting problems for military and civilian scientists and engineers were "of particular concern."

With this shortage, the service has found it difficult to free its scientists and engineers from operational assignments to pursue graduate degrees at AFIT.

"It is in the hard-core sciences that the seats have been difficult to fill," stated the report. Since 1995, the aeronautical and electrical engineering seat fill rate has been less than 50 percent, and the physics seat fill rate has been 30 percent.

US and Canada To Work Jointly on Smallpox Vaccine Program

The Pentagon announced April 12 that DOD and Canada's Department of National Defense had agreed to collaborate on a smallpox vaccine development program.

The program is intended to produce a new vaccine to protect military members of both countries against the deadly disease.

Ongoing Research Could Make Anthrax Useless as Bioweapon

Computer research conducted by an international Anthrax Research Project could greatly speed work on an anthrax antitoxin—eliminating anthrax as a viable biological weapon. The project presented the results of its research to DOD at the British Embassy in Washington, D.C., in March.

Individual computer users participated in the project by donating their personal computers' spare resources to build a virtual supercomputer that could analyze billions of molecules in a fraction of the time it would take standard supercomputers. The project started in January.

Recent anthrax research has shown that the anthrax toxin has three protein components. One of these proteins forms a ring, which binds with another protein, facilitating the entry of the lethal factor into a cell. Harvard University discovered that this binding could be inhibited, preventing toxicity.

A group at Oxford University identified the site on this key protein where the binding occurs and where the right molecular interaction may inhibit the binding—ultimately preventing the toxicity that results in disease.

The project used the donated resources of personal computers to help scientists screen 3.57 billion molecular compounds against the fatal anthrax toxin protein—the aim to find a subset of drug-like molecules that could render anthrax useless as a weapon.

Using traditional computing methods, the same project would have taken years instead of weeks.

This initial screening process narrowed the pool of 3.57 billion mol-

US Discovers Huge Cache of Smallpox Vaccine

A pharmaceutical company in Swiftwater, Pa., found 70 million to 90 million doses of smallpox vaccine in its freezers, where the vaccine had been stored since it was made decades ago, reported the *Washington Post*.

The find increases the US inventory six times over, providing an adequate supply if needed in case of a bioterror attack, said officials.

The liquid vaccine was produced by the French company Aventis Pasteur, which has its US operations in Swiftwater. There was no information provided on why there was a delay in finding the vaccine or who made the discovery.

The federal government had already contracted with various companies to produce new vaccine and had been testing diluted doses to determine how far it can stretch current stocks. The new discovery will allow more time to fine-tune new vaccines under development.

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ecules considerably, said a DOD statement, and "significantly reduced the next phase of the [drug] discovery process."

The Anthrax Research Project is sponsored by Intel, Microsoft, Oxford University, the National Foundation for Cancer Research, and United Devices.

News Notes

■ CMSAF Frederick J. Finch announced his retirement, slated for June 28, after nearly three years as USAF's top enlisted member and 28 years of service.

■ China announced a 2002 military spending increase of 17.6 percent, or about $3 billion. The increase does not include major spending for weapons research or for the purchase of foreign weapons.

■ The Air Force announced March 26 that retired Maj. Gen. Robert S. Dickman will fill a new position as deputy for military space for the undersecretary of the Air Force, Peter B. Teets. The position was announced Feb. 7 by Teets, who is also director of the National Reconnaissance Office, as part of the transformation of national security space.

■ Individuals may register on the Web (http://afmarathon.wpafb.af.mil) for the 2002 USAF Marathon, scheduled for Sept. 21 at Wright–Patterson AFB, Ohio. The deadline is Sept. 4.

■ Brig. Gen. David E. Clary was named director of USAF's new homeland security directorate at the Pentagon on March 28. Clary was previously commander of the 51st Fighter Wing at Osan AB, South Korea.

■ USAF's return-to-service program has brought 215 officers who had separated or retired back on active duty since Sept. 11, and more are waiting, said officials. Many of the returnees are getting back in cockpits, which will save the Air Force millions of dollars in training.

■ Lisa Beamer, the widow of Todd Beamer, helped unveil the "Let's Roll" emblem on an F-16 at the New Jersey ANG's 177th Fighter Wing. Todd Beamer uttered the now famous phrase before he and other passengers rushed the cockpit in the hijacked airliner that crashed in Pennsylvania Sept. 11.

■ USAF announced March 28 it had created a new office to focus on the future of the expeditionary air and space force—the special assistant for expeditionary air and space force.

■ The Society of American Military Engineers awarded Lt. Col. Thomas Quasney, commander of the 48th Civil Engineer Squadron at RAF Lakenheath, UK, the 2001 Newman Medal for the year's most outstanding contribution to military engineering.

■ The Senate confirmed Joseph E. Schmitz March 21 as the Pentagon's new Inspector General. He had been nominated by President Bush last June.

■ In late March, China successfully launched a third unmanned spacecraft, Shenzhou III. Beijing expects to launch manned spacecraft by 2005.

■ The Air Force Uniform Board approved some new optional items: Air Force symbol cuff links, tie tacks, and tie bars. The new items should be available by 2003.

■ Sens. James M. Inhofe (R–Okla.) and Daniel K. Akaka (D–Hawaii) announced March 26 the formation of an Army Caucus in the Senate "to focus more attention on the programs and needs of the US Army." Inhofe said that "in some cases the Army has been on the short end of the stick in funding."

■ DOD said March 22 it plans to award $15.7 million to 29 academic institutions in 16 states to perform research in science and engineering

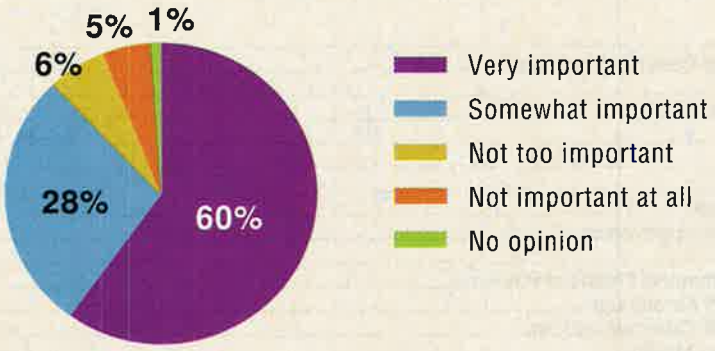
Public Agrees With White House About Removing Saddam

A majority of Americans believe removal of Iraq's Saddam Hussein from power should be a top foreign policy goal for the US, according to a *USA Today*/CNN/Gallup poll. In that, they clearly support the Bush Administration's efforts to oust Saddam. The only question is how.

A March 22–24 poll revealed that 88 percent rate the removal of Saddam as either very important or somewhat important.

Other questions in the same poll indicate that most Americans would favor using airpower against Saddam. Least favored was the use of US ground forces to invade Iraq. There was also considerable support for arming and training opposition forces rather than using US forces directly. Of those who would favor using US ground troops, surprisingly 53 percent said they would be willing to have them remain in Iraq for more than five years.

Is it important to remove Saddam Hussein from power in Iraq?



What steps against Iraq would you favor?	Favor	Oppose
Using military air strikes but no US ground troops	67%	29%
Arming and training Iraqi opposition forces but not using US forces directly	53%	42%
Using US ground troops to invade Iraq	46%	50%

How long would you favor using US ground troops in Iraq?

Less than one year	17 %
One to two years	19%
Three to five years	8%
More than five years	53%

fields. The average award will be about $291,000.

■ Pentagon spokeswoman Victoria Clarke received an unexpected note welcoming her aboard from the airliner pilot flying her back to Washington, D.C. The pilot signed the note: Capt. Rich Lepman, United Airlines, or Lt. Col. Rich Lepman, US Air Force Reserve. The note said he had just finished work as a crisis action team duty officer at the Pentagon.

■ The Pentagon honored 39 first responders—one from the Leased Facilities Division, 17 in the Defense Protective Service, and 22 in the Federal Facilities Division—in March for their efforts on Sept. 11, 2001. They each received Medal of Valor awards.

■ Ana Belen Montes, the Defense Intelligence Agency's senior analyst for Cuban issues until her arrest Sept. 21, 2001, pleaded guilty March 19 to spying for Cuba for 16 years. Federal prosecutors agreed to waive the death penalty, instead offering a 25-year prison term if Montes tells FBI and other investigators what she knows about Cuban intelligence activities.

■ USAF awarded Coastal Environmental Systems a five-year $60 million contract for weather monitoring systems to automate collection of weather data at bases worldwide.

■ The Air Force selected Lt. Gen. Leslie F. Kenne to head the new deputy chief of staff for warfighting integration office. She was the commander at Electronic Systems Center, Hanscom AFB, Mass.

■ A B-52 crew from the 419th Flight Test Squadron, Edwards AFB, Calif., successfully launched two AGM-154A Joint Standoff Weapons at two different targets. The JSOW missiles were launched three seconds apart against two close, but separate, targets—both hit their targets.

■ Rockwell Collins signed an initial $11 million contract with Boeing to develop dual Head-Up Display systems for USAF's C-130 avionics modernization program.

■ Rep. Walter B. Jones (R–N.C.) introduced two pieces of legislation March 14 that would eliminate a tax on military death benefits and increase that benefit annually for inflation. He said that $3,000 of a $6,000 gratuity paid to the surviving family of a military member killed in the line of duty is taxed because of an anomaly in a 1986 revenue bill.

■ Lockheed Martin reported March 15 that its Atlas V team had rolled the new booster out to a launchpad for the first time and successfully loaded it with its supercold propellants and conducted a simulated countdown. This was the last test needed before the vehicle's debut launch, slated for this summer.

■ USAF is offering signing bonuses of $30,000 to bring in 55 new pharmacy officers before Oct. 1. The pharmacists must be US citizens, graduates of a US–accredited pharmacy school, and hold a current state pharmacy license. They will serve a minimum of 48 months of active duty.

■ Air Force Personnel Center officials said the senior master sergeant promotion rate for the 02E8 cycle was the highest seen since 1987. USAF selected 1,544 of 15,307 eligible master sergeants for a 10.09 percent selection rate.

■ The 8th Air Force headquarters building at Barksdale AFB, La., burned March 12, but officials said the damage was limited to the third floor and the attic.

■ Lt. Col. Rudy Abeyta, Kirtland AFB, N.M., didn't let a potential explosion stop him from pulling an unconscious motorist from a burning car. Abeyta was driving along an interstate when he noticed a car

across the highway catch fire after ramming into a flatbed trailer. He and another motorist managed to get the door open and pulled the injured man out.

■ Boeing announced March 19 it had delivered ahead of schedule the wings for the first F-22 production aircraft to team partner Lockheed Martin.

■ The Pro Football Hall of Fame in Canton, Ohio, and the National Football League joined forces to produce a unique exhibit titled "Football and America: The NFL Responds During Times of National Crisis." The exhibit, which will run throughout 2002, showcases NFL contributions from World War II through the Sept. 11 terrorist attacks.

■ USAF said it needs more combat rescue officers. The requirements call for male officers or male enlisted members eligible for Officer Training School who must pass strenuous physical requirements. Trainees will complete combat diver school, parachute training, pararescue school, medical training, and military tactics training. Contact Lt. Col. Thomas Phillips at 703-693-5544 or e-mail: thomas.phillips@pentagon.af.mil.

■ Air Force Space Command declared initial operational capability on March 15 for the Minuteman III ICBM propulsion replacement program. The $2.4 billion program will replace the aging propellant in all 500 Minutemans.

■ Lockheed Martin announced April 11 it was shipping the last of its Titan IV launch vehicles from the company's Denver facilities to launch sites at Cape Canaveral AFS, Fla., and Vandenberg AFB, Calif. The last Titan IV is slated to boost a classified payload into orbit next year. The Titan series began as the Titan ICBM with first launch in 1959.

■ The Interior Department and the Army released 26 acres of land at Arlington National Cemetery to make room for more graves and a new columbarium to hold ashes. Officials have said that at the current rate the cemetery would reach capacity by 2025. The new land will be developed beginning in 2007. Another parcel, 40 acres, will undergo development next year.

■ The South Dakota Highway Patrol presented the state's highest civilian honor to Capt. Terrence Koudelka, a B-1B weapons system officer at Ellsworth AFB, S.D., for providing help to a patrolman trying to make an arrest earlier this year. ■

CBO Claims Navy Can Meet Goals With Fewer Subs

The Congressional Budget Office believes it has a remedy for the Navy's shortfall in attack submarines that will not strain the Navy's already overburdened shipbuilding budget. The answer, said the CBO, is that 55 subs can do the work of 68 or even 76, if they are utilized more efficiently and more are deployed forward.

The Senate Armed Services sea power subcommittee asked the CBO to explore, basically, how to do more with less. The CBO responded with its report, "Increasing the Mission Capability of the Attack Submarine Force," which describes three options that would require the Navy to change its operating concepts and basing locations.

The Navy currently has 54 SSNs (attack submarines). It would like to maintain a force of at least 55, which is the minimum number a 1999 Joint Chiefs of Staff study said would be needed to meet wartime requirements. The JCS study also concluded the Navy would need 68 SSNs by 2015 and 76 by 2025 to handle critical missions during peacetime. Navy officials endorsed the higher numbers.

However, the Navy cannot sustain even 55 SSNs at current funding levels beyond 2015, said the CBO. After 2015, the force "would shrink to 36 attack submarines by 2025 and 28 by 2030." Old subs would retire faster than new ones would be built.

The current construction rate produces an average of one per year, which is twice the rate sustained in the 1990s. The rate needed to reach the 2015 goal of 68 subs would be about three per year, for the 2025 goal of 76, about 3.2 per year. And the Navy would need to spend about $6.1 billion per year, according to CBO estimates, to reach the 2025 goal. That would be about 58 percent of the annual shipbuilding budget. In comparison, the Navy allocated only 24 percent to subs in 2002.

"Attack submarines represent the largest shortfall in the Navy's shipbuilding account," said the report. "In dollar terms, that shortfall amounts to about $1.6 billion per year."

One step the Navy is already taking to help alleviate the SSN situation is to base three attack subs in Guam by the end of 2003. That move doesn't go nearly far enough, per the CBO report.

The CBO options:

Option 1. Convert four Trident ballistic missile subs to non-nuclear missions.

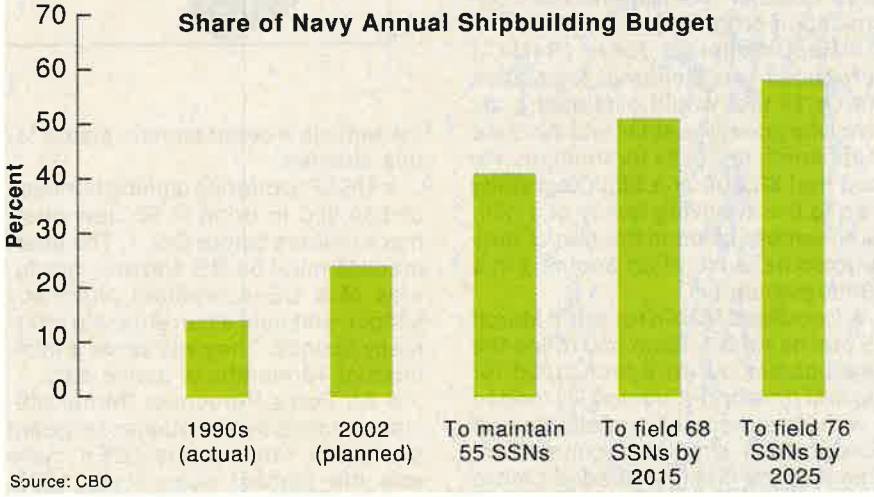
Option 2. Use more than one crew to operate some subs.

Option 3. Base more subs in Guam than the three already planned.

Any of these options, said the CBO, would allow a force of 55 subs to provide the same number of mission days as 68 subs in 2015 or 76 in 2025, at reduced operating cost. Each option would be cheaper than building additional subs.

Cost Effectiveness of Different Options
(In millions of dollars)

	Total Cost per Mission Day
Current plan	$2.5
68 SSNs by 2015	$2.7
76 SSNs by 2025	$2.7
Option 1	$2.2
Option 2	$2.2
Option 3	$2.0



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Verbatim

By John T. Correll, Editor in Chief

Osama and His Mama

"He loves his family and friends, but he especially adores our mother. First comes God, then our mother."—***Sheikh Ahmed Mohammed, about his half-brother, Osama bin Laden, on CNN's "Newsnight With Aaron Brown," March 18.***

Weapons in Space

"I do believe the time has come for very serious discussions on the whole subject of space control and the projection of force in space. ... I believe that weapons will go into space. It's a question of time. And we need to be at the forefront of that."—***Peter B. Teets, undersecretary of the Air Force and director of the National Reconnaissance Office, in* Aerospace Daily, *March 7.***

Don't Blame Poor Saddam

"We calculate that there might be a problem in Iraq with weapons of mass destruction ... [but] the problem is not with Saddam Hussein. The problem is with weapons of mass destruction."—***Sergei Ivanov, Russian Defense Minister, on NBC's "Meet the Press," March 17.***

Terrorists Can Be Beaten

"The brief Afghan campaign revealed that terrorists are as dependent as regular armies on bases and training facilities, on regular lines of supply, and on infusions of manpower to replace casualties. Terrorist organizations are as susceptible to defeat as regular armies; indeed, they are even more susceptible, if hit at their weak spots."—***John Keegan, in London's* Daily Telegraph, *March 1.***

Scribbulus Vomitus

"Whether it is an ill-specified axis of evil, or a decision to make tactical nuclear war thinkable, or a domestic 'shadow government,' or deliberately leaked plans to attack Iraq, George W. Bush in his own way is as frightening as al Qaeda."—***Columnist Robert Kuttner, in* Boston Globe, *March 13.***

Integrity

"She engaged in these activities because of her belief that US policy does not afford Cubans respect, tolerance, and understanding."—***Plato Cacheris, lawyer for Ana Belen Montes, Defense Intelligence Agency senior analyst for Cuban issues, who pleaded guilty to spying for Cuba for 16 years, quoted in* Washington Post, *March 20.***

This Sounds Familiar

"Complain of mistreatment while in prison."—***From terrorist manual found by police at the home in England (where he had been granted political asylum) of al Qaeda official Abu Anas Liby, quoted in* Washington Post, *March 19.***

Parity for Civil Servants

"Each day our nation's civil servants and uniformed military [personnel] perform invaluable work for our nation. Both our federal employees and our military personnel are working side by side to fight the war on terrorism and strengthen homeland security, and there is no reason that these groups should not be compensated equitably."—***Rep. James P. Moran (D–Va.), proposing equal pay increases for military and civil service next year, quoted on* GovExec.com, *March 13.***

Watch Out, Omar

"If I were an al Qaeda guy, I wouldn't go out for a pizza. I'd stay home and dig deep. I wouldn't walk down the middle of the valley."—***Maj. Bryan Hilferty, spokesman for US forces in Afghanistan, quoted in* New York Times, *March 11.***

Lieberman for Victory

"I disagree with those of my colleagues, including some Democrats, who are already pressing for a plan for withdrawal from Afghanistan. We need a victory strategy, not an exit strategy."—***Sen. Joseph I. Lieberman (D–Conn.),* Wall Street Journal, *March 7.***

Transatlantic Gap

"The choice for the Europeans is modernization or marginalization. ... Otherwise, the gap between American forces on the one hand and European—and Canadian—forces on the other will be unbridgeable. For Washington, the choice could become: Act alone or not at all. And that is no choice at all."—***George Robertson, NATO secretary general, at Potsdam Center for Transatlantic Security and Military Affairs, March 4.***

Bring on the Good Stuff

"Where's the dad-gum air? Push the air!"—***Army Maj. Gen. Franklin L. Hagenbeck, commander of US and coalition forces in Afghanistan, just before F-16s arrived to take out the moving target Hagenbeck was tracking on a video feed from a Predator reconnaissance drone, quoted by Newhouse News Service, March 8.***

The New Bolsheviks

"Islamic extremism today, like bolshevism in the past, is an armed doctrine. It is an aggressive ideology, promoted by fanatical, well-armed devotees. And, like communism, it requires an all-embracing long-term strategy to defeat it."—***Margaret Thatcher, former British Prime Minister, in* The Guardian, *Feb. 12.***

Homeward Bound

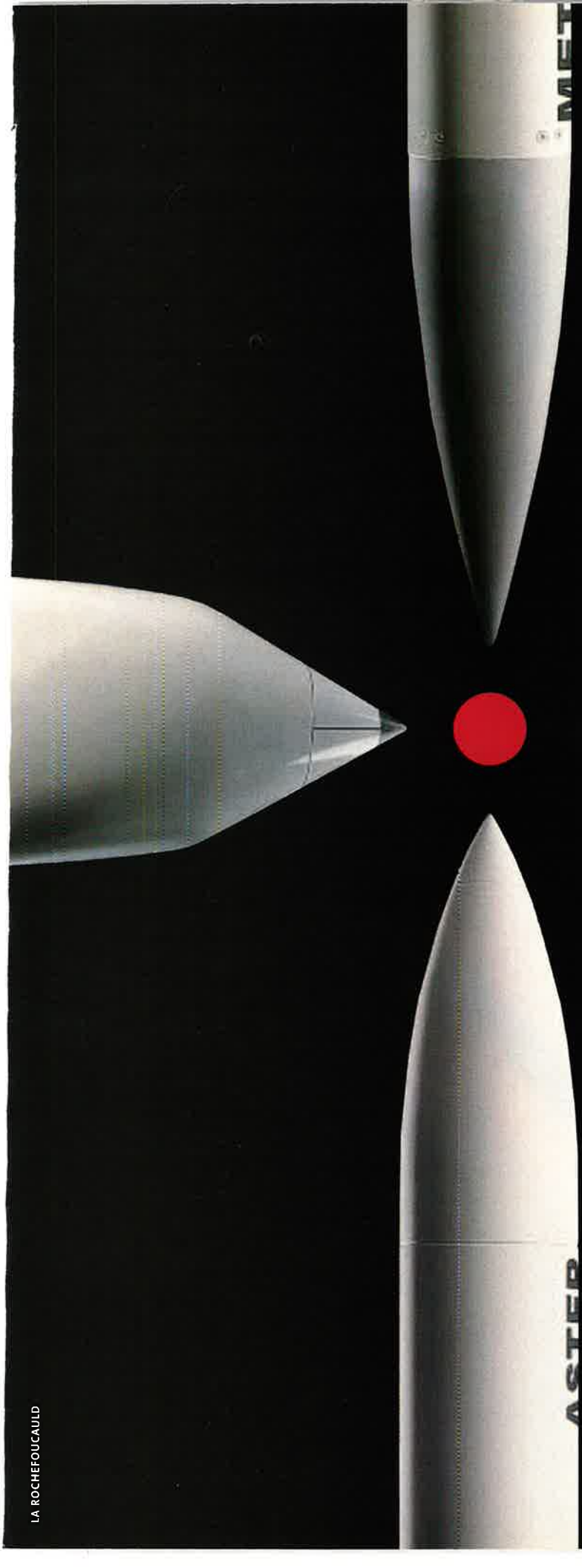
"When the Taliban fell, 95 percent of this movement went from Afghanistan to Pakistan. Pakistan is the one who gave birth to the [Taliban] movement, and when they were defeated, they went back to their masters."—***Saranwal Mir Jan, spokesman for the Afghanistan Defense Ministry, Associated Press, March 18.***

Salem I ...

"I support bin Laden because he is standing up to America."—***Salem, engineering student at King Saud University, Riyadh, Saudi Arabia, quoted in* Boston Globe, *March 4.***

... And Salem II

"No, my brother studied there. But I'd love to go. It's a great country. Do you think it's still possible for us to get visas?"—***Salem, when asked if he had been to the United States.***



MBDA, formed through the merger of Matra BAe Dynamics, EADS Aerospatiale Matra Missiles and the missile activity of Alenia Marconi Systems, is ranked second in the world and has a presence in over 70 countries.

FIRING POINT

MBDA is a world leading missile systems company, with sales of more than $2 billion and a backlog of more than $13 billion. It is the worldwide reference in missile systems and is now positioned to satisfy Air, Land, and Naval force requirements with the latest technologies.

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LA ROCHEFOUCAULD

USAF Almanac

ac 2002

Photo © Tom and Pat Leeson

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

Edited by Tamar A. Mehuron, Associate Editor

USAF Almanac

The Air Force in Facts and Figures

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 the typical organization chain.

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. Until recently, most wings were headed by colonels but now are usually under the command of a general officer. An objective wing typically contains an **operations group,** which includes aircrews, intelligence units, and others; a **logistics group,** which can include maintenance and supply squadrons; a **support group,** which can include such functions as security forces and civil engineers; and a **medical group.**

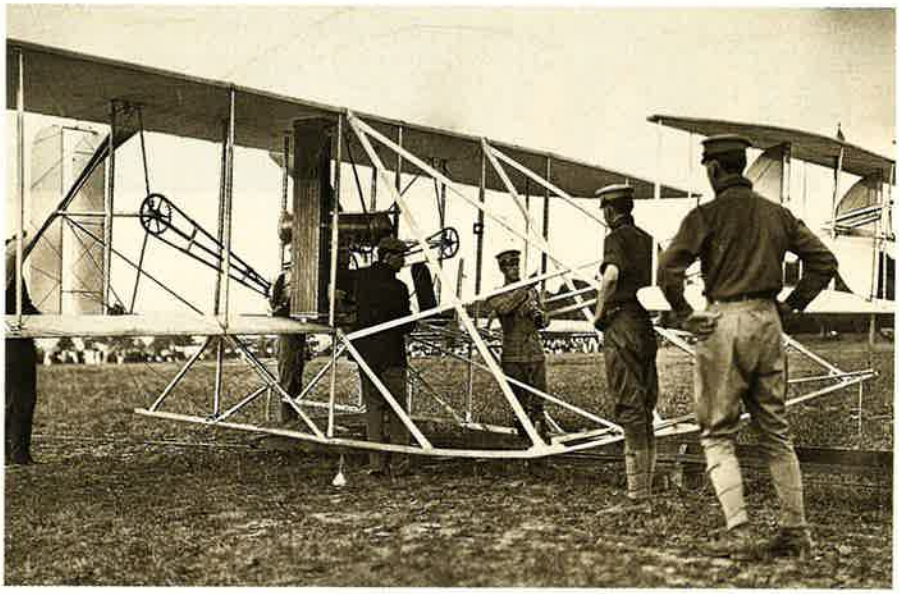
Most individual officers and airmen are assigned to a **squadron,** which may be composed of several **flights.**

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

US Navy photo by Arlo K. Abrahamson

A security forces airman from Maine's Air National Guard scans the perimeter of a forward operating base. From Stateside locations to remote sites on the other side of the world, USAF operations are a Total Force effort.

In 1931, he would become Chief of Air Corps, but when this photo was taken at Ft. Myer, Va., on July 30, 1909, Benjamin Foulois (facing camera) was a lieutenant. Here, he stands in front of the Wright Military Flyer's engine, with Orville Wright at his side. On this day—with Foulois as a passenger—Wright flew the aircraft on its final trial flight before acceptance by the US government.



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. 18, 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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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 Brubaker (acting)	Dec. 3, 2001	

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	

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. William 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	

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. Bradley 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	

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	

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	

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	

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	

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	

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	

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

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	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	

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	

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	

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	

US Strategic Command

Gen. G. Lee Butler, USAF	June 1, 1992	Feb. 13, 1994
Adm. Henry G. Chiles Jr., USN	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	

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	

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	

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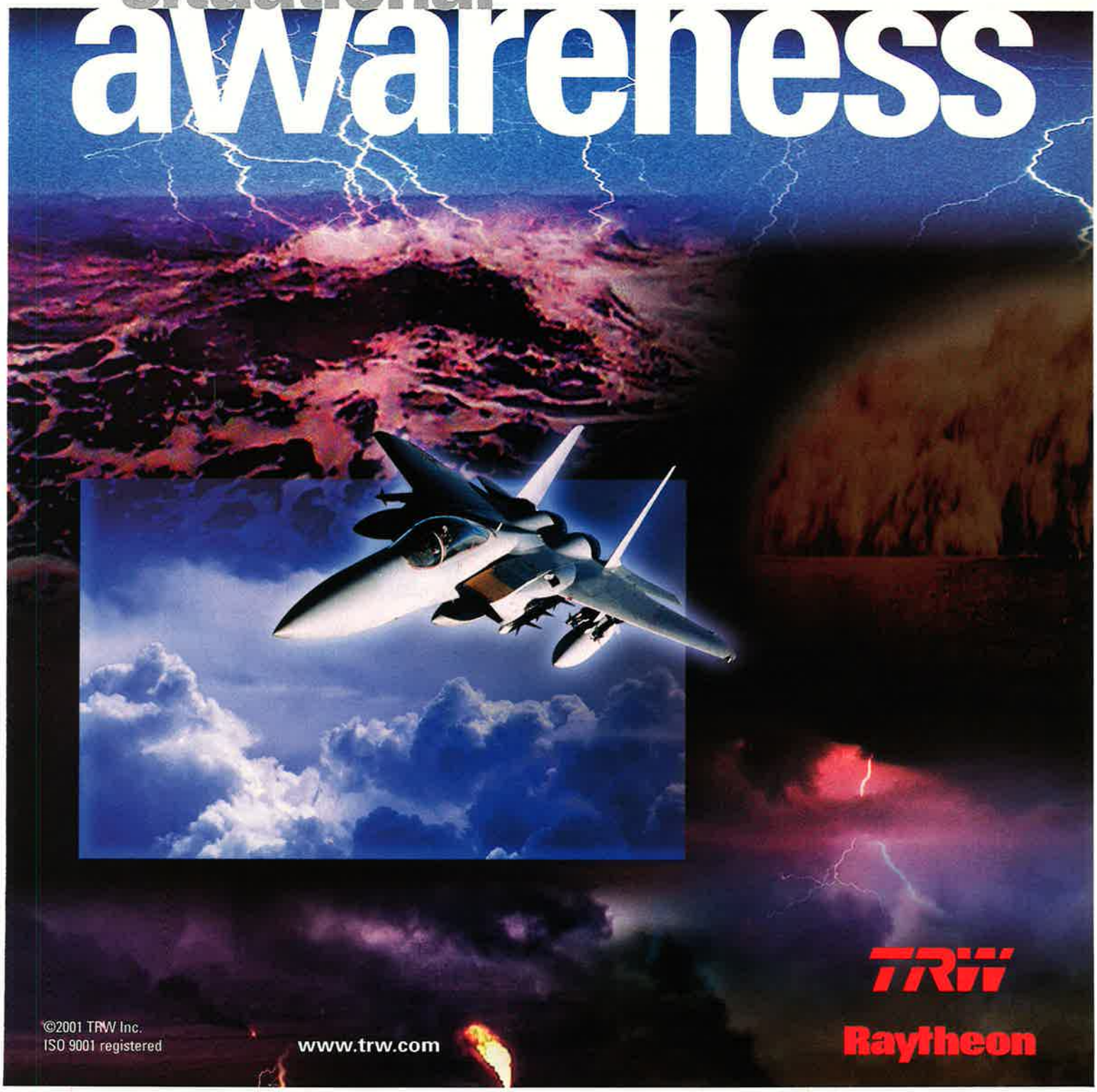
situational awareness



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People

USAF Total Force

(As of Sept. 30, 2001)

	FY96	FY97	FY98	FY99	FY00	FY01	FY02
Air Force active duty							
Officers	76,388	73,983	71,892	70,318	69,023	68,862	70,066
Enlisted	308,608	299,373	291,590	286,169	282,356	280,410	284,734
Cadets	4,005	4,029	3,988	4,103	4,275	4,299	4,000
Total Air Force active duty	**389,001**	**377,385**	**367,470**	**360,590**	**355,654**	**353,571**	**358,800**
Career re-enlistments (second term)	37,200	34,900	31,300	30,392	32,042	30,380	29,500
Rate	87%	86%	85%	84%	84%	84%	85%
First-term re-enlistments	12,900	12,300	10,400	8,196	9,917	10,485	11,300
Rate	59%	56%	54%	49%	52%	56%	55%
Civilian personnel							
Direct hire (excluding technicians)	143,662	139,517	133,332	126,685	122,312	121,321	117,226
ANG	23,931	23,404	23,388	22,892	22,781	24,228	24,109
Technicians: AFRC	9,436	9,422	9,376	9,470	9,583	9,871	9,800
Indirect hire—foreign nationals	6,695	6,841	6,749	6,693	6,508	6,450	6,107
Total civilian personnel	**183,724**	**179,184**	**172,845**	**165,740**	**161,184**	**161,870**	**157,242**
Guard and Reserve							
Air National Guard, Selected Reserve	110,471	110,023	108,098	105,715	106,366	108,486	108,400
AFRC, paid	76,138	73,311	71,970	71,772	71,357	74,869	74,700
AFRC, nonpaid	71,910	66,827	56,459	54,271	50,307	47,944	49,250
Total Ready Reserve	**258,519**	**250,161**	**236,527**	**231,758**	**228,030**	**231,299**	**232,350**
Standby	14,437	14,500	16,042	17,129	16,470	17,827	17,300
Total Guard and Reserve	**272,956**	**264,661**	**252,569**	**248,887**	**244,500**	**249,126**	**249,650**

Numbers are rounded and may not sum to totals. FYs 1996–2001 are actual figures; FY 2002 is an estimate.

Armed Forces Manpower Trends, End Strength in Thousands

(As of Sept. 30, 2001)

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Active duty military								
Air Force	389	377	367	361	356	354	359	359
Army	491	492	484	479	482	481	480	480
Marine Corps	175	174	173	173	173	173	173	175
Navy	417	396	382	373	373	378	376	376
Total	**1,472**	**1,439**	**1,407**	**1,386**	**1,384**	**1,385**	**1,388**	**1,390**
Selected Guard and Reserve								
Air National Guard	110	110	108	106	106	109	108	107
AFRC	74	72	72	71	71	74	73	74
Army National Guard	370	370	362	344	353	350	350	350
Army Reserve	226	213	205	222	206	204	205	205
Marine Corps Reserve	42	42	41	39	40	40	40	40
Naval Reserve	98	95	93	89	86	88	86	88
Total	**920**	**902**	**881**	**871**	**864**	**866**	**863**	**863**
Direct-hire civilian[a]								
Air Force[b]	238	237	174	162	156	155	152	150
Army[b]	229	214	237	209	204	199	197	195
Navy/Marine Corps	176	175	211	193	186	178	171	165
Defense agencies	135	135	126	117	113	112	110	108
Total[b]	**779**	**760**	**748**	**681**	**659**	**644**	**629**	**619**

Numbers are rounded and may not sum to totals.

FY03 numbers are programmed manpower.

[a]Full-time equivalents.

[b]Includes Army and Air National Guard technicians, who were converted from state to federal employees in FY 1969.

USAF Educational Levels

(As of Dec. 31, 2001)

	Number	Percent
Enlisted		
High school	37,762	13
Some college (< 2 years)	198,686	68.4
AA/AS degree or equivalent hours	39,795	13.7
Bachelor's degree	12,491	4.3
Master's degree	1,743	0.6
Total	**290,477**	**100**
Officers		
Bachelor's degree	30,968	45.7
Master's degree	28,801	42.5
Doctoral degree	949	1.4
Professional degree	7,048	10.4
Total	**67,766**	**100**

Numbers are rounded. Does not include 4,299 cadets.

USAF Marital Status

(As of Dec. 31, 2001)

Total percent married	59
Percent of enlisted	56
Percent of officers	72
Number of USAF couples	18,462
Number married to members of other services	1,266

Numbers are rounded.

Air Force Personnel Strength

(As of Sept. 30, 2001)

Year	Strength	Year	Strength	Year	Strength
1907	3	1939	23,455	1971	755,107
1908	13	1940	51,165	1972	725,635
1909	27	1941	152,125	1973	690,999
1910	11	1942	764,415	1974	643,795
1911	23	1943	2,197,114	1975	612,551
1912	51	1944	2,372,292	1976	585,207
1913	114	1945	2,282,259	1977	570,479
1914	122	1946	455,515	1978	569,491
1915	208	1947	305,827	1979	559,450
1916	311	1948	387,730	1980	557,969
1917	1,218	1949	419,347	1981	570,302
1918	195,023	1950	411,277	1982	582,845
1919	25,603	1951	788,381	1983	592,044
1920	9,050	1952	973,474	1984	597,125
1921	11,649	1953	977,593	1985	601,515
1922	9,642	1954	947,918	1986	608,199
1923	9,441	1955	959,946	1987	607,035
1924	10,547	1956	909,958	1988	576,446
1925	9,670	1957	919,835	1989	570,880
1926	9,674	1958	871,156	1990	535,233
1927	10,078	1959	840,028	1991	510,432
1928	10,549	1960	814,213	1992	470,315
1929	12,131	1961	820,490	1993	444,351
1930	13,531	1962	883,330	1994	426,327
1931	14,780	1963	868,644	1995	400,409
1932	15,028	1964	855,802	1996	389,001
1933	15,099	1965	823,633	1997	377,385
1934	15,861	1966	886,350	1998	367,470
1935	16,247	1967	897,426	1999	360,590
1936	17,233	1968	904,759	2000	355,654
1937	19,147	1969	862,062	2001	353,571
1938	21,089	1970	791,078	2002	358,800

2002 number is programmed.

Active Duty Force Demographics

(As of Sept. 30, 2001)

Grade	Total	Blacks	Women	Other Minorities
Officers				
General	272	10	10	0
Colonel	3,674	187	327	65
Lieutenant Colonel	9,941	642	1,284	248
Major	15,074	909	2,264	719
Captain	22,542	1,536	4,443	1,847
First Lieutenant	7,773	547	1,701	817
Second Lieutenant	9,586	758	2,005	1,139
Total	**68,862**	**4,589**	**12,034**	**4,835**
Enlisted				
Chief Master Sergeant of the Air Force	1			
Chief Master Sergeant	2,776	505	326	68
Senior Master Sergeant	5,611	1,118	661	201
Master Sergeant	29,220	6,036	3,010	1,363
Technical Sergeant	42,432	8,306	5,313	2,369
Staff Sergeant	69,860	11,798	13,250	4,796
Sergeant/Senior Airman	53,226	10,099	13,061	6,194
Airman First Class	51,953	9,635	12,516	4,845
Airman	11,097	2,506	3,547	948
Airman Basic	14,234	2,192	3,194	269
Total	**280,410**	**52,195**	**54,878**	**21,053**
Total personnel	**349,272**	**56,784**	**66,912**	**25,888**

Average ages of military personnel: Officers **35,** Enlisted **28**

Total does not include 4,299 cadets.

The Civilian Force

(As of Sept. 30, 2001)

General Schedule/ Other

Grade	Force
1	183
2	397
3	1,043
4	3,169
5	9,246
6	5,967
7	8,757
8	1,205
9	12,194
10	732
11	14,992
12	16,838
13	10,424
14	3,323
15	1,303
16	0
17	0
18	0
ST[a]	28
SES[b]	169
Other	277
Total	**90,247**

Wage Grade

Grade	Force
1	119
2	357
3	402
4	193
5	1,307
6	987
7	1,845
8	3,617
9	2,833
10	12,196
11	3,231
12	1,550
13	175
14	49
15	2
16	0
17	0
18	0
Total	**28,863**

Wage Grade Leader

Grade	Force
1	0
2	10
3	5
4	4
5	15
6	24
7	39
8	107
9	208
10	669
11	133
12	67
13	4
14	0
15	0
16	0
17	0
18	0
Total	**1,285**

Wage Grade Supervisory

Grade	Force
1	25
2	25
3	25
4	26
5	66
6	94
7	142
8	191
9	821
10	1,017
11	401
12	220
13	128
14	181
15	99
16	38
17	24
18	13
Total	**3,536**

Air Force Civilian Personnel: Average Age and Length of Service

General schedule	**47**
Federal wage system	**46**
Average age	**46**
Average length of service (overall)	**16.4 years**

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

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

[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, 2001)

	Military	Civilian	Total
Major commands			
Air Combat Command (ACC)	84,948	9,868	94,816
Air Education and Training Command (AETC)	69,237	14,595	83,832
Air Force Materiel Command (AFMC)	23,781	57,378	81,159
Air Force Reserve Command (AFRC)	417	14,757	15,174
Air Force Space Command (AFSPC)	19,438	7,165	26,603
Air Force Special Operations Command (AFSOC)	9,057	606	9,663
Air Mobility Command (AMC)	49,469	7,814	57,283
Pacific Air Forces (PACAF)	31,559	8,883	40,442
United States Air Forces in Europe (USAFE)	26,332	5,0232	31,354
Total major commands	**314,238**	**126,088**	**440,326**
Field Operating Agencies (FOAs)			
Air Force Agency for Modeling and Simulation	20	12	32
Air Force Audit Agency	0	862	862
Air Force Base Conversion Agency	0	226	226
Air Force Center for Environmental Excellence	41	397	438
Air Force Civil Engineering Support Agency	85	109	194
Air Force Communications Agency	189	307	496
Air Force Cost Analysis Agency	19	32	51
Air Force Flight Standards Agency	116	34	150
Air Force Frequency Management Agency	9	19	28
Air Force Historical Research Agency	5	59	64
Air Force History Support Office	5	25	30
Air Force Inspection Agency	103	20	123
Air Force Legal Services Agency	368	113	481
Air Force Logistics Management Agency	54	20	74
Air Force Manpower & Innovation Agency	103	80	183
Air Force Medical Operations Agency	95	57	152
Air Force Medical Support Agency	45	20	65
Air Force News Agency	307	91	398
Air Force Office of Special Investigations	1,426	478	1,904
Air Force Operations Group	200	10	210
Air Force Pentagon Communications Agency	408	231	639
Air Force Personnel Center	961	1,050	2,011
Air Force Personnel Operations Agency	37	11	48
Air Force Program Executive Office	31	9	40
Air Force Review Boards Agency	10	43	53
Air Force Safety Center	65	49	114
Air Force Security Forces Center	259	12	271
Air Force Services Agency	68	179	247
Air Force Technical Applications Center	524	0	524
Air Force Weather Agency	553	200	753
Air Intelligence Agency*	10,230	2,059	12,289
Air National Guard Readiness Center	138	435	573
Total FOAs	**16,474**	**7,249**	**23,723**
Direct Reporting Units (DRUs)			
Air Force Doctrine Center	63	12	75
Air Force Operational Test and Evaluation Center	497	205	702
Air Force Studies and Analyses Agency	64	17	81
United States Air Force Academy	2,257	1,835	4,092
11th Wing	1,599	853	2,452
Total DRUs	**4,480**	**2,922**	**7,402**
Other			
Other active duty	14,080	25,611	39,691
USAFA cadets	4,299	0	4,299
Total for all categories	**353,571**	**161,870**	**515,441**

*Air Intelligence Agency now falls under Air Combat Command.

USAF Personnel by Geographic Area

(As of Sept. 30, 2001)

Total military personnel	**353,571**
US territory and special locations	**295,408**
Total in foreign countries	**58,163**
Western and southern Europe	**34,208**
Germany	15,268
UK	9,826
Turkey	1,828
Italy	4,373
Spain	274
All other countries	2,639
East Asia and Pacific	**23,050**
Japan/Okinawa	13,713
South Korea	9,071
All other countries	266
Africa, Near East, South Asia	**513**
Saudi Arabia	254
Egypt	68
All other countries	191
Western hemisphere	**353**
Panama	2
Canada	82
All other countries	269
Other areas	**39**

Active Duty Force by Grade

(As of Sept. 30, 2001)

Grade	Number
Officers	
General	12
Lieutenant General	38
Major General	84
Brigadier General	138
Colonel	3,674
Lieutenant Colonel	9,941
Major	15,074
Captain	22,542
First Lieutenant	7,773
Second Lieutenant	9,586
Total	**68,862**
Cadets	4,299
Enlisted	
Chief Master Sergeant of the Air Force	1
Chief Master Sergeant	2,776
Senior Master Sergeant	5,611
Master Sergeant	29,220
Technical Sergeant	42,432
Staff Sergeant	69,860
Sergeant/Senior Airman	53,226
Airman First Class	51,953
Airman	11,097
Airman Basic	14,234
Total	**280,410**
Total strength	**353,571**

Specialties in the Enlisted Force

(As of Sept. 30, 2001)

Code	Career Field	Assigned	Percent
1A	Aircrew Operations	7,421	2.6
1C	Command Control Systems Operations	11,929	4.3
1N	Intelligence	10,188	3.6
1S	Safety	396	0.1
1T	Aircrew Protection	2,605	0.9
1W	Weather	2,398	0.9
2A	Manned Aerospace Maintenance	59,396	21.2
2E	Communications–Electronics Systems	11,912	4.2
2F	Fuels	3,709	1.3
2G	Logistics Plans	695	0.2
2M	Missile & Space Systems Maintenance	2,470	0.9
2P	Precision Measurement	1,154	0.4
2R	Maintenance Management Systems	1,734	0.6
2S	Supply	10,240	3.7
2T	Transportation & Vehicle Maintenance	12,210	4.4
2W	Munitions & Weapons	14,137	5.0
3A	Information Management	10,716	3.8
3C	Communications–Computer Systems	13,407	4.8
3E	Civil Engineering	18,079	6.4
3H	Historian	103	0.0
3M	Morale, Welfare, Recreation, & Services	4,645	1.7
3N	Public Affairs	1,492	0.5
3P	Security Forces	21,903	7.8
3S	Mission Support	9,345	3.3
3U	Manpower	713	0.3
3V	Visual Information	1,318	0.5
4A–V	Medical	19,234	6.9
4Y	Dental	2,478	0.9
5J	Paralegal	954	0.3
5R	Chapel Services Support	409	0.1
6C	Contracting	1,251	0.4
6F	Financial	3,454	1.2
7S	Special Investigation	732	0.3
8	Special Duty Identifiers	6,449	2.3
9	Reporting Identifiers	8,010	2.9
	Unassigned	3,124	1.1
	Total	**280,410**	**100**

Percentages have been rounded.

Specialties in the Officer Force

(As of Sept. 30, 2001)

Code	Utilization Field Title	Assigned	Percent
X0	Commander & Director	762	1.1
11	Pilot	11,179	16.2
12	Navigator	4,254	6.2
13	Space, Missile, Command & Control	4,731	6.9
14	Intelligence	2,687	3.9
15	Weather	675	1.0
16	Operations Support	1,454	2.1
21	Aircraft Maintenance & Munitions	3,954	5.7
31	Security Forces	753	1.1
32	Civil Engineering	1,351	2.0
33	Communications–Computer Systems	4,038	5.9
34	MWR & Services	368	0.5
35	Public Affairs	380	0.6
36	Personnel	1,581	2.3
38	Manpower	330	0.5
4X	Medical	11,853	17.2
51	Law	1,251	1.8
52	Chaplain	581	0.8
61	Scientific/Research	871	1.3
62	Developmental Engineering	2,275	3.3
63	Acquisition	2,356	3.4
64	Contracting	924	1.3
65	Financial	899	1.3
71	Special Investigations	373	0.5
8X	Special Duty Identifiers	1,753	2.5
9X	Reporting Identifiers	5,771	8.4
	Other	1,458	2.1
	Total	**68,862**	**100**

Total does not include 4,299 cadets. Percentages have been rounded.

USAF photo by SSgt. Pamela Farlin

At an Enduring Freedom forward operating location, a Reservist monitors the refueling of a C-5. USAF's Guard and Reserve forces number more than 249,000.

Budgets

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 current and FY03 constant $ millions)

Current dollars	**FY93**	**FY94**	**FY95**	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02**
Military personnel	20,141	18,168	19,602	19,309	19,186	19,111	19,357	20,217	20,956	22,552
Operations & maintenance	22,179	24,525	24,561	23,519	22,728	25,174	27,107	27,254	29,328	31,921
Procurement	21,803	17,716	16,529	15,558	14,247	15,258	18,434	18,755	22,054	22,186
RDT&E	12,979	12,021	11,787	12,427	14,017	14,265	13,807	14,511	14,297	14,478
Military construction	1,053	1,554	816	1,285	1,567	1,537	862	1,174	1,410	1,802
Family housing	1,212	923	1,106	1,124	1,135	1,114	1,082	1,158	1,084	1,374
Rev. & mgmt. funds	n/a	n/a	n/a	n/a	790	234	1,510	434	515	34
Trust & receipts	-221	-332	-470	-231	-453	-409	-248	-453	-95	-107
Total	**79,146**	**74,575**	**73,932**	**72,992**	**73,216**	**76,284**	**81,914**	**83,050**	**85,549**	**94,242**
Constant FY03 dollars										
Military personnel	28,043	24,696	26,014	25,054	24,216	23,237	22,830	22,800	22,873	23,330
Operations & maintenance	27,768	30,157	29,916	28,009	26,342	28,190	29,748	29,593	30,279	32,196
Procurement	25,355	20,220	18,527	17,156	15,516	16,463	19,649	19,677	22,754	22,538
RDT&E	15,233	13,863	13,341	13,801	15,319	15,440	14,758	15,256	14,756	14,696
Military construction	1,224	1,773	914	1,418	1,711	1,661	920	1,232	1,455	1,832
Family housing	1,410	1,052	1,241	1,239	1,234	1,198	1,153	1,217	1,166	1,395
Rev. & mgmt. funds	n/a	n/a	n/a	n/a	852	251	1,606	456	530	35
Trust & receipts	-258	-379	-527	-254	-489	-439	-264	-475	-98	-108
Total	**98,774**	**91,380**	**89,427**	**86,423**	**84,701**	**86,003**	**90,402**	**89,756**	**93,667**	**95,913**
Percentage real growth										
Military personnel	-9.9	-11.9	5.3	-3.7	-3.4	-4.0	-1.8	-0.1	0.3	2.0
Operations & maintenance	-5.7	8.6	-0.8	-6.4	-6.0	7.0	5.5	-0.5	2.3	6.3
Procurement	-8.2	-20.3	-8.4	-7.4	-9.6	6.1	19.4	0.1	15.6	-1.0
RDT&E	-1.3	-9.0	-3.8	3.4	11.0	0.8	-4.4	3.4	-3.3	-0.4
Military construction	-13.9	44.8	-48.4	55.2	20.7	-2.9	-44.7	33.9	18.1	25.9
Family housing	6.6	-25.4	18.0	-0.2	-0.4	-2.9	-3.8	5.6	-8.3	24.9
Total	**-6.8**	**-7.5**	**-2.1**	**-3.4**	**-2.0**	**1.5**	**5.1**	**-0.7**	**4.4**	**2.4**

Numbers do not add due to rounding.

Air Force Major Force Programs

(Total Obligation Authority in FY03 constant $ billions)

	FY93	**FY94**	**FY95**	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02**
Forces										
Strategic Forces	10.6	6.9	5.7	5.6	4.4	4.8	4.7	4.4	4.1	4.5
General-Purpose Forces	20.3	19.4	18.6	18.6	18.2	18.5	19.9	20.7	23.3	24.2
Airlift Forces	8.8	9.3	9.9	9.5	9.4	9.8	11.3	11.3	10.9	11.6
Guard and Reserve Forces	8.1	8.2	8.5	8.1	8.0	8.3	8.7	8.9	9.0	9.4
Special Operations Forces	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total	**48.2**	**44.2**	**43.1**	**42.3**	**40.4**	**42.0**	**45.1**	**45.7**	**47.9**	**50.3**
Support										
Intelligence & Communications	22.6	21.9	19.2	19.6	19.4	20.2	20.9	20.5	22.4	22.1
Research & Development	8.9	7.9	8.9	9.0	8.6	8.5	7.7	8.1	7.4	7.0
Central Supply & Maintenance	7.0	4.9	4.9	4.5	4.4	4.4	4.7	4.9	5.2	5.1
Training, Medical, & Personnel	10.6	9.8	10.1	10.0	9.4	9.5	9.5	9.6	9.9	10.6
Administration & Other	1.8	1.9	1.7	1.8	1.8	1.9	2.0	1.9	2.0	2.0
Total	**51.0**	**46.4**	**44.8**	**44.9**	**43.7**	**44.5**	**44.7**	**45.0**	**47.0**	**46.8**

Defense Department Budget Topline

(In current and FY03 constant $ billions)

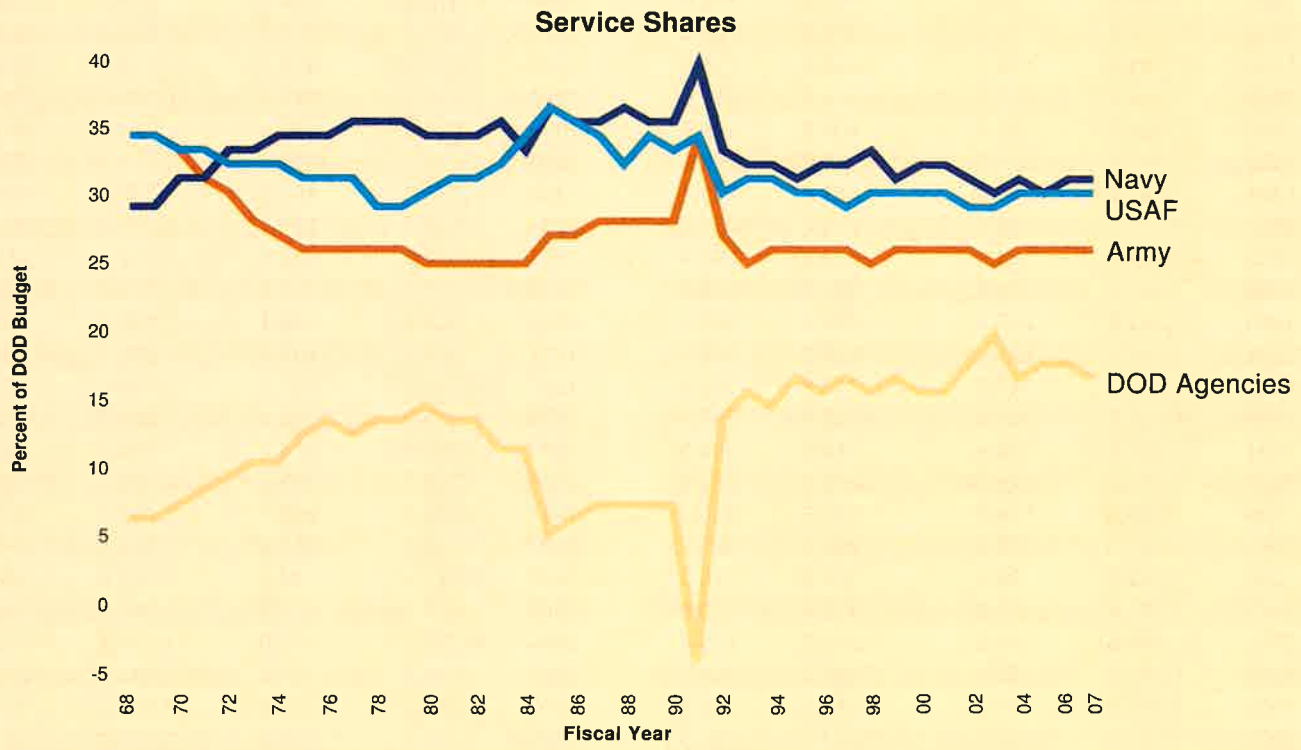
	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Budget authority (current $)	296	331	379	388	409	430	451
Budget authority (constant FY03 $)	312	339	379	379	390	399	409
Outlays (current $)	284	327	361	376	396	410	424
Outlays (constant FY03 $)	299	334	361	368	377	382	384

Note: At press time, DOD had released no FY2006 deflator, preventing conversion of 2006 amounts into 2002 dollars. Numbers have been rounded.

Service Shares

(In FY03 constant $ billions)

Budget authority	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Air Force	90	96	107	111	113	116	119
Army	77	83	91	94	96	100	104
Navy	98	101	108	112	114	118	122
Defense agencies, DOD–wide	47	59	73	62	67	66	65
Total	312	339	379	379	390	399	409
Percent of budget authority							
Air Force	29%	28%	28%	29%	29%	29%	29%
Army	25%	25%	24%	25%	25%	25%	25%
Navy	31%	30%	29%	30%	29%	30%	30%
Defense agencies, DOD–wide	15%	17%	19%	16%	17%	17%	16%



Explanatory Note

Data for 1962–2001 are historical. Data for 2002–03 are projections. These four tables are based on "The Economic and Budget Outlook: Fiscal Years 2003–12," published by the Congressional Budget Office, January 2002. (Constant dollar figures are derived.)

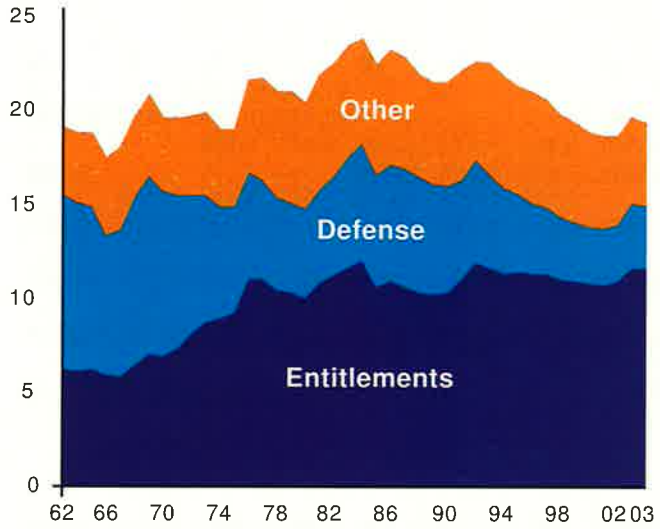
Federal Budget Categories
Current $ billions

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	26.4	100.8	79.3
1973	245.7	15.4	116.0	77.1
1974	269.4	8.0	130.9	80.7
1975	332.3	55.3	169.4	87.6
1976	371.8	70.5	189.1	89.9
1977	409.2	49.8	203.7	97.5
1978	458.7	54.9	227.4	104.6
1979	504.0	38.7	247.0	116.8
1980	590.9	72.7	291.2	134.6
1981	678.2	74.0	339.4	158.0
1982	745.8	120.1	370.8	185.9
1983	808.4	208.0	410.6	209.9
1984	851.9	185.7	405.6	228.0
1985	946.4	221.7	448.2	253.1
1986	990.5	238.0	461.8	273.8
1987	1,004.1	169.3	474.2	282.5
1988	1,064.5	194.0	505.0	290.9
1989	1,143.7	205.2	549.6	304.0
1990	1,253.2	277.8	626.9	300.1
1991	1,324.4	321.6	702.3	319.7
1992	1,381.7	340.5	716.8	302.6
1993	1,409.5	300.5	738.0	292.4
1994	1,461.9	258.9	786.1	282.3
1995	1,515.8	226.4	818.5	273.6
1996	1,560.6	174.1	858.7	266.0
1997	1,601.3	103.4	896.3	271.7
1998	1,652.6	30.0	938.6	270.2
1999	1,701.9	+1.8	976.8	275.5
2000	1,788.8	+86.6	1,029.8	295.0
2001	1,863.9	33.4	1,095.2	306.1
2002	2,003.0	181.0	1,188.0	330.6
2003	2,085.0	193.0	1,248.0	360.9

Federal Budget Categories
Constant FY03 $ billions

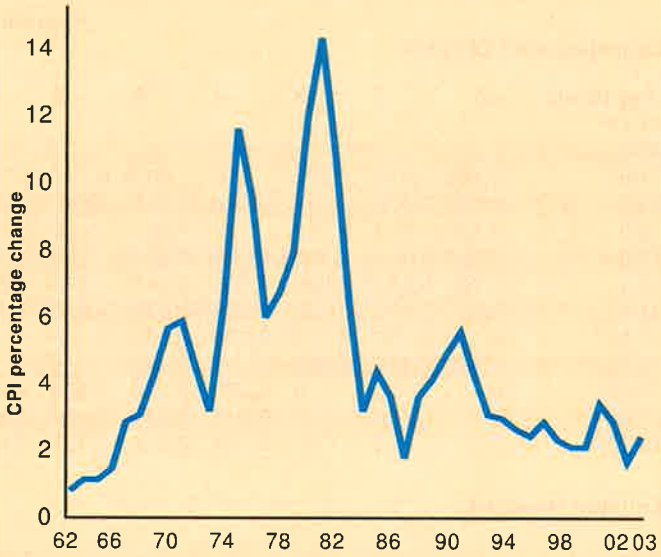
Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	657.4	36.3	213.6	323.8
1963	676.3	24.3	220.0	326.3
1964	710.8	39.0	233.3	329.9
1965	697.9	9.4	234.4	301.1
1966	771.7	17.8	249.0	338.5
1967	876.5	70.1	283.3	400.7
1968	951.2	147.9	318.8	439.0
1969	929.5	2.5	327.0	418.7
1970	936.8	41.7	347.2	392.3
1971	964.3	119.7	398.7	362.4
1972	1025.5	117.4	448.1	352.5
1973	1028.5	64.5	485.6	322.7
1974	1,015.9	30.2	493.6	304.3
1975	1,148.6	191.1	585.5	302.8
1976	1,214.7	230.3	617.8	293.7
1977	1,255.3	152.8	624.9	299.1
1978	1,307.7	156.5	648.3	298.2
1979	1,291.0	99.1	632.7	299.2
1980	1,333.5	164.1	657.2	303.8
1981	1,387.6	151.4	694.4	323.3
1982	1,436.9	231.4	714.4	358.2
1983	1,509.2	388.3	766.5	391.9
1984	1,524.8	332.4	726.0	408.1
1985	1,635.1	383.0	774.4	437.3
1986	1,679.4	403.5	783.0	464.2
1987	1,643.3	277.1	776.1	462.3
1988	1,673.5	305.0	793.9	457.3
1989	1,715.7	307.8	824.5	456.0
1990	1,783.6	395.4	892.2	427.1
1991	1,809.0	439.3	959.3	436.7
1992	1,830.5	451.1	949.6	400.9
1993	1,812.9	386.5	949.2	376.1
1994	1,830.9	324.3	984.5	353.6
1995	1,852.1	276.6	1,000.1	334.3
1996	1,853.1	206.7	1,019.6	315.9
1997	1,856.9	119.9	1,039.4	315.1
1998	1,875.1	34.0	1,065.0	306.6
1999	1,889.5	+2.0	1,084.5	305.9
2000	1,920.7	+93.0	1,105.7	316.7
2001	1,944.9	34.4	1,142.8	319.4
2002	2,053.1	185.5	1,217.7	338.9
2003	2,085.0	193.0	1,248.0	360.9

Federal Budget Outlay Categories
Percentages of GDP



Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	18.8	1.0	6.1	9.2
1963	18.5	0.7	6.0	8.9
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	9.4
1969	19.3	0.1	6.8	8.7
1970	19.3	0.9	7.2	8.1
1971	19.4	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	0.6	9.1	5.6
1975	21.3	3.5	10.9	5.6
1976	21.4	4.1	10.9	5.2
1977	20.7	2.5	10.3	4.9
1978	20.7	2.5	10.2	4.7
1979	20.1	1.5	9.9	4.7
1980	21.6	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	22.9	5.4	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	3.9	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	22.2	5.5	11.5	4.9
1993	21.5	4.6	11.2	4.5
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	19.5	1.3	10.9	3.3
1998	19.1	0.3	10.8	3.1
1999	18.6	0.0	10.7	3.0
2000	18.4	+0.9	10.6	3.0
2001	18.4	0.3	10.8	3.0
2002	19.4	1.8	11.5	3.4
2003	19.1	1.8	11.5	3.3

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	3.1
1993	3.0
1994	2.7
1995	2.5
1996	2.9
1997	2.4
1998	2.2
1999	2.2
2000	3.4
2001	2.9
2002	1.8
2003	2.5

Monthly Military Basic Rates of Pay

(Effective Jan. 1, 2002)

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]												11,602	11,659	11,901	12,324
O-9[a]												10,148	10,294	10,505	10,874
O-8[a]	7,180	7,415	7,572	7,615	7,809	8,135	8,211	8,520	8,609	8,874	9,260	9,615	9,852	—	—
O-7[a]	5,966	6,372	—	6,418	6,658	6,840	7,051	7,262	7,473	8,135	8,695	—	—	—	8,739
O-6	4,422	4,858	5,177	—	5,197	5,419	5,449	—	5,629	6,306	6,627	6,948	7,131	7,316	7,675
O-5	3,537	4,153	4,440	4,494	4,673	—	4,814	5,073	5,414	5,756	5,919	6,080	6,263	—	—
O-4	3,024	3,682	3,928	3,983	4,211	4,396	4,696	4,930	5,093	5,256	5,311	—	—	—	—
O-3	2,797	3,170	3,422	3,699	3,876	4,070	4,232	4,441	4,550	—	—	—	—	—	—
O-2	2,416	2,752	3,170	3,276	3,344	—	—	—	—	—	—	—	—	—	—
O-1	2,098	2,183	2,639	—	—	—	—	—	—	—	—	—	—	—	—
O-3E[b]	0	0	0	3,699	3,876	4,070	4,232	4,441	4,617	4,718	4,855	—	—	—	—
O-2E[b]	0	0	0	3,276	3,344	3,450	3,630	3,769	3,872	—	—	—	—	—	—
O-1E[b]	0	0	0	2,639	2,818	2,922	3,029	3,133	3,276	—	—	—	—	—	—

Enlisted Members

E-9	—	—	—	—	—	—	3,424	3,501	3,599	3,715	3,830	3,944	4,098	4,251	4,467
E-8	—	—	—	—	—	2,858	2,941	3,018	3,110	3,210	3,315	3,420	3,573	3,725	3,938
E-7	1,987	2,169	2,252	2,333	2,417	2,563	2,645	2,726	2,808	2,893	2,975	3,057	3,200	3,293	3,527
E-6	1,701	1,871	1,954	2,034	2,117	2,255	2,337	2,417	2,499	2,558	2,603	—	—	—	—
E-5	1,562	1,665	1,746	1,829	1,913	2,030	2,110	2,193	—	—	—	—	—	—	—
E-4	1,444	1,518	1,600	1,680	1,752	—	—	—	—	—	—	—	—	—	—
E-3	1,304	1,385	1,469	—	—	—	—	—	—	—	—	—	—	—	—
E-2	1,239	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1 4 mos.+	1,106	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1<4 mos.	1,023	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Amounts have been rounded to the nearest dollar.

[a]Basic pay for pay grades O-7 through O-10 is limited to $11,516.70, regardless of cumulative years of service.

[b]Commissioned officers with more than four years' active service as enlisted members.

Basic pay while serving as Chairman of the Joint Chiefs of Staff or Chief of Staff of the Air Force is $13,598.10, regardless of cumulative years of service, but the general officer cap of $11,516.70 applies, as well.

Basic pay while serving as Chief Master Sergeant of the Air Force is $5,382.90, regardless of cumulative years of service.

Aviation Career Incentive Pay

(Effective Jan. 1, 2002)

Monthly Rate	Years of Aviation Service as an Officer
125	2 or fewer
156	more than 2
188	more than 3
206	more than 4
650	more than 6
840	more than 14

Monthly Rate	Years of Service as an Officer
585	more than 22
495	more than 23
385	more than 24
250	more than 25

Provided to qualified rated officers.

Officers in pay grade O-7 are paid $200 per month. Officers in pay grade O-8 or above are paid $206 per month.

Continuous pay ends following the 25th year of service.

Hazardous Duty Pay

(Effective Jan. 1, 2002)

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, 2002)

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	14,757	15,249	15,704	16,228	16,720	17,009	17,492	17,981	18,001	18,456
GS-2	16,592	16,985	17,535	18,001	18,201	18,736	19,271	19,806	20,341	20,876
GS-3	18,103	18,706	19,309	19,912	20,515	21,118	21,721	22,324	22,927	23,530
GS-4	20,322	20,999	21,676	22,353	23,030	23,707	24,384	25,061	25,738	26,415
GS-5	22,737	23,495	24,253	25,011	25,769	26,527	27,285	28,043	28,801	29,559
GS-6	25,344	26,189	27,034	27,879	28,724	29,569	30,414	31,259	32,104	32,949
GS-7	28,164	29,103	30,042	30,981	31,920	32,859	33,798	34,737	35,676	36,615
GS-8	31,191	32,231	33,271	34,311	35,351	36,391	37,431	38,471	39,511	40,551
GS-9	34,451	35,599	36,747	37,895	39,043	40,191	41,339	42,487	43,635	44,783
GS-10	37,939	39,204	40,469	41,734	42,999	44,264	45,529	46,794	48,059	49,324
GS-11	41,684	43,073	44,462	45,851	47,240	48,629	50,018	51,407	52,796	54,185
GS-12	49,959	51,624	53,289	54,954	56,619	58,284	59,949	61,614	63,279	64,944
GS-13	59,409	61,389	63,369	65,349	67,329	69,309	71,289	73,269	75,249	77,229
GS-14	70,205	72,545	74,885	77,225	79,565	81,905	84,245	86,585	88,925	91,265
GS-15	82,580	85,333	88,086	90,839	93,592	96,345	99,098	101,851	104,604	107,357

Senior Executive Service

ES-1	ES-2	ES-3	ES-4	ES-5	ES-6
113,000	118,300	123,700	129,800	130,000	130,000

NOTE: Since January 1994, locality-based comparability payments have been applied to General Schedule (GS) and Senior Executive Service (ES) positions in the continental United States. In other words, pay is higher in areas of the US where nonfederal salaries are higher. Because there are 30 locality pay areas recognized by the Office of Personnel Management, there are in effect 30 different GS and ES pay schedules based on the schedule above. Locality pay adjustments do not apply to employees already receiving special salary rates that exceed the locality rate nor to overseas employees.

Housing Allowance

(Effective Jan. 1, 2002)

Pay Grade	With Dependents	Without Dependents
O-10	1,205.70	979.80
O-9	1,205.70	979.80
O-8	1,205.70	979.80
O-7	1,205.70	979.80
O-6	1,085.40	898.80
O-5	1,046.40	865.50
O-4	922.20	801.90
O-3	762.90	642.90
O-2	651.30	510.00
O-1	582.60	429.60
O-3E	819.90	694.20
O-2E	739.80	589.80
O-1E	683.70	507.60
E-9	783.30	594.30
E-8	722.40	545.70
E-7	670.50	465.90
E-6	619.80	421.80
E-5	557.40	389.10
E-4	484.20	338.40
E-3	450.90	332.10
E-2	429.60	269.70
E-1	429.60	240.60

Subsistence Allowance

(Effective Jan. 1, 2002)

	Cash/In-Kind
Officers	166.37/month
Enlisted Members Standard	241.60/month
When rations in-kind are not available	262.50/month

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Equipment

Total Active Inventory (TAI): aircraft assigned to operating forces for mission, training, test, or maintenance. Includes primary, backup, and attrition aircraft.
Primary Aircraft Inventory (PAI): aircraft assigned to meet Primary Aircraft Authorization (PAA).

Active Duty Inventory

(As of Sept. 30, 2001)

Type	TAI	PAI
Bomber		
B-1	75	68
B-2	21	16
B-52	85	49
Total	**181**	**133**
Fighter/Attack		
A-10	128	114
OA-10	84	66
F-15	611	514
F-16	735	638
F-22	6	6
F-117	52	44
YF-117	3	3
Total	**1,619**	**1,385**
Helicopter		
HH-60	64	43
UH-1	62	44
Total	**126**	**87**
Reconnaissance/BM/C^{3}I		
E-3	32	26
E-4	4	3
E-8	11	10
EC-130	22	16
EC-135	2	0
NC-135	1	0
OC-135	2	2
RC-135	21	16
RQ-1	8	5
U-2	31	29
WC-135	2	0
Total	**136**	**107**
Special Ops Forces		
AC-130	21	16
MC-130	48	40
MH-53	38	30
Total	**107**	**86**
Tanker		
HC-130	13	11
KC-10	59	54
KC-135	255	226
NKC-135	3	3
Total	**330**	**294**

Type	TAI	PAI
Trainer		
AT-38	77	77
T-1	180	149
T-3	110	109
T-6	34	26
T-37	415	349
T-38	413	297
T-39	3	3
T-41	6	3
T-43	10	9
TC-18	2	0
TC-135	2	2
TE-8	1	0
TG-3	3	2
TG-4	14	10
TG-7	9	8
TG-9	4	4
TG-10	1	0
TG-11	2	2
TU-2	4	4
UV-18	3	2
Total	**1,293**	**1,056**
Transport		
C-5	81	70
C-9	23	22
C-12	27	27
C-17	76	67
C-20	13	12
C-21	76	72
C-32	4	4
C-37	6	2
C-41	2	2
C-130	191	164
C-135	2	2
C-137	2	1
C-141	39	32
NC-130	2	1
VC-25	2	2
Total	**546**	**480**
Total Active	**4,338**	**3,628**

Air National Guard Inventory

(As of Sept. 30, 2001)

Type	TAI	PAI
Bomber		
B-1	18	16
Fighter/Attack		
A-10	76	72
OA-10	26	18
F-15	126	98
F-16	576	462
Total	**804**	**650**
Helicopter		
HH-60G	18	15
Reconnaissance/BM/C^{3}I		
EC-130	8	3
Special Ops Forces		
MC-130	4	4
Tanker		
HC-130	9	7
KC-135	221	204
Total	**230**	**211**
Transport		
C-5	13	12
C-21	2	2
C-22	3	0
C-26	11	11
C-38	2	2
C-130	221	208
C-135	1	0
C-141	18	16
LC-130	8	8
Total	**279**	**259**
Total ANG	**1,361**	**1,158**

Air Force Reserve Command Inventory

(As of Sept. 30, 2001)

Type	TAI	PAI
Bomber		
B-52	9	8
Fighter/Attack		
A-10	44	39
OA-10	8	6
F-16	70	59
Total	**122**	**104**
Helicopter		
HH-60	23	21
Reconnaissance/BM/C^{3}I		
WC-130	14	4
Special Ops Forces		
MC-130	14	12
Tanker		
HC-130	9	9
KC-135	70	64
Total	**79**	**73**
Transport		
C-5	32	28
C-130	107	100
C-141	45	40
Total	**184**	**168**
Total AFRC	**445**	**390**

Total Number of USAF Aircraft in Service Over Time

(As of Sept. 30, 2001)

Type of aircraft	FY95	FY96	FY97	FY98	FY99	FY00	FY01
Bomber	183	185	177	179	179	181	181
Tanker	325	314	310	317	317	316	317
Fighter/interceptor/attack	1,750	1,637	1,631	1,613	1,594	1,595	1,556
Reconnaissance/electronic warfare	318	257	252	211	211	209	187
Transport	690	654	612	610	592	570	549
Search & rescue (fixed wing)	12	9	9	9	10	12	13
Helicopter (includes rescue)	123	174	178	165	165	168	164
Trainer	1,205	1,193	1,234	1,247	1,247	1,261	1,282
Utility/observation/other	104	98	98	96	98	89	89
Total active duty	**4,710**	**4,521**	**4,501**	**4,447**	**4,413**	**4,401**	**4,338**
Air National Guard	1,461	1,426	1,375	1,351	1,360	1,362	1,361
AFRC	462	447	454	430	430	442	445
Total active duty, ANG, and AFRC	**6,633**	**6,394**	**6,330**	**6,228**	**6,203**	**6,205**	**6,144**
Total aircraft, including foreign-government-owned	6,725	6,476	6,412	6,327	6,302	6,304	6,245

Age of the Active Duty Fleet

(As of Sept. 30, 2001)

	Age in Years										
	0–3	3–6	6–9	9–12	12–15	15–18	18–21	21–24	24+	Total	Average
A/OA-10						13	172	27		212	19.8
B-1					60	15				75	14.3
B-2		7	10	3	1					21	7.1
B-52									85	85	39.8
C-5					43	7			31	81	19.8
C-9									23	23	30.5
KC-10				1	11	30	17			59	16.7
C-12					4	8		1	14	27	21.1
C-17	33	20	19	4						76	4.1
C-18[a]							2			2	19.3
C-20		1	1		8	2	1			13	13.9
C-21						76				76	16.7
C-25[a]				2						2	10.9
C-32	2	2								4	3.0
C-37	6									6	1.4
C-41	2									2	1.0
C-130[a]			15	17	13	7			245	297	29.0
C-135[a]									290	290	39.7
C-137[a]				1					1	2	19.3
C-141[a]									39	39	34.8
E-3						3	8	13	8	32	21.8
E-4									4	4	27.3
E-8[a]	7	4		1						12	3.0
F-15	17		35	117	115	97	135	92	3	611	15.4
F-16	16	22	185	289	120	87	8	8		735	10.8
F-22	4	2								6	1.8
F-117[b]				5	18	23	9			55	15.5
H-1[a]									62	62	30.7
H-53[a]									38	38	31.3
H-60[a]	7	1	5	30	11	2	8			64	11.3
RQ-1	4	4								8	3.1
T-1		57	102	21						180	6.9
T-3		14	96							110	6.6
T-6	34									34	0.7
T-37									415	415	38.2
T-38[a]									490	490	34.4
T-39									3	3	40.6
T-41									6	6	32.6
T-43									10	10	27.5
TG-3				3						3	10.6
TG-4			4	1	1		3	5		14	16.0
TG-7					4	1	4			9	16.0
TG-9					4					4	14.6
TG-10			1							1	6.6
TG-11			2							2	6.2
U-2				1	9	13	8		4	35	18.0
UV-18		1							2	3	17.5
Total	132	135	475	496	422	384	375	146	1,773	4,338	21.9
Percent[c]	**3%**	**3%**	**11%**	**11%**	**10%**	**9%**	**9%**	**3%**	**41%**		

[a]Includes all types. [b]Includes YF-117. [c]Percentages are rounded.

Age of the Air National Guard Fleet

(As of Sept. 30, 2001)

	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	42	59		102	20.8
B-1					17	1				18	14.2
C-5									13	13	30.4
C-21					2					2	14.0
C-22						3				3	16.7
C-26			9	2						11	7.3
C-38		2								2	3.5
C-130	8	20	30	38	17	26	13	16	82	250	20.2
C-135									222	222	41.4
C-141									18	18	35.2
F-15						2	4	76	44	126	23.3
F-16		1	17	87	255	148	66	2		576	14.2
H-60			7		11					18	10.8
Total	8	23	63	127	302	181	125	153	379	1,361	21.4
Percent	**1%**	**2%**	**5%**	**9%**	**22%**	**13%**	**9%**	**11%**	**28%**		

Percentages have been rounded.

Age of the Air Force Reserve Command Fleet

(As of Sept. 30, 2001)

	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	22	29		52	21.0
B-52									9	9	39.5
C-5									32	32	30.3
C-130	8	6	22	12	25	8	6		57	144	20.7
C-135									70	70	40.7
C-141									45	45	34.9
F-16				1	64	5				70	13.7
H-60				23						23	11.1
Total	8	6	22	36	89	14	28	29	213	445	24.8
Percent	**2%**	**1%**	**5%**	**8%**	**20%**	**3%**	**6%**	**7%**	**48%**		

Percentages have been rounded.

ICBMs and Spacecraft in Service

(As of Sept. 30, 2001)

Type of system	FY95	FY96	FY97	FY98	FY99	FY00	FY01
Minuteman II ICBM	0	0	0	0	0	0	0
Minuteman III ICBM	530	530	530	530	500	500	500
Peacekeeper ICBM	50	50	50	50	50	50	50
Total ICBMs	**580**	**580**	**580**	**580**	**550**	**550**	**550**
DMSP satellite	3	2	2	2	2	2	2
DSCS satellite	5	5	5	5	5	5	5
DSP satellite (data classified)	—	—	—	—	—	—	—
GPS satellite	25	26	26	26	26	24	27
Milstar	2	2	2	2	2	2	3
Total satellites	**35**	**35**	**35**	**35**	**35**	**33**	**37**

DMSP: Defense Meteorological Satellite Program **DSCS:** Defense Satellite Communications System **DSP:** Defense Support Program **GPS:** Global Positioning System
As of FY01, satellite data show the number of satellites that are primary mission capable.

USAF Aircraft Flying Hours

(In thousands, as of Sept. 30, 2001)

	FY95	FY96	FY97	FY98	FY99	FY00	FY01
Active duty	1,709	1,657	1,680	1,644	1,633	1,555	1,579
ANG	403	380	375	361	357	342	341
AFRC	141	144	150	149	142	139	146
Total	**2,253**	**2,181**	**2,205**	**2,154**	**2,132**	**2,036**	**2,066**

USAF Squadrons by Mission Type

(As of Sept. 30, 2001)

	FY97	FY98	FY99	FY00	FY01
Active forces					
Bomber	10	10	10	10	9
Air refueling	23	25	24	26	26
Strategic command & control	1	2	2	2	2
Fighter	54	47	46	46	46
Reconnaissance	4	0	0	1	4
Electronic warfare	3	3	3	3	2
Special Operations Forces	16	13	13	14	14
Ground theater air control	5	8	8	7	7
Airborne theater air control	9	8	8	8	8
Rescue	7	7	7	7	6
Theater airlift	13	11	12	12	12
Long-range airlift	17	20	20	20	18
Aeromedical airlift	3	3	3	3	3
ICBM	14	14	14	14	14
Space operations	10	10	10	8	8
Space communications	1	1	1	1	1
Space warning	8	8	8	7	7
Space surveillance	6	6	6	6	4
Space launch	5	5	5	3	3
Range	2	2	2	2	2
Total	**213**	**205**	**204**	**202**	**198**
Reserve forces					
ANG Selected Reserve					
Flying	88	88	88	88	88
Space operations	0	0	0	0	1
Space warning	0	0	0	0	1
AFRC					
Flying	60	62	68	70	68
Space operations	1	2	3	4	4
Space warning	0	0	1	1	1
Total	**149**	**152**	**160**	**163**	**163**
Grand total	**362**	**357**	**364**	**365**	**361**

Aircraft per Active Duty USAF Squadron

(As of Sept. 30, 2001)

Aircraft	Number
A/OA-10	21
AC-130	13
B-1B	9
B-2	8
B-52	12
C-5	16
C-9A	6
C-17	15
C-130	15
C-141B	23
E-3	5
E-8	3
EC-130H	5
F-15	22
F-15E	22
F-16	20
F-117A	18
HC-130P/N	11
HH-60G	9
KC-10A	15
KC-135	27
MC-130H	21
MH-53J	13
U-2	29

Air National Guard Air Defense Unit Fin Flashes

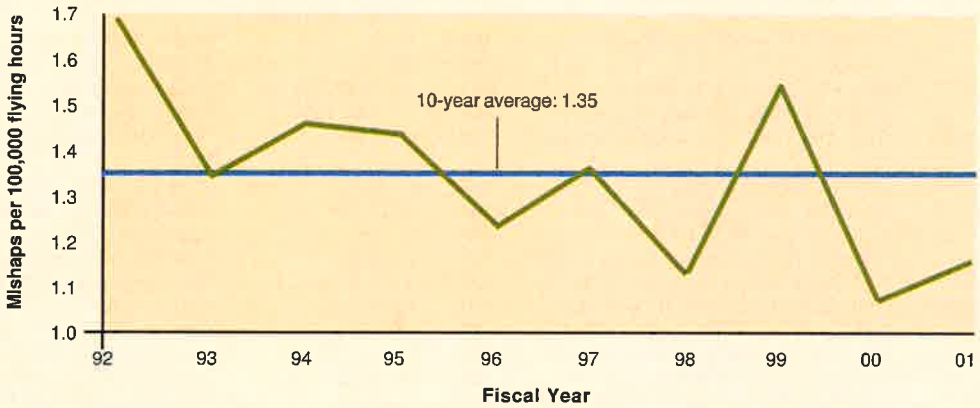
Description	Aircraft	Unit and Location
Minuteman over Massachusetts	F-15A/B	102nd FW, Otis ANGB, Mass.
Red stripe with "Happy Hooligans" logo	F-16A/B	119th FW, Hector Arpt., N.D.
Dark gray bison's skull against prairie/mountain profile	F-16A/B	120th FW, Great Falls Arpt., Mont.[a]
Subdued hawk with banner in talons	F-15A/B	123rd FS (142nd FW), Portland Arpt., Ore.
Gray lightning bolt	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.[a]
Stars of Little Dipper constellation and "Duluth" logo	F-16A/B	148th FW, Duluth Arpt., Minn.
Subdued "Vermont" on top of tail with figure of Ethan Allen	F-16C/D	158th FW, Burlington Arpt., Vt.[a]
Subdued "Atlantic City" at top of tail	F-16C/D	177th FW, Atlantic City Arpt., N.J.[a]
Subdued eagle and "Oregon" logo	F-15A/B	114th FS (173rd FW), Klamath Falls Arpt., Ore.[b]
Starburst state flag and "Arizona" logo	F-16A/B	162nd FW, Tucson Arpt., Ariz.[b]

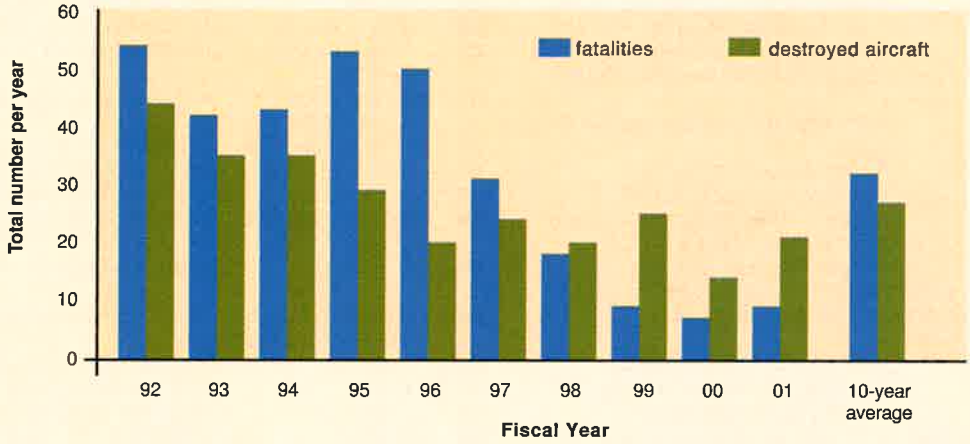
[a]General-purpose units (no longer air defense only).
[b]ANG training units.

Class A Aircraft Mishaps

(As of Sept. 30, 2001)

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





Data provided by USAF.

Staff photo by Guy Aceto

The fin flash on this F-15 from the 123rd Fighter Squadron, Oregon Air National Guard, depicts a hawk clutching a banner bearing the state name and a USAF Outstanding Unit ribbon with three oak leaf clusters.

USAF Aircraft Tail Markings

Code	Aircraft	Unit and Location
AC	F-16	177th FW (ANG), Atlantic City Arpt., N.J.
AF	C-150, gliders, T-41, UV-18	34th OG, USAF Academy, Colo.
AK	C-12, C-130H, F-15C/D/E	3rd Wing, Elmendorf AFB, Alaska
AK	A/OA-10A, F-16C/D	354th FW, Eielson AFB, Alaska
AL	F-16C/D	187th FW (ANG), Dannelly Fld., 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, U-2	9th RW, 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 Fed Afld., Calif.
CB	T-1, T-37B, T-38A	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, Buckley 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, EC-130E/H	355th Wing, Davis–Monthan AFB, Ariz.
DR	HH-60G	305th RQS (AFRC), Davis–Monthan AFB, Ariz.
DY	B-1B	7th BW, 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	AT-38B, T-37B, T-38A	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 TG, Fairchild AFB, Wash.
FE	UH-1N	90th SPW, F.E. Warren AFB, Wyo.
FF	F-15C/D	1st FW, Langley AFB, Va.
FL	HC-130P/N, HH-60G	920th RQG (AFRC), Patrick AFB, Fla.
FM	F-16C/D	482nd FW (AFRC), Homestead ARS, Fla.
FS	F-16A/B	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	B-1B	116th BW (ANG), Robins AFB, Ga.
GA	C-130H	165th AW (ANG), Savannah Arpt., Ga.
HA	F-16C/D	185th FW (ANG), Sioux Gateway Arpt., Iowa
HD	QF-4	53rd WEG, Holloman AFB, N.M.
HH	C-130H, F-15A/B, KC-135R	154th Wing, Hickam AFB, Hawaii
HI	F-16C/D	419th FW (AFRC), Hill AFB, Utah
HL	F-16C/D	388th FW, Hill AFB, Utah
HO	F-117A, T-38A	49th FW, Holloman AFB, N.M.
HO	F-4F	Luftwaffe RTU, Holloman AFB, N.M.
HT	AT-38B, C-12, F-15A	46th TG, Holloman AFB, N.M.
HV	UH-1N	30th SPW, Vandenberg AFB, Calif.
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 (ACC), NAS Keflavik, Iceland
JZ	F-15A/B	159th FW (ANG), NAS New Orleans JRB
KC	A/OA-10	442nd FW (AFRC), Whiteman AFB, Mo.
LA	B-52H	2nd BW, Barksdale AFB, La.
LI	HC-130P, HH-60G	106th RW (ANG), F.S. Gabreski Arpt., N.Y.
LN	F-15C/D/E	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.
MM	UH-1N	341st SPW, Malmstrom AFB, Mont.
MN	C-130H	133rd AW (ANG), Minn.–St. Paul Arpt./ARS
MN	F-16A/B	148th FW (ANG), Duluth Arpt., Minn.
MO	B-1B, F-15C/D/E, F-16CJ, KC-135R	366th Wing, Mountain Home AFB, Idaho
MT	B-52H	5th BW, Minot AFB, N.D.
MT	UH-1N	91st SPW, Minot AFB, N.D.
MY	HC-130P, HH-60G	347th Rescue Wing, Moody AFB, Ga.
MY	AT-38B, T-6A	479th FTG (AETC), Moody AFB, Ga.
NC	C-130H	145th AW (ANG), Charlotte/Douglas Arpt., N.C.
NM	F-16C/D	150th FW (ANG), Kirtland AFB, N.M.
NO	A/OA-10A	926th FW (AFRC), NAS New Orleans JRB
NV	C-130E	152nd AW (ANG), Reno/Tahoe Arpt., Nev.
NY	F-16C/D	174th FW (ANG), Hancock Fld., N.Y.
OF	Various	55th Wing, Offutt AFB, Neb.
OH	F-16C/D	178th FW (ANG), Springfield–Beckley Arpt., Ohio
OH	C-130H	179th AG (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, TC-18E	552nd ACW, Tinker AFB, Okla.
OS	A/OA-10A, C-12, F-16C/D	51st FW, Osan AB, South Korea
OT	F-15A/B/C/D/E, F-16A/B/C/D	85th TES, 53rd Wing (ACC), Eglin AFB, Fla.
OT	F-15, F-16A/C	422nd TES, 53rd Wing, Nellis AFB, Nev.
OT	F-117	Det. 1, 53rd WEG, Holloman AFB, N.M.
PA	A/OA-10A	111th FW (ANG), Willow Grove ARS, Pa.
PD	HC-130P, HH-60G, C-130E	939th RW (AFRC), Portland Arpt., Ore.
PR	C-130E	156th AW (ANG), Luis Munoz Marin Arpt., Puerto Rico
RA	AT-38B, T-1A, T-6A, T-37B, T-38A, T-43A	12th FTW, Randolph AFB, Hondo Arpt, Tex.
RI	C-130E	143rd AW (ANG), Quonset State Arpt., R.I.
RS	C-130E	86th AW, Ramstein AB, Germany
SA	F-16C/D	149th FW (ANG), Kelly Fld., 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), 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/D	52nd FW, Spangdahlem AB, Germany
ST	Various	82nd TW, Sheppard AFB, Tex.
SW	F-16C/J	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 F.W. JRB, Tex.
TX	F-16C/D	301st FW (AFRC), NAS F.W. JRB, Tex.
TY	F-15C/D	325th FW, Tyndall AFB, Fla.
VA	F-16C/D	192nd FW (ANG), Richmond Arpt., Va.
VN	T-1A, T-37B, T-38A	71st FTW, Vance AFB, Okla.
WA	A-10, F-15C/D/E, F-16A/B/C/D, HH-60, RQ-1	57th Wing, Nellis AFB, Nev.
WE	E-9A	53rd WEG, Tyndall AFB, Fla.
WI	F-16C/D	115th FW (ANG), Truax Fld., Wis.
WM	B-2A, T-38A	509th BW, Whiteman AFB, Mo.
WP	F-16C/D	8th FW, Kunsan AB, South Korea
WR	E-8C, TE-8A	93rd ACW, Robins AFB, Ga.
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-1A, T-37B, T-38A	47th FTW, Laughlin AFB, Tex.
XP	C-130H	139th AW (ANG), Rosecrans Arpt., Mo.
YJ	C-21A, C-130E/H, UH-1N	374th AW, Yokota AB, Japan
ZZ	E-3B, F-15C/D, KC-135R, HH-60G	18th Wing, Kadena AB, Japan

Source: USAF

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

This display represents, in correct order of precedence, selected ribbons from World War II to present day. For information regarding ribbons not depicted, refer to AFI 36-2803.

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

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.

Mobility Device
is worn with the Armed Forces Reserve Medal to denote active duty for at least one day during a contingency.

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.

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.

Wings and Badges

Shown here and on p. 66 are current wings and badges. 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.

Astronaut

The astronaut designator indicates a USAF rated officer qualified to perform duties in space (50 miles and up) and who has completed at least one operational mission. Pilot wings are used here to illustrate the position of the designator on the wings.

Pilot

Navigator/Observer

Enlisted Aircrew

Flight Surgeon

Flight Nurse

Officer Aircrew Member

Air Battle Manager

Missile with Operations Designator

Missile

Berets

Five USAF career fields are authorized to wear a colored beret along with the crest of that particular field. Below are those badges on their particular beret color.

Combat Control Team

Combat Weather
The parachutist badge indicates the wearer is at the master level.

Force Protection
Officers display their rank in a plain blue shield above the motto "Defensor Fortis."

Pararescue

Tactical Air Control Party

Badges, continued

Acquisition and Financial Management

Air Traffic Control

Band

Chaplain Service Support

Civil Engineer

Command and Control

Communications and Information

Explosive Ordnance Disposal

Force Protection

Historian

Information Management

Intelligence

Judge Advocate

Logistics

Maintenance

Manpower and Personnel

Meteorologist

Operations Support

Parachutist

Paralegal

Public Affairs

Services

Space/Missile

Supply/Fuels

Transportation

Weapons Director

Medical

Biomedical Science Corps

Dental Corps

Enlisted Medical

Medical Corps

Medical Service Corps

Nurse Corps

Chaplain

Buddhist

Christian

Jewish

Muslim

USAF Almanac

Air Force Magazine's Guide to Aces and Heroes

Striking a pose in front of Capt. Eddie Rickenbacker's airplane are (l–r) 1st Lt. Joseph Eastman, Capt. James A. Meissner (eight victories), Rickenbacker (26 victories), 1st Lt. Reed M. Chambers (seven victories), and 1st Lt. Thorne C. Taylor (two victories).

By tradition, anyone with five official 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 relied 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 have been corrected, updated, and combined into one comprehensive volume.

In each war in which its members flew and fought, the Air Force established criteria for awarding aerial victory credits. These criteria 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.

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 (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

Leading American Aces of World War I

(10 or more victories[a])

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

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

2nd Lt. Frank Luke Jr.

Maj. Richard I. Bong

Leading Army Air Forces Aces of World War II

(10 or more victories)

Bong, Maj. Richard I.	40	Moran, 1st Lt. Glennon T.	13
McGuire, Maj. Thomas B. Jr.	38	Parker, Capt. Harry A.	13
Gabreski, Lt. Col. Francis S.	28[a]	Stephens, Maj. Robert W.	13
Johnson, Capt. Robert S.	27	Williamson, Capt. Felix D.	13
MacDonald, Col. Charles H.	27	Brueland, Maj. Lowell K.	12.50
Preddy, Maj. George E.	26.83	Brown, Maj. Quince L.	12.33
Meyer, Lt. Col. John C.	24[a]	Brezas, 1st Lt. Michael	12
Schilling, Col. David C.	22.50	Chase, Lt. Col. Levi R.	12
Johnson, Lt. Col. Gerald R.	22	East, Capt. Clyde B.	12
Kearby, Col. Neel E.	22	Gleason, Capt. George W.	12
Robbins, Maj. Jay T.	22	Hively, Maj. Howard D.	12
Christensen, Capt. Fred J.	21.50	Ladd, Capt. Kenneth G.	12
Wetmore, Capt. Ray S.	21.25	Moore, Maj. Robert W.	12
Voll, Capt. John J.	21	Olds, Maj. Robin	12
Mahurin, Maj. Walker M.	20.75[a]	Schreiber, Capt. Leroy A.	12
Lynch, Lt. Col. Thomas J.	20	Skogstad, 1st Lt. Norman C.	12
Westbrook, Lt. Col. Robert B.	20	Sloan, 1st Lt. William J.	12
Gentile, Capt. Don S.	19.83	Watkins, Capt. James A.	12
Duncan, Col. Glenn E.	19.50	Megura, Capt. Nicholas	11.83
Carson, Capt. Leonard K.	18.50	Blakeslee, Col. Donald J.M.	11.50
Eagleston, Maj. Glenn T.	18.50[a]	Conger, Maj. Paul A.	11.50
Beckham, Maj. Walter C.	18	Kirla, 1st Lt. John A.	11.50
Green, Maj. Herschel H.	18	McDonald, Maj. Norman L.	11.50
Herbst, Lt. Col. John C.	18	Stewart, Maj. James C.	11.50
Zemke, Lt. Col. Hubert	17.75	Yeager, Capt. Charles E.	11.50
England, Maj. John B.	17.50	Norley, Maj. Louis H.	11.33
Beeson, Capt. Duane W.	17.33	Frantz, 1st Lt. Carl M.	11
Thornell, 1st Lt. John F. Jr.	17.25	Goebel, Capt. Robert J.	11
Varnell, Capt. James S. Jr.	17	Lawler, Capt. John B.	11
Johnson, Maj. Gerald W.	16.50	Lent, 1st Lt. Francis J.	11
Godfrey, Capt. John T.	16.33	Leverette, Lt. Col. William L.	11
Anderson, Capt. Clarence E. Jr.	16.25	Loisel, Maj. John S.	11
Dunham, Lt. Col. William D.	16	Lowry, 1st Lt. Wayne L.	11
Harris, Lt. Col. Bill	16	McCorkle, Col. Charles M.	11
Welch, Capt. George S.	16	McKennon, Maj. Pierce W.	11
Beerbower, Capt. Don M.	15.50	Mitchell, Lt. Col. John W.	11
Brown, Maj. Samuel J.	15.50	Molland, Capt. Leland P.	11
Peterson, Capt. Richard A.	15.50	Quirk, Capt. Michael J.	11
Whisner, Capt. William T. Jr.	15.50[a]	Riddle, 1st Lt. Robert E.	11
Bradley, Lt. Col. Jack T.	15	Shubin, 1st Lt. Murray J.	11
Cragg, Maj. Edward	15	Smith, Capt. Cornelius M. Jr.	11
Foy, Maj. Robert W.	15	Sparks, 1st Lt. Kenneth C.	11
Hofer, 2nd Lt. Ralph K.	15	Turner, Maj. Richard E.	11
Homer, Capt. Cyril F.	15	O'Connor, Capt. Frank Q.	10.75
Landers, Lt. Col. John D.	14.50	Ceuleers, Lt. Col. George F.	10.50
Powers, Capt. Joe H.	14.50	Clark, Lt. Col. James A. Jr.	10.50
Brown, Capt. Henry W.	14.20	Doersch, Capt. George A.	10.50
Carr, 1st Lt. Bruce W.	14	Halton, Maj. William T.	10.50
Curtis, Maj. Robert C.	14	Hovde, Maj. William J.	10.50
Dahlberg, Capt. Kenneth H.	14	Littge, Capt. Raymond H.	10.50
DeHaven, Capt. Robert M.	14	Storch, Lt. Col. John A.	10.50
Emmer, Capt. Wallace N.	14	Glover, Maj. Fred W.	10.33
Goodson, Maj. James A.	14	Anderson, 1st Lt. Charles F.	10
Jeffrey, Lt. Col. Arthur F.	14	Aschenbrener, Capt. Robert W.	10
McComas, Lt. Col. Edward O.	14	Blickenstaff, Lt. Col. Wayne K.	10
Roberts, Capt. Daniel T. Jr.	14	England, Maj. James J.	10
West, Capt. Richard L.	14	Giroux, Capt. William K.	10
Bochkay, Maj. Donald H.	13.83	Gladych, SL[b] Michael	10
Strait, Maj. Donald J.	13.50	Goehausen, Capt. Walter J. Jr.	10
Bryan, Capt. Donald S.	13.33	Harris, Capt. Ernest A.	10
Carpenter, Maj. George	13.33	Lines, 1st Lt. Ted E.	10
Brooks, 1st Lt. James L.	13	Rankin, 1st Lt. Robert J.	10
Hampshire, Capt. John F. Jr.	13	Reynolds, 1st Lt. Andrew J.	10
Head, Capt. Cotesworth B. Jr.	13	Scott, Col. Robert L. Jr.	10
Holloway, Col. Bruce K.	13	Stanch, Capt. Paul M.	10
Millikan, Capt. Willard W.	13	Summer, Capt. Elliot	10

Ranks are as of last victory in World War II.

[a]Aces who added to these scores by victories in the Korean War.

[b]SL stands for Squadron Leader, a British designation. Gladych was Polish and flew in service with American units. The Polish government in exile was headquartered in London. Thus, Polish pilots had British designations.

Capt. Joseph C. McConnell Jr.

USAF Aces of the Korean War

McConnell, Capt. Joseph C. Jr.	16
Jabara, Maj. James	15[a]
Fernandez, Capt. Manuel J. Jr.	14.50
Davis, Maj. George A. Jr.	14[a]
Baker, Col. Royal N.	13[a]
Blesse, Maj. Frederick C.	10
Fischer, Capt. Harold E.	10
Garrison, Lt. Col. Vermont	10[a]
Johnson, Col. James K.	10[a]
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[a]
Risner, Capt. Robinson	8
Ruddell, Lt. Col. George I.	8[a]
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[a]
Jones, Lt. Col. George L.	6.50
Marshall, Maj. Winton W.	6.50
Kasler, 1st Lt. James H.	6
Love, Capt. Robert J.	6
Whisner, Maj. William T. Jr.	5.50[a]
Baldwin, Col. Robert P.	5
Becker, Capt. Richard S.	5
Bettinger, Maj. Stephen L.	5
Creighton, Maj. Richard D.	5[a]
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[a]
Wescott, Maj. William H.	5

[a]In addition to World War II victories.

Capts. Charles B. DeBellevue and Richard S. Ritchie

USAF Aces of the Vietnam War

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

Capt. Jeffrey S. Feinstein

Maj. George A. Davis (left), the first ace in two wars, was the leading ace in Korea with 14 aircraft destroyed when he was shot down on a mission for which he would receive a posthumous Medal of Honor. With him are Col. Ben Preston (center), 4th Fighter–Interceptor Group commander, and Maj. Winton W. Marshall, also an ace. Davis would eventually be surpassed by only three pilots, including Capt. Joseph C. McConnell Jr., USAF's leading ace in Korea.

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's four additional victories came during the Vietnam War.

Col. John C. Meyer

Maj. James Jabara

Col. Robin Olds

Col. Francis S. Gabreski

Capt. Robert S. Johnson

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.

USAF Recipients of the Medal of Honor

[a]Living Medal of Honor recipient.

Names, Alphabetically by Wars, and Rank at Time of Action	Hometown	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.	Poplar, 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
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.[a]	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.[a]	Sioux City, Iowa	Conspicuous gallantry while POW	
Dethlefsen, Maj. Merlyn H.	Greenville, Iowa	March 10, 1967	Thai Nguyen, N. Vietnam
Fisher, Maj. Bernard F.[a]	San Bernardino, Calif.	March 10, 1966	A Shau Valley, S. Vietnam
Fleming, 1st Lt. James P.[a]	Sedalia, Mo.	Nov. 26, 1968	Duc Co, S. Vietnam
Jackson, Lt. Col. Joe M.[a]	Newnan, Ga.	May 12, 1968	Kham Duc, S. Vietnam
Jones, Col. William A. III	Warsaw, Va.	Sept. 1, 1968	Dong Hoi, N. Vietnam
Levitow, A1C John L.	South Windsor, 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.[a]	Seattle	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 record flight
Mitchell, Maj. Gen. W. "Billy"	Milwaukee	Posthumous award	Foresight in military aviation

USAF Almanac

Major Commands

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: operational and support.

ACC Air Combat Command

Headquarters Langley AFB, Va.

Established June 1, 1992

Commander Gen. Hal M. Hornburg

MISSIONS

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

Organize, train, equip, and maintain combat-ready forces for rapid deployment and employment to meet the challenges of peacetime air sovereignty, wartime defense, and military operations other than war

Provide air combat forces to America's warfighting commands (Central, European, Joint Forces, Pacific, and Southern); nuclear forces to STRATCOM; air defense forces to NORAD

COROLLARY MISSIONS

Monitor and intercept illegal drug traffic

Test new combat equipment

FORCE STRUCTURE

Three Numbered Air Forces: **8th,** Barksdale AFB, La.; **9th,** Shaw AFB, S.C.; **12th,** Davis–Monthan AFB, Ariz.

Two Direct Reporting Units: Aerospace C^2, Intelligence, Surveillance, and Reconnaissance Center and Aerospace Expeditionary Force Center, Langley AFB, Va.

Two primary subordinate units: Air Intelligence Agency, Kelly Field, Tex.; Air Warfare Center, Nellis AFB, Nev.

25 wings

OPERATIONAL ACTIVITY

Flying hours: 30,160 per month

Major operations

Enduring Freedom (Afghanistan); Noble Eagle (US); Northern/Southern Watch (Iraq)

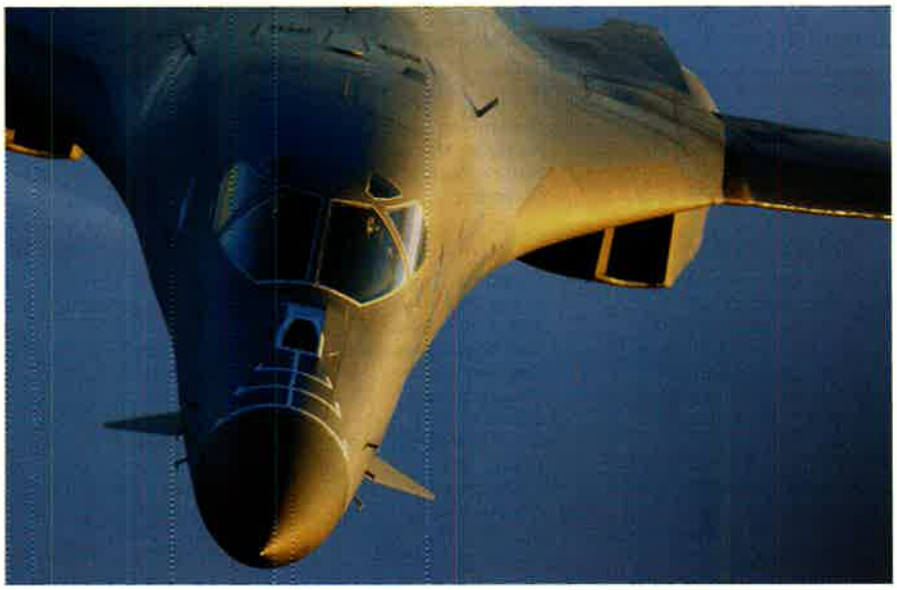
Major training exercises

Air Warrior and AW II; Amalgam Warrior; Baltops; Blue Advance; Blue Flag; Bright Star; Cooperative Zenith; Fuertas Defensas; Global Guardian; Initial Link; Internal Look; JTFEX; Linked Seas; Maple Flag; New Horizons; Northern Viking; Red Flag; Roving Sands; Rugged Arch; Strong Resolve

PERSONNEL

(as of Sept. 30, 2001)

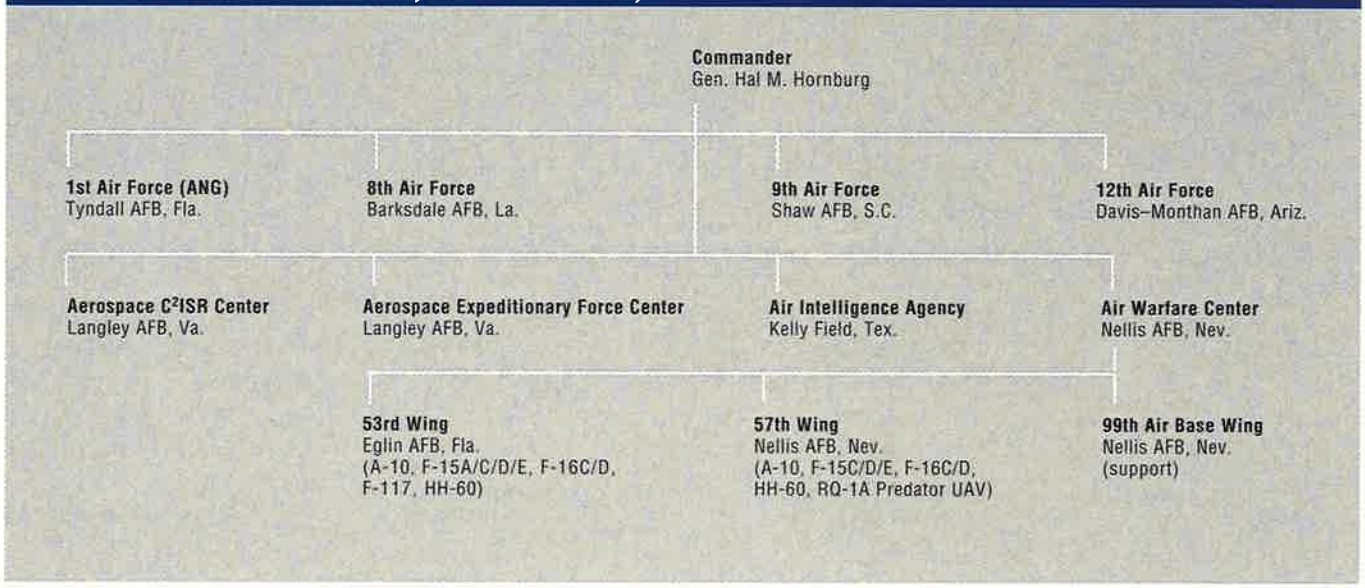
Active duty		84,948
Officers	12,116	
Enlisted	72,832	
Reserve components		58,136
ANG	47,711	
AFRC	10,425	
Civilian		9,868
Total		**152,952**



USAF photo by TSgt. Cedric H. Rudisill

A B-1B Lancer from the 28th Air Expeditionary Wing heads for a refueling boom during an Enduring Freedom mission in Afghanistan.

AIR COMBAT COMMAND, LANGLEY AFB, VA.



EQUIPMENT

(Primary Aircraft Inventory as of Sept. 30, 2001)

Bombers (B-1B, B-2, B-52H)	130
Fighter/Attack (A/OA-10, F-15, F-16, F-117)	687
Helicopter (HH-60)	32
Recon/BM/C³I (E-3, E-4, E-8, EC-130, OC-135, RC-135, RQ-1, U-2)	105
Tanker (HC-130, KC-135R)	17
Trainer (T-38, TC-135, TU-2)	30

UNIT	BASE	WEAPONS
1st Fighter Wing	Langley AFB, Va.	F-15C/D
2nd Bomb Wing	Barksdale AFB, La.	B-52H
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.	T-38, U-2
20th Fighter Wing	Shaw AFB, S.C.	F-16C/CJ/D
23rd Fighter Group	Pope AFB, N.C.	A/OA-10
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.	AT-38B, F-117A, German F-4F
53rd Wing	Eglin AFB, Fla.	A-10, F-15A/C/D/E, F-16C/D, F-117, HH-60
53rd Weapons Evaluation Group*	Tyndall AFB, Fla.	BQM-34, MQM-107, QF-4
55th Wing	Offutt AFB, Neb.	E-4B, OC-135C, RC-135S/U/V/W, TC-135S/W
57th Wing	Nellis AFB, Nev.	A-10, F-15C/D/E, F-16C/D, HH-60, RQ-1A
65th Air Base Wing	Lajes Field, the Azores (support)	—
67th Information Operations Wing	Kelly Field, Tex.	—
70th Intelligence Wing	Ft. Meade, Md.	—
85th Group	NAS Keflavik, Iceland	HH-60
93rd Air Control Wing	Robins AFB, Ga.	E-8C
99th Air Base Wing	Nellis AFB, Nev. (support)	—
347th Rescue Wing	Moody AFB, Ga.	HC-130, HH-60
355th Wing	Davis–Monthan AFB, Ariz.	A/OA-10, EC-130E/H
366th Wing	Mountain Home AFB, Idaho	B-1B, F-15C/D/E, F-16C/CJ/D, KC-135R
388th Fighter Wing	Hill AFB, Utah	F-16C/D
509th Bomb Wing	Whiteman AFB, Mo.	B-2, T-38
552nd Air Control Wing	Tinker AFB, Okla.	E-3B/C

*Part of 53rd Wing.

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

Commander
Lt. Gen. Bruce A. Carlson (5-17-02)

2nd Bomb Wing
Barksdale AFB, La.
(B-52H)

5th Bomb Wing
Minot AFB, N.D.
(B-52H)

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)

65th Air Base Wing
Lajes Field, the Azores
(support)

67th Information Operations Wing
Kelly Field, Tex.

70th Intelligence Wing
Ft. Meade, Md.

509th Bomb Wing
Whiteman AFB, Mo.
(B-2, T-38)

85th Group
NAS Keflavik, Iceland
(HH-60)

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

Commander
Lt. Gen. T. Michael Moseley

1st Fighter Wing
Langley AFB, Va.
(F-15C/D)

4th Fighter Wing
Seymour Johnson AFB, N.C.
(F-15E)

20th Fighter Wing
Shaw AFB, S.C.
(F-16C/CJ/D)

33rd Fighter Wing
Eglin AFB, Fla.
(F-15C/D)

93rd Air Control Wing
Robins AFB, Ga.
(E-8C)

347th Rescue Wing
Moody AFB, Ga.
(HC-130, HH-60)

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

Commander
Lt. Gen. William T. Hobbins

9th Reconnaissance Wing
Beale AFB, Calif.
(T-38, U-2R/S)

49th Fighter Wing
Holloman AFB, N.M.
(AT-38B, F-117A,
German F-4F)

55th Wing
Offutt AFB, Neb.
(E-4B, OC-135C, RC-135S/U/V/W,
TC-135S/W)

355th Wing
Davis-Monthan AFB, Ariz.
(A/OA-10, EC-130E/H)

366th Wing
Mountain Home AFB, Idaho
(B-1B, F-15C/D/E, F-16C/CJ/D, KC-135R)

388th Fighter Wing
Hill AFB, Utah
(F-16C/D)

552nd Air Control Wing
Tinker AFB, Okla.
(E-3B/C)

USAF photo by MSgt. Dave Nolan

An F-15E Strike Eagle with the 366th Air Expeditionary Wing returns from a bombing mission in Afghanistan. The aircraft is based at Mountain Home AFB, Idaho.

AETC Air Education and Training Command

Headquarters Randolph AFB, Tex.

Established July 1, 1993

Commander Gen. Donald G. Cook

MISSIONS

Recruit, train, and educate quality people

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

Conduct joint, medical service, readiness, and Air Force security assistance training

OTHER RESPONSIBILITIES

Recall of Individual Ready Reservists. Mobility and contingency tasking support to combatant commanders

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

OPERATIONAL ACTIVITY

Flying hours: 46,748 per month

USAF photo by SSgt. Jeffrey Allen

T-38s from the 12th Flying Training Wing at Randolph AFB, Tex., fly in formation. One of AETC's five flying training wings, the 12th FTW conducts T-38 Instructor Pilot training, graduating about 350 IPs each year.

PERSONNEL
(as of Sept. 30, 2001)

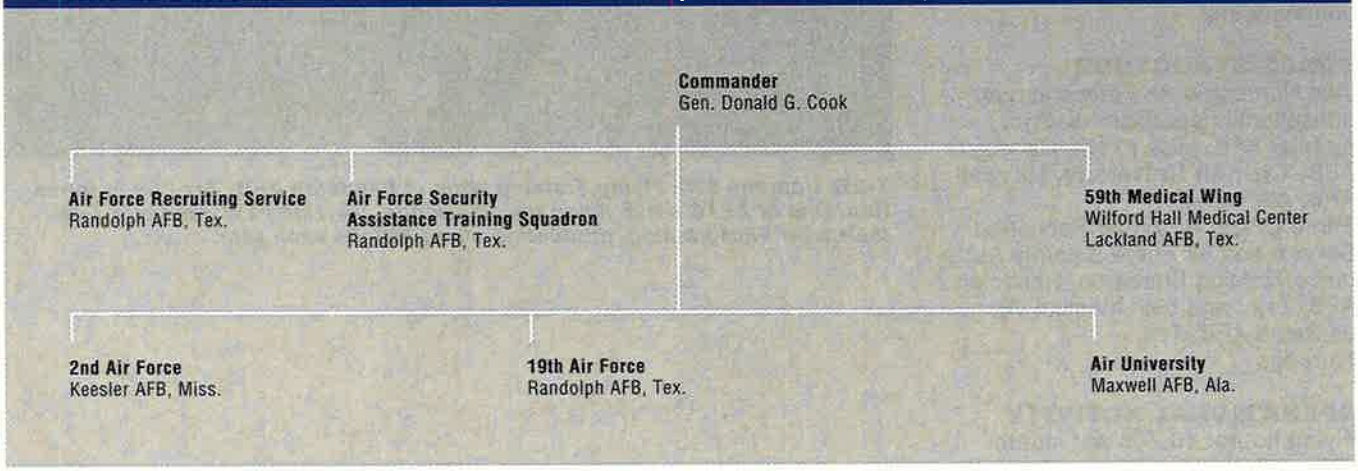
Active duty		69,237
Officers	14,405	
Enlisted	54,832	
Reserve components		7,790
ANG	4,386	
AFRC	3,404	
Civilian		14,595
Total		**91,622**

EQUIPMENT
(PAI as of Sept. 30, 2001)

Fighter/Attack (F-15, F-16)	211
Helicopter (UH-1)	7
Special Operations Forces (MC-130, MH-53)	12
Tanker (KC-135)	24
Trainer (AT/T-38, T-1, T-6, T-37, T-43)	978
Transport (C-5, C-17, C-21, C-130)	56

UNIT	BASE	WEAPONS
Flying/Aircrew Training Units (Active)		
12th Flying Training Wing	Randolph AFB, Tex.	T-1, T-6, T-37, T-38, T-43
14th Flying Training Wing	Columbus AFB, Miss.	T-1, T-37, T-38
45th Airlift Squadron	Keesler AFB, Miss.	C-21
47th Flying Training Wing	Laughlin AFB, Tex.	T-1, T-37, T-38
56th Fighter Wing	Luke AFB, Ariz.	F-16
58th Special Operations Wing	Kirtland AFB, N.M.	MC-130H, MC-130P, MH-53, UH-1
71st Flying Training Wing	Vance AFB, Okla.	T-1, T-37, T-38
80th Flying Training Wing	Sheppard AFB, Tex.	AT/T-38, T-37
97th Air Mobility Wing	Altus AFB, Okla.	C-5, C-17, KC-135
314th Airlift Wing	Little Rock AFB, Ark.	C-130E
325th Fighter Wing	Tyndall AFB, Fla.	F-15, Undergraduate Controller and Air Battle Manager Training
336th Training Group	Fairchild AFB, Wash.	UH-1, Aircrew Survival Training
479th Flying Training Group	Moody AFB, Ga.	T-6, AT-38, 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.	

AIR EDUCATION AND TRAINING COMMAND, RANDOLPH AFB, TEX.



Increasing the safety and accommodation standard from primary trainer to JSF

STOP PRESS
Mk. 16 seat now fully qualified and being delivered to retro-fit the NASA T-38 fleet

Martin-Baker Mk. 16 seats are flying in the T-6A Texan II and will equip the F-35 JSF.

These advanced seats accommodate the full range of male and female aircrew sizes and greatly improve pilot safety.

NASA is re-equiping their T-38 fleet with the Mk. 16.

Re-equiping the Air Force T-38 fleet with modern Mk. 16 ejection seats would satisfy accommodation and safety needs, simplify training and servicing and guarantee logistic support for the next 40 years - and beyond.

Martin-Baker America

Martin-Baker America Inc, PO Box 2223, Arlington, Virginia 22202-0223
Martin-Baker America (manufacturing), 423 Walters Avenue, Johnstown PA15904
Martin-Baker America (support), 23 Creek Circle, Naamans Creek Centre, Boothwyn, PA19061

www.martin-baker.com

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

Commander
Maj. Gen. John F. Regni

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

[a]Tenant unit.

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

Commander
Maj. Gen. James E. Sandstrom

- **12th Flying Training Wing**
  Randolph AFB, Tex.
  (T-1, T-6, T-37, T-38, T-43)
- **14th Flying Training Wing**
  Columbus AFB, Miss.
  (T-1, T-37, T-38)
- **47th Flying Training Wing**
  Laughlin AFB, Tex.
  (T-1, T-37, T-38)
- **56th Fighter Wing**
  Luke AFB, Ariz.
  (F-16)
- **58th Special Operations Wing[a]**
  Kirtland AFB, N.M.
  (MC-130H, MC-130P, MH-53, UH-1)
- **71st Flying Training Wing**
  Vance AFB, Okla.
  (T-1, T-37, T-38)
- **80th Flying Training Wing[a]**
  Sheppard AFB, Tex.
- **97th Air Mobility Wing**
  Altus AFB, Okla.
  (C-5, C-17, KC-135)
- **314th Airlift Wing**
  Little Rock AFB, Ark.
  (C-130E)
- **325th Fighter Wing**
  Tyndall AFB, Fla.
  (F-15)
- **336th Training Group[a]**
  Fairchild AFB, Wash.
  (UH-1)
- **479th Flying Training Group[a]**
  Moody AFB, Ga.
  (AT-38, T-6, T-38C)

[a]Tenant unit.

AIR UNIVERSITY (AETC), MAXWELL AFB, ALA.

Commander
Lt. Gen. Donald A. Lamontagne

- **Civil Air Patrol–USAF**
  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. Lester L. Lyles

MISSIONS

Manage the integrated research, development, test, acquisition, and sustainment of weapon systems
Produce and acquire advanced systems
Operate major product centers, logistics centers, test centers, and the Air Force Research Laboratory

FORCE STRUCTURE

Three major product centers
Two test centers
Three air logistics centers
Two specialized centers
One laboratory

OPERATIONAL ACTIVITY

Flying hours: 1,800 per month

PERSONNEL

(as of Sept. 30, 2001)

Active duty		23,781
Officers	7,269	
Enlisted	16,512	
Reserve components		5,547
ANG	2,200	
AFRC	3,347	
Civilian		57,378
Total		**86,706**

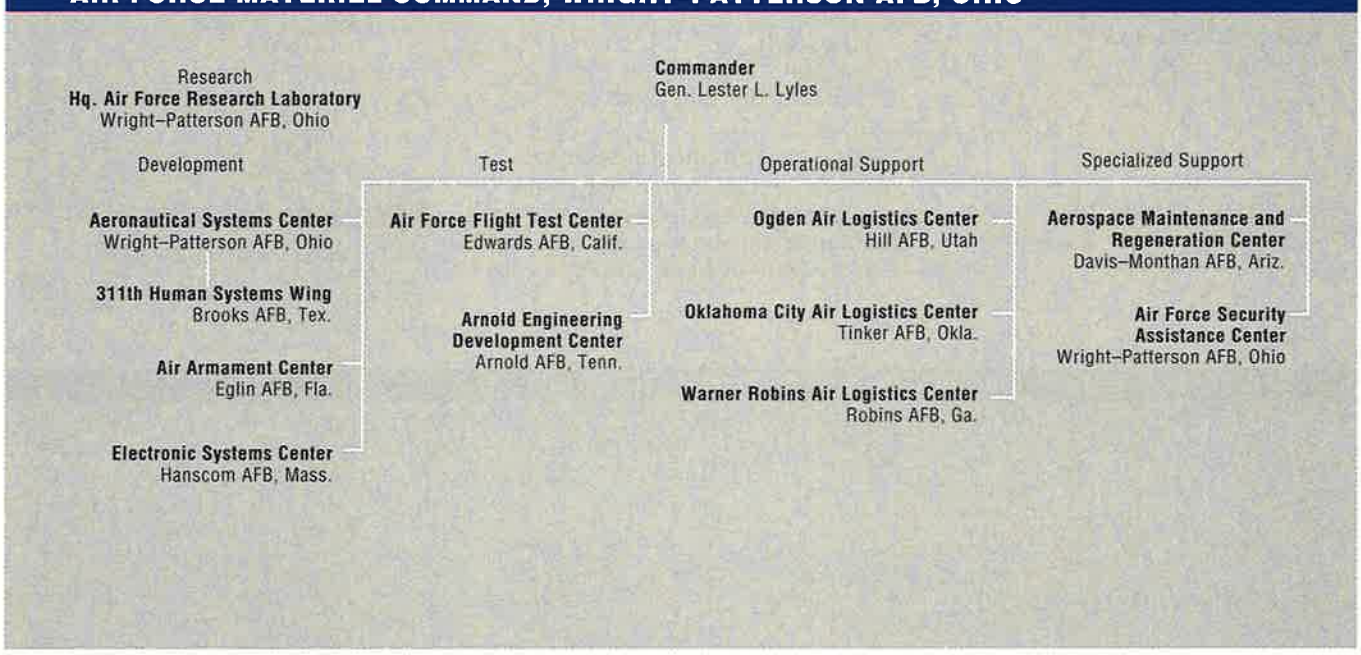
EQUIPMENT

(PAI as of Sept. 30, 2001)

Bomber (B-1B, B-52)	3
Fighter/Attack (A-10, F-15, F-16, F-22, F-117)	50
Helicopter (HH-60, UH-1)	5
Tanker (NKC/KC-135)	4
Trainer (AT/T-38, T-39)	17
Transport (C-12, C-17, C-135, NC-130)	26

UNIT	BASE
Aeronautical Systems Center	Wright–Patterson AFB, Ohio
Air Armament Center	Eglin AFB, Fla.
Electronic Systems Center	Hanscom AFB, Mass.
Air Force Flight Test Center	Edwards AFB, Calif.
Arnold Engineering Development Center	Arnold AFB, Tenn.
Ogden Air Logistics Center	Hill AFB, Utah
Oklahoma City Air Logistics Center	Tinker AFB, Okla.
Warner Robins Air Logistics Center	Robins AFB, Ga.
Aerospace Maintenance & Regeneration Center	Davis–Monthan AFB, Ariz.
Air Force Security Assistance Center	Wright–Patterson AFB, Ohio
311th Human Systems Wing	Brooks AFB, Tex.
Hq. Air Force Research Laboratory	Wright–Patterson AFB, Ohio

AIR FORCE MATERIEL COMMAND, WRIGHT-PATTERSON AFB, OHIO



Air Force Space Command

Headquarters Peterson AFB, Colo.

Established Sept. 1, 1982

Commander Gen. Lance W. Lord

MISSIONS

Operate and test USAF 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

Provide command and control for DOD satellites; ballistic missile warning to NORAD and SPACECOM; 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.

One major product center

One DRU: Space Warfare Center, Schriever AFB, Colo.

Eight wings

PERSONNEL

(as of Sept. 30, 2001)

Active duty		19,438
Officers	5,459	
Enlisted	13,979	
Reserve components		1,331
ANG	438	
AFRC	893	
Civilian		7,165
Total		**27,934**

EQUIPMENT

(as of Sept. 30, 2001)

Ballistic missile warning systems: Defense Support Program satellites, Ballistic Missile Early Warning System, Pave PAWS radars, Perimeter Acquisition Radar Attack Characterization System, conventional radars

Boosters: Delta II, Atlas II, Titan II, Titan IV

Helicopters: 18

ICBMs:

Peacekeeper: 50
Minuteman III: 500

Satellite command-and-control system:

Air Force Satellite Control Network (worldwide system of eight tracking stations providing communications links to satellites to monitor their status)

Satellite systems
(as of Jan. 1, 2002):

GPS: Block II/IIA/IIR: 27
DMSP: 2
DSCS III: 10
Milstar: 3
Milsatcom Polar System: 1

Space surveillance systems:

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

Photo by Russ Underwood, Lockheed Martin Space Systems

With a Milstar communications satellite as its payload, a USAF Titan IVB blasts off from Cape Canaveral AFS, Fla., on Feb. 27, 2001.

AIR FORCE SPACE COMMAND, PETERSON AFB, COLO.

Commander
Gen. Lance W. Lord

14th Air Force
Vandenberg AFB, Calif.

Space and Missile Systems Center
Los Angeles AFB, Calif.

Space Warfare Center
Schriever AFB, Colo.

20th Air Force
F.E. Warren AFB, Wyo.

Multimission Space Sensors

Remote Sensing

Planetary Exploration

Meteorological Monitoring

Intelligence Support

Future Sensors

- Japanese Advanced Meteorological Imager
- Visible/Infrared Imaging Radiometer Suite
- Space Based Infrared System Low
- Space Based Radar

A legacy of remote sensors unmatched in the industry

Raytheon's space sensor legacy began in 1966 with the development of a single weather sensor. Today we produce some of the most sophisticated multimission space sensors available. These sensors operate reliably in the harsh environment of space, monitoring Earth's global weather and resources and gathering vital research and operational data. With over 35 years of proven designs and more than 450 years of on-orbit experience, we don't have to go back to the drawing board to produce the advanced space sensors of the future.

Raytheon

Electronic Systems

Surveillance & Reconnaissance Systems

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

Commander
Maj. Gen. (sel.) Michael A. Hamel

21st Space Wing
Peterson AFB, Colo.

460th Air Base Wing
Buckley AFB, Colo.

30th Space Wing
Vandenberg AFB, Calif.
(UH-1N)

45th Space Wing
Patrick AFB, Fla.

50th Space Wing
Schriever AFB, Colo.

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

Commander
Maj. Gen. Timothy J. McMahon

90th Space Wing
F.E. Warren AFB, Wyo.
(Minuteman III, Peacekeeper, UH-1)

91st Space Wing
Minot AFB, N.D.
(Minuteman III, UH-1)

341st Space Wing
Malmstrom AFB, Mont.
(Minuteman III, UH-1)

UNIT	BASE	WEAPONS/ACTIVITIES
21st Space Wing	Peterson AFB, Colo.	Missile warning and space surveillance
30th Space Wing	Vandenberg AFB, Calif.	Polar-orbiting launches, launch R&D tests, range operations for DOD, NASA, ballistic missile and aeronautical systems, and commercial launches; test support for DOD space and ICBM systems; UH-1, Delta II, Atlas IIAS, Titan II, Titan IV, Pegasus, Taurus
45th Space Wing	Patrick AFB, Fla.	Launch, range operations for DOD, NASA, and commercial space launches; shuttle program support and US Navy Trident test support; Delta II, Atlas II, Titan IV
50th Space Wing	Schriever AFB, Colo.	Command and control of DOD and allied nations' satellites
90th Space Wing	F.E. Warren AFB, Wyo.	Minuteman III and Peacekeeper ICBMs, 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 Air Base Wing	Buckley AFB, Colo.	Missile warning and space communications

AFSOC Air Force Special Operations Command

Headquarters Hurlburt Field, Fla.

Established May 22, 1990

Commander Lt. Gen. Paul V. Hester

MISSIONS

Serve as the Air Force component of SOCOM
Deploy specialized airpower, delivering special operations combat power anywhere, anytime
Provide Air Force Special Operations Forces for worldwide deployment and assignment to regional unified commands to conduct unconventional warfare, direct action, special reconnaissance, counterterrorism, foreign internal defense, counterproliferation, civil affairs, humanitarian assistance, psychological operations, personnel recovery, and counternarcotics operations

FORCE STRUCTURE

One active duty, one ANG, and one AFRC special operations wings
Three groups (two special opera-

A machine gunner on an MH-53 helicopter from the 16th Special Operations Wing at Hurlburt Field, Fla., looks out at another Pave Low helicopter. AFSOC's long-range, deep-penetration helicopters have provided vital support in Enduring Freedom missions.

USAF photo by TSgt. Manuel Trejo

tions, one special tactics)
USAF Special Operations School

OPERATIONAL ACTIVITY

Flying hours: 4,700 per month

PERSONNEL

(as of Sept. 30, 2001)

Active duty		9,057
Officers	1,479	
Enlisted	7,578	
Reserve components		2,532
ANG	1,206	
AFRC	1,326	
Civilian		606
Total		**12,195**

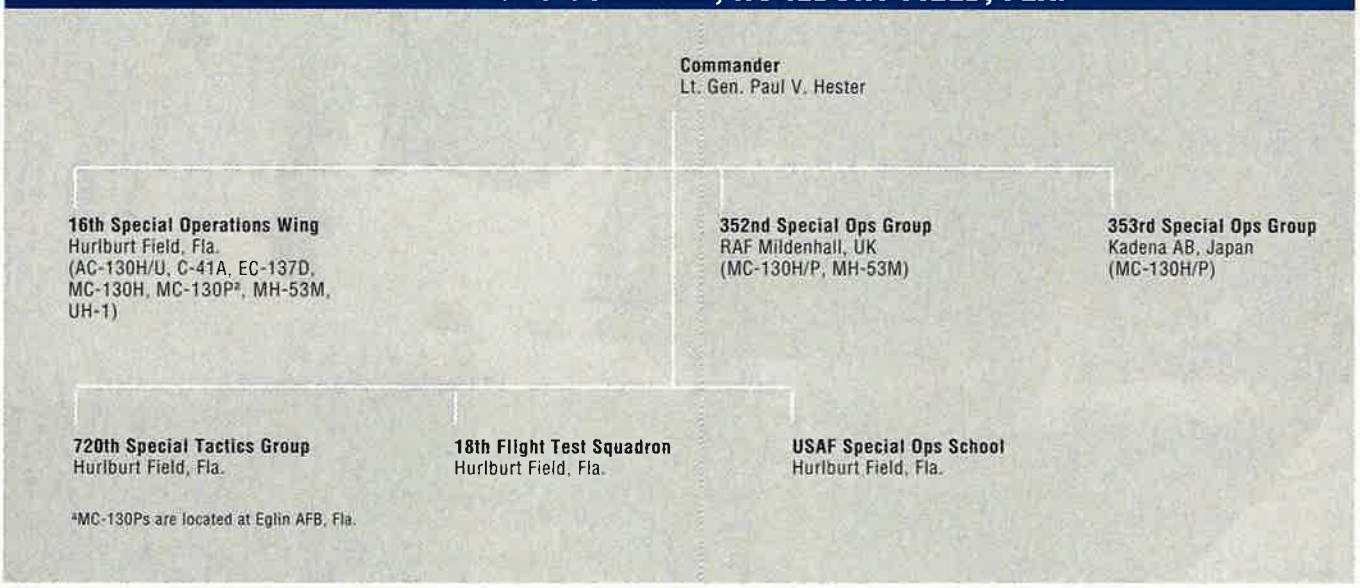
EQUIPMENT

(PAI as of Sept. 30, 2001)

Helicopter (UH-1)	2
SOF (AC-130, MC-130, MH-53)	74
Transport (EC-137D, C-41)	3

UNIT	BASE	WEAPONS
16th Special Operations Wing	Hurlburt Field, Fla.	AC-130H/U, C-41A, EC-137D, MC-130H, MC-130P (Eglin AFB, Fla.), MH-53M, UH-1
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/P
720th Special Tactics Group	Hurlburt Field, Fla.	—
USAF Special Operations School	Hurlburt Field, Fla.	—

AIR FORCE SPECIAL OPERATIONS COMMAND, HURLBURT FIELD, FLA.



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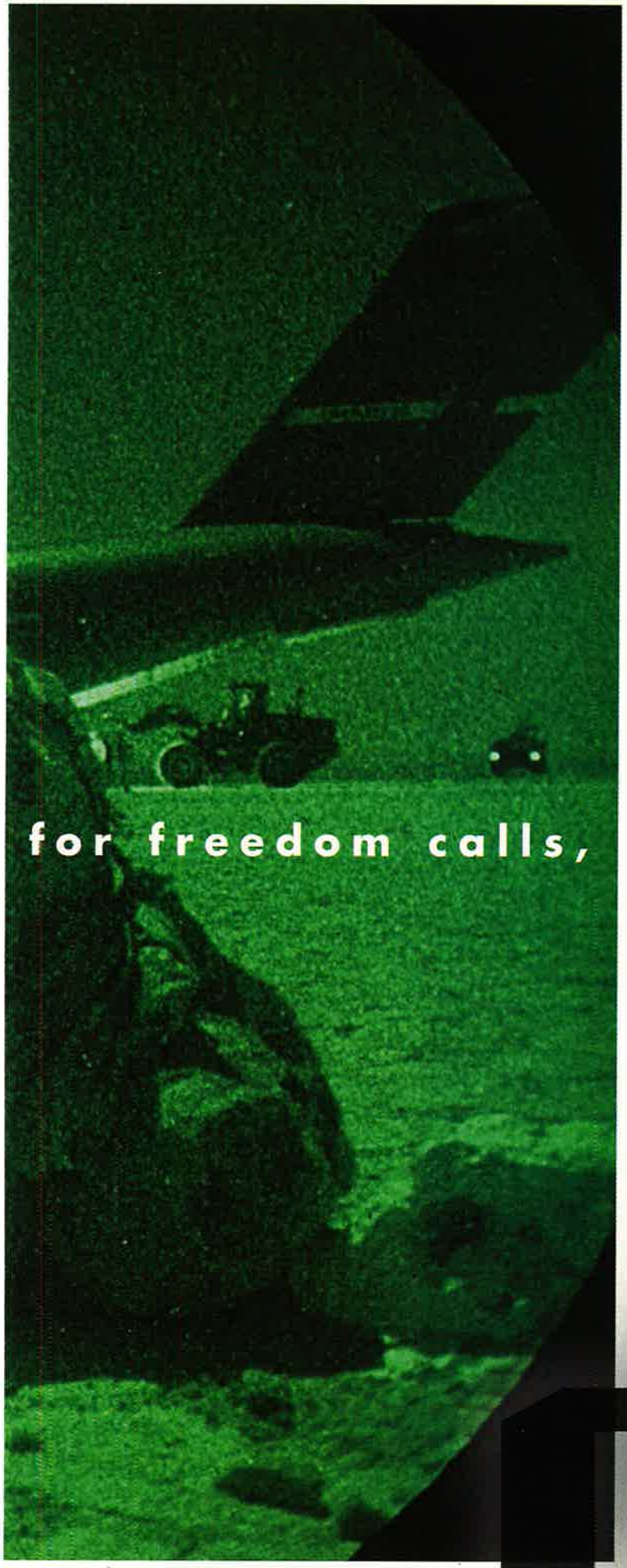

for freedom calls, heroes answer.

To defend the principles of freedom,

the crews who fly and support the C-17

Globemaster III in Operation Enduring

Freedom put themselves in harm's way.

At Boeing, we proudly salute these

brave men and women, and all who serve,

for their commitment and their sacrifice.

C-17

There's only one.

Air Mobility Command

Headquarters Scott AFB, Ill.

Established June 1, 1992

Commander Gen. John W. Handy

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

Two Numbered Air Forces: **15th,** Travis AFB, Calif.; **21st,** McGuire AFB, N.J.

Three DRUs: Air Mobility Warfare Center, Ft. Dix, N.J.; Tanker Airlift Control Center, Scott AFB, Ill.; Defense Courier Service, Ft. Meade, Md.

12 wings (six airlift, three air mobility, three air refueling)

Three groups (two airlift, one air refueling)

OPERATIONAL ACTIVITY

Flying hours: 29,600+ per month (42,400 since October 2001)

Major operations

Deep Freeze (Antarctic); Enduring Freedom (Afghanistan); Noble Eagle (US); Northern/Southern Watch (Iraq); Phoenix Forest (fire fighting)

Major training exercises

Blue Flag; Bright Star; Early Victor; Flintlock; Global Guardian; Jackal Cave; Lariat Response; New Horizon; Positive Force; Reception, Staging, Onward Movement and Integration; Roving Sands; Team Challenge; Turbo Challenge

PERSONNEL

(as of Sept. 30, 2001)

Active duty		49,469
Officers	8,273	
Enlisted	41,196	
Reserve components		82,938
ANG	37,479	
AFRC	45,459	
Civilian		7,814
Total		**140,221**

USAF photos by SSgt. Jeremy T. Lock

In Afghanistan, a C-130 on the ramp at Kandahar waits for a new load, while at left a loadmaster helps move a pallet onto a C-17 bound for Bagram. AMC's transports and tankers have racked up more than 42,000 flying hours per month since last October.

EQUIPMENT

(PAI as of Sept. 30, 2001)

Helicopter (UH-1)	15
Tanker (KC-10, KC-135)	222
Transport (C-5, C-9, C-17, C-20, C-21, C-32, C-37, C-130, C-141, VC-25)	320

Ready to go.

Enhanced operational readiness is a matter of working harder, smarter, and faster on the support side. At least, that's how we see it at Parker. Because we back you with complete logistics services, including repairs and spares, we deliver higher levels of availability and reliability. While our performance-based logistics, technology insertions, reliability improvement programs, field and tech support, and customization options offer you greater flexibility in reducing total ownership cost. All of which makes us a partner with common objectives – a partner who's right behind you, ready to go.

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Parker
Aerospace

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
62nd Airlift Wing	McChord AFB, Wash.	C-17, C-141
89th Airlift Wing	Andrews AFB, Md.	C-9, C-20, C-32, C-37, VC-25, UH-1
92nd Air Refueling Wing	Fairchild AFB, Wash.	KC-135
305th Air Mobility Wing	McGuire AFB, N.J.	C-141, 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-9, 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

AIR MOBILITY COMMAND, SCOTT AFB, ILL.

Commander
Gen. John W. Handy

15th Air Force
Travis AFB, Calif.

21st Air Force
McGuire AFB, N.J.

Air Mobility Warfare Center
Ft. Dix, N.J.

Tanker Airlift Control Center
Scott AFB, Ill.

Defense Courier Service
Ft. Meade, Md.

15th AIR FORCE (AMC), TRAVIS AFB, CALIF.

Commander
Maj. Gen. John D. Becker

22nd Air Refueling Wing
McConnell AFB, Kan.
(KC-135)

60th Air Mobility Wing
Travis AFB, Calif.
(C-5, KC-10)

62nd Airlift Wing
McChord AFB, Wash.
(C-17, C-141)

92nd Air Refueling Wing
Fairchild AFB, Wash.
(KC-135)

319th Air Refueling Wing
Grand Forks, N.D.
(KC-135)

375th Airlift Wing
Scott AFB, Ill.
(C-9, C-21)

317th Airlift Group[a]
Dyess AFB, Tex.
(C-130)

[a]Tenant unit.

21st AIR FORCE (AMC), MCGUIRE AFB, N.J.

Commander
Maj. Gen. George N. Williams

6th Air Mobility Wing
MacDill AFB, Fla.
(C-37, KC-135)

43rd Airlift Wing
Pope AFB, N.C.
(C-130)

89th Airlift Wing
Andrews AFB, Md.
(C-9, C-20, C-32, C-37, VC-25, UH-1)

305th Air Mobility Wing
McGuire AFB, N.J.
(C-141, KC-10)

436th Airlift Wing
Dover AFB, Del.
(C-5)

437th Airlift Wing
Charleston AFB, S.C.
(C-17)

19th Air Refueling Group
Robins AFB, Ga.
(KC-135)

463rd Airlift Group[a]
Little Rock AFB, Ark.
(C-130)

[a]Tenant unit.

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There are many reasons why EADS is a strong strategic partner for America. We are a leading global manufacturer in the defense and aerospace sectors and have the world's most comprehensive product portfolio. In fact, we already work with many top American companies, supporting 100,000 US jobs and contributing $5 billion a year to America's economy.

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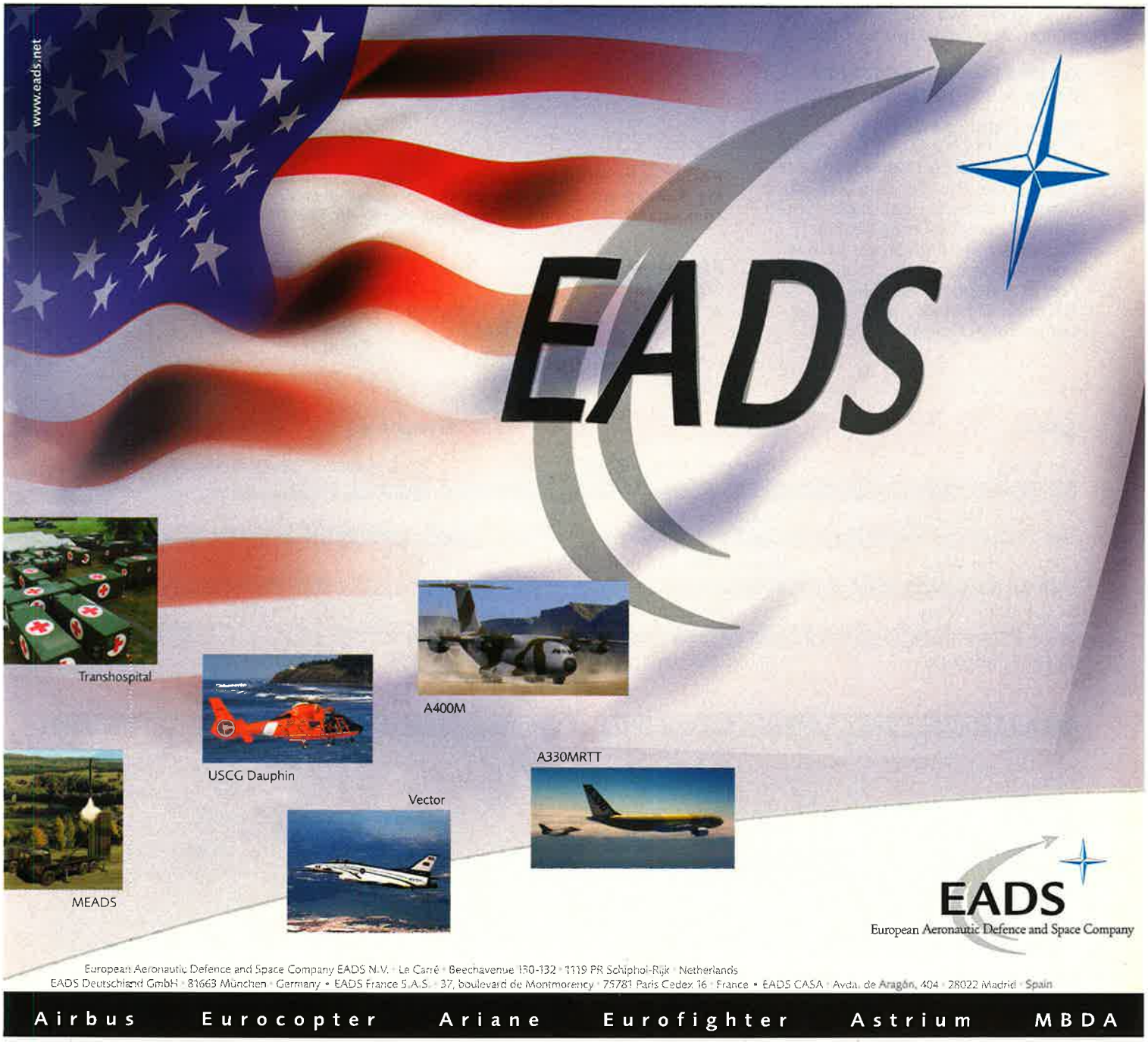
The step beyond



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Pacific Air Forces

Headquarters Hickam AFB, Hawaii

Established July 1, 1957

Commander Gen. William J. Begert

MISSIONS

Plan, conduct, and coordinate offensive and defensive air operations in the Asian and Pacific Theaters

Organize, train, equip, and maintain resources to conduct air operations

FORCE STRUCTURE

Four Numbered Air Forces: **5th,** Yokota AB, Japan; **7th,** Osan AB, South Korea; **11th,** Elmendorf AFB, Alaska; **13th,** Andersen AFB, Guam

Nine wings (two multimission, four fighter, one airlift, two air base)

OPERATIONAL ACTIVITY

Flying hours: 10,109 per month

Major training exercises

Cobra Gold (Thailand); Commando Sling (Singapore); Cope North (Japan); Cope Thunder (Alaska); Cope Tiger (Thailand); Foal Eagle (South Korea); Positive Force (Pacific); Reception Staging Onward Movement and Integration (South Korea); Tandem Thrust (Guam, Northern Marianas); Ulchi Focus Lens (South Korea)

USAF photo by MSgt. Marvin Krause

PACAF units in Japan work closely with host country forces. The backseater in the Kadena Air Base F-15 in the foreground is Lt. Gen. Katsuhiko Iwasaki, commander, Air Defense Command, Japan Air Self Defense Force.

PERSONNEL

(as of Sept. 30, 2001)

Active duty		31,559
Officers	3,990	
Enlisted	27,569	
Reserve components		4,671
ANG	4,317	
AFRC	354	
Civilian		8,883
Total		**45,113**

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 Air Base Wing	Hickam AFB, Hawaii	
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 Air Base 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-9A, C-21A, C-130E/H

PACIFIC AIR FORCES, HICKAM AFB, HAWAII

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

Commander
Lt. Gen. Thomas C. Waskow

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-9A, C-21A, C-130E/H)

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

Commander
Lt. Gen. Lance L. Smith

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. Norton A. Schwartz

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, 2001)

Fighter/Attack (A/OA-10, F-15, F-16)	264
Helicopter (HH-60)	8
Recon/BM/C^3I (E-3)	2
Tanker (KC-135)	12
Transport (C-9, C-12, C-21, C-130)	39

USAF photo by SSgt. Johnny Saldiver

Airmen from the 25th Fighter Squadron, 51st Fighter Wing, prepare an A-10 for departure from Osan AB, South Korea.

13th AIR FORCE (PACAF), ANDERSEN AFB, GUAM

Commander
Maj. Gen. Theodore W. Lay II

36th Air Base Wing
Andersen AFB, Guam

497th Fighter Training Squadron
Paya Lebar Airfield, Singapore[a]

[a]Base owned by Singapore government.

US Air Forces in Europe

Headquarters Ramstein AB, Germany

Established Aug. 7, 1945

Commander Gen. Gregory S. Martin

MISSIONS

Provide the joint force commander rapidly deployable expeditionary aerospace forces

COROLLARY MISSIONS

Plan, conduct, coordinate, and support aerospace 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

Two Numbered Air Forces: **3rd,** RAF Mildenhall, UK; **16th,** Aviano AB, Italy
Six wings (one multimission, one air refueling, one airlift, and three fighter)

OPERATIONAL ACTIVITY

Flying hours: 7,500 per month

Major operations
Enduring Freedom (Afghanistan); Focus Relief (Sierra Leone); Joint Forge (Bosnia); Joint Guardian (Kosovo); Northern/Southern Watch (Iraq)

USAF photo by SSgt. Justin D. Pyle

USAFE's Ramstein AB, Germany, has among its several missions intratheater aeromedical evacuation as well as CONUS staging and medevac. Landstuhl Regional Medical Center is located a few miles from the base.

US AIR FORCES IN EUROPE, RAMSTEIN AB, GERMANY

Commander
Gen. Gregory S. Martin

3rd Air Force
RAF Mildenhall, UK
Maj. Gen. Michael W. Wooley

16th Air Force
Aviano AB, Italy
Lt. Gen. Ronald E. Keys

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

Allied Command Europe (ACE)

Allied Forces Southern Europe (AFSOUTH)
Naples, Italy

Allied Forces North Europe (AFNORTH)
Brunssum, Netherlands

Allied Air Forces Southern Europe (AIRSOUTH)
Naples, Italy

Allied Air Forces North Europe (AIRNORTH)
Ramstein AB, Germany

5th Combined Air Operations Center
Vicenza, Italy

6th Combined Air Operations Center
Eskisehir, Turkey

Interim Deployable CAOC
Ramstein AB, Germany

Major training exercises
African Eagle; Anatolian Eagle; Baltops; Buckeye One; Clean Hunter; Combined Endeavor; Cooperative Key; Medflag; Midget Thrust; Millennium Falcon; Sentry White Eagle; Sharp Eagle; Tactical Fighter Weaponry; Trailblazer; Union Flash; Veneto Rescue; Victory Strike

PERSONNEL

(as of Sept. 30, 2001)

Active duty		26,332
Officers	3,439	
Enlisted	22,893	
Reserve components		388
ANG	198	
AFRC	190	
Civilian		5,022
Total		**31,742**

EQUIPMENT

(PAI as of Sept. 30, 2001)

Fighter/Attack (A/OA-10, F-15, F-16)	173
Tanker (KC-135)	15
Transport (C-9, C-20, C-21, C-130)	36

USAF photo

At Incirlik AB, Turkey, SSgt. Jeff Lease from Misawa AB, Japan, and SrA. Ben Ramaekers from Kadena AB, Japan, unload Sidewinder missiles. They are preparing an F-16 from Aviano AB, Italy, for a Northern Watch mission over Iraq.

UNIT	BASE	WEAPONS
31st Fighter Wing	Aviano AB, Italy	F-16C/D
39th Wing	Incirlik AB, Turkey	(Tactical range and contingency support, rotational aircraft)
48th Fighter Wing	RAF Lakenheath, UK	F-15C/D, F-15E
52nd Fighter Wing	Spangdahlem AB, Germany	A/OA-10, F-16C/D
86th Airlift Wing	Ramstein AB, Germany	C-9, C-20, C-21, C-130E
100th Air Refueling Wing	RAF Mildenhall, UK	KC-135R

3rd AIR FORCE (USAFE), RAF MILDENHALL, UK

Commander
Maj. Gen. Michael W. Wooley

48th Fighter Wing
RAF Lakenheath, UK
(F-15C/D, F-15E)

52nd Fighter Wing
Spangdahlem AB, Germany
(A/OA-10, F-16C/D)

86th Airlift Wing
Ramstein AB, Germany
(C-9, C-20, C-21, C-130E)

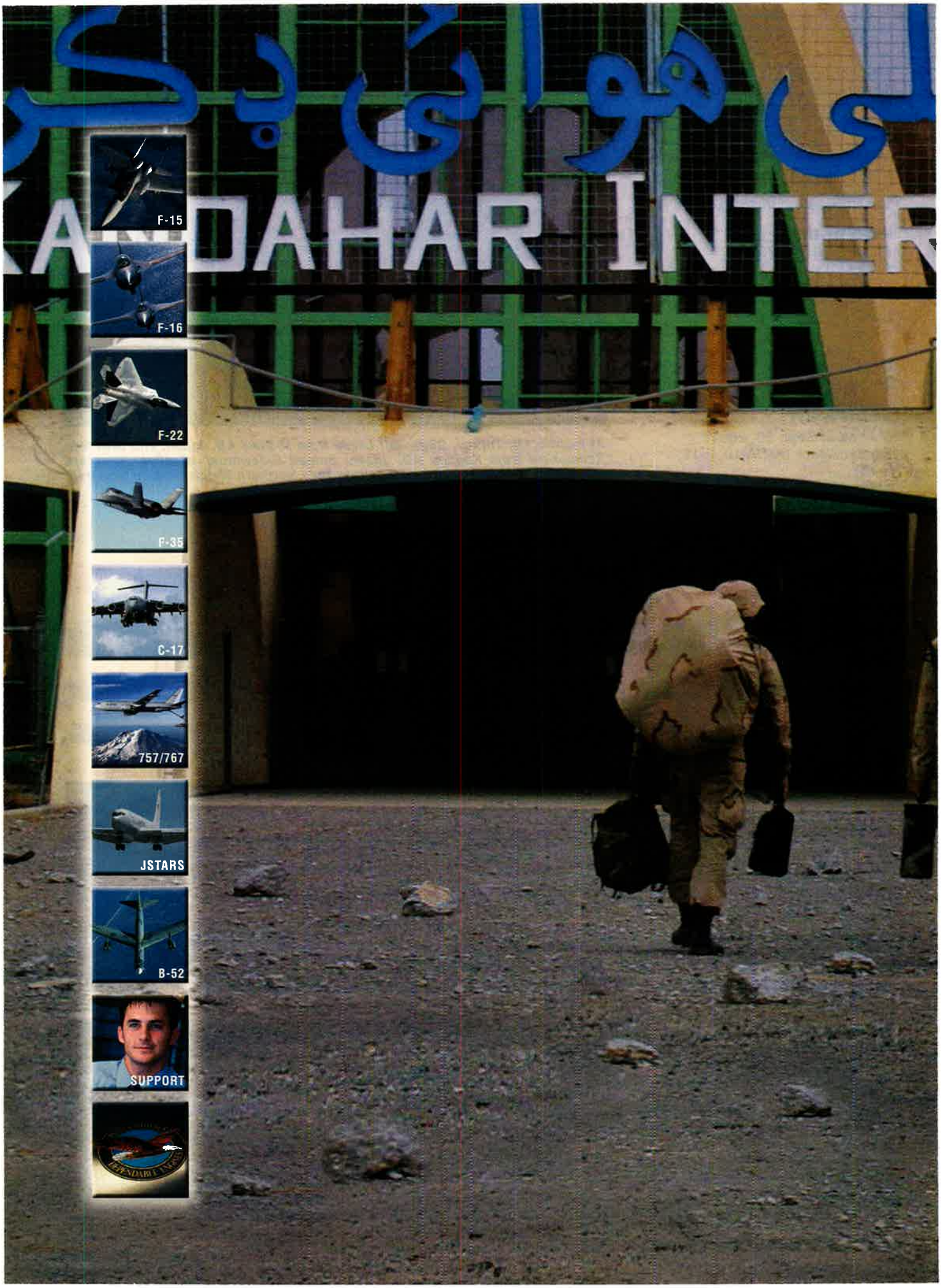
100th Air Refueling Wing
RAF Mildenhall, UK
(KC-135R)

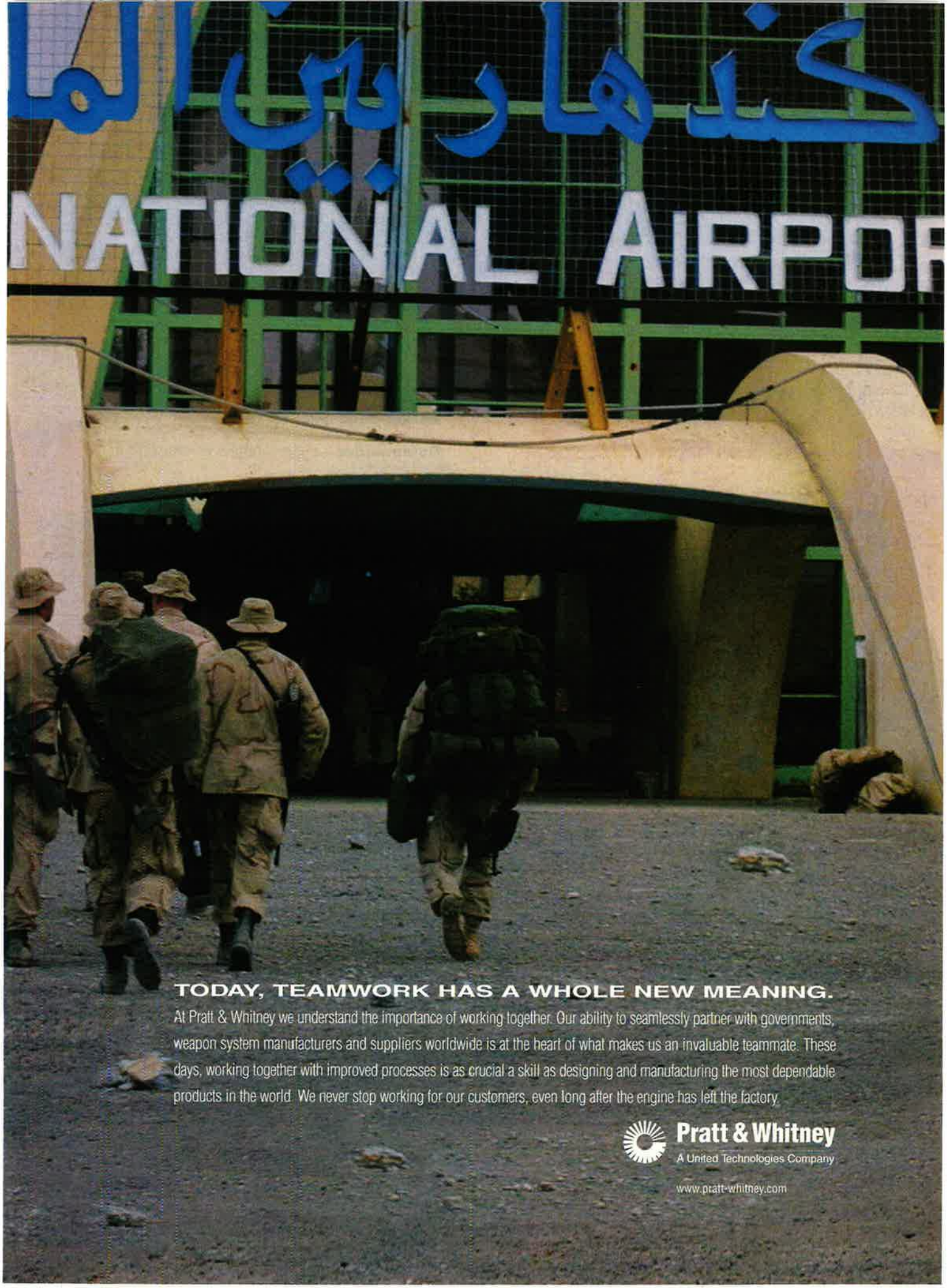
16th AIR FORCE (USAFE), AVIANO AB, ITALY

Commander
Lt. Gen. Ronald E. Keys

31st Fighter Wing
Aviano AB, Italy
(F-16C/D)

39th Wing
Incirlik AB, Turkey
(Tactical range and contingency support, rotational aircraft)


KANDAHAR INTER
F-15
F-16
F-22
F-35
C-17
757/767
JSTARS
B-52
SUPPORT



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Air Reserve Components

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.

AFRC Air Force Reserve Command

Headquarters Robins AFB, Ga.

Established Feb. 17, 1997

Commander Lt. Gen. James E. Sherrard III

MISSIONS

Support the active duty force
Serve in such missions as fighter, bomber, airlift, aerial refueling, rescue, special operations, aeromedical evacuation, aerial fire fighting, weather reconnaissance, space operations, airborne air control, flying training, and flight testing
Provide support and disaster relief in the US
Support national counterdrug efforts

FORCE STRUCTURE

Air Reserve Personnel Center, Denver
Three Numbered Air Forces: **4th,** March ARB, Calif.; **10th,** NAS Fort Worth JRB, Tex.; **22nd,** Dobbins ARB, Ga.
35 flying wings
Eight groups (one air refueling, one air control, one flying training, one rescue, one space, and three regional support)

OPERATIONAL ACTIVITY

Enduring Freedom (Afghanistan); Noble Eagle (US); Northern/Southern Watch (Iraq)

USAF photo by MSgt. Dave Nolan

Crew chief SrA. Gaylon Hoebelheinrich prepares to launch an AFRC F-16 for a Southern Watch mission over Iraq. AFRC personnel and equipment help USAF conduct operations around the clock, around the world.

PERSONNEL

(as of Sept. 30, 2001)

Total AFRC (paid)*		74,869
Officers	17,209	
Enlisted	57,660	
Civilians (non–ART)		4,559
Total		**79,428**

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

EQUIPMENT

(PAI as of Sept. 30, 2001)

Bomber (B-52)	8
Fighter/Attack (A/OA-10, F-16)	104
Helicopter (HH-60)	21
Recon/BM/C^{3}I (WC-130)	4
SOF (MC-130)	12
Tanker (HC-130, KC-135)	73
Transport (C-5, C-130, C-141)	168

AIR FORCE RESERVE COMMAND, ROBINS AFB, GA.

Commander
Lt. Gen. James E. Sherrard III

4th Air Force
March ARB, Calif.

10th Air Force[c]
NAS Fort Worth JRB, Tex.

22nd Air Force
Dobbins ARB, Ga.

Air Reserve Personnel Center
Col. Laura C. Counts
Denver

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

Commander
Maj. Gen. James P. Czekanski

349th Air Mobility Wing
Travis AFB, Calif.
(C-5A/B, KC-10[a])

446th Airlift Wing
McChord AFB, Wash.
(C-17[a], C-141B)

927th Air Refueling Wing
Selfridge ANGB, Mich.
(KC-135E)

433rd Airlift Wing
Kelly Field, Tex.
(C-5A)

452nd Air Mobility Wing
March ARB, Calif.
(C-141C, KC-135R)

932nd Airlift Wing
Scott AFB, Ill.
(C-9[a])

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)

445th Airlift Wing
Wright–Patterson AFB, Ohio
(C-141C)

916th Air Refueling Wing
Seymour Johnson AFB, S.C.
(KC-135R)

931st Air Refueling Group
McConnell AFB, Kan.
(KC-135R[a])

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

Commander
Maj. Gen. David E. Tanzi

301st Fighter Wing[c]
NAS Fort Worth JRB, Tex.
(F-16C/D)

919th Special Ops Wing
Duke Field, Fla.
(MC-130E/P)[b]

310th Space Group
Schriever AFB, Colo.

419th Fighter Wing
Hill AFB, Utah
(F-16C/D)

926th Fighter Wing[c]
NAS New Orleans JRB
(OA-10A)

340th Flying Training Group
Randolph AFB, Tex.
(AT/T-38, T-1, T-37)[a]

442nd Fighter Wing
Whiteman AFB, Mo.
(OA-10A)

939th Rescue Wing
Portland Arpt., Ore.
(HC-130N/P, HH-60G)

513th Air Control Group
Tinker AFB, Okla.
(E-3[a])

482nd Fighter Wing
Homestead ARB, Fla.
(F-16C/D)

Det. 1
Shaw AFB, S.C.
(F-16C/D)[a]

917th Wing
Barksdale AFB, La.
(B-52H, OA-10A)

944th Fighter Wing
Luke AFB, Ariz.
(F-16C/D)[b]

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

Commander
Maj. Gen. James D. Bankers

94th Airlift Wing
Dobbins ARB, Ga.
(C-130H)

439th Airlift Wing
Westover ARB, Mass.
(C-5A)

514th Air Mobility Wing
McGuire AFB, N.J.
(C-141B, KC-10A)[a]

913th Airlift Wing
Willow Grove ARS, Pa.
(C-130E)

302nd Airlift Wing
Peterson AFB, Colo.
(C-130H)

440th Airlift Wing
General Mitchell Arpt./ARS, Wis. (C-130H)

908th Airlift Wing
Maxwell AFB, Ala.
(C-130H)

914th Airlift Wing
Niagara Falls Arpt./ARS, N.Y.
(C-130H)

315th Airlift Wing
Charleston AFB, S.C.
(C-17A[a])

459th Airlift Wing
Andrews AFB, Md.
(C-141C)

910th Airlift Wing
Youngstown–Warren Regional Airport/ARS, Ohio
(C-130H)

934th Airlift Wing
Minneapolis–St. Paul Arpt./ARS, Minn. (C-130E)

403rd Wing
Keesler AFB, Miss.
(C-130J, WC-130H/J)

512th Airlift Wing
Dover AFB, Del.
(C-5A/B[a])

911th Airlift Wing
Pittsburgh Arpt./ARS
(C-130H)

[a]Associate aircraft.
[b]AFRC--owned and associate aircraft.
[c]Tenant unit on naval base.

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

Air National Guard

Headquarters Washington, D.C.

Established Sept. 18, 1947

Director Brig. Gen. David Brubaker (acting)

MISSIONS

Provide trained units and individuals in support of national military objectives, as a full partner in the Total Air Force

Support state governors by providing equipment and trained individuals to help preserve peace, order, and public safety

FORCE STRUCTURE

One NAF: **1st,** Tyndall AFB, Fla.
91 flying wings
Two space squadrons (one space warning and one space operations)

OPERATIONAL ACTIVITY

Enduring Freedom (Afghanistan); Noble Eagle (US); Northern/Southern Watch (Iraq)

PERSONNEL

(as of Sept. 30, 2001)

Total ANG military*		108,486
Officers	13,425	
Enlisted	95,061	
Civilian		1,241
Total		**109,727**

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

EQUIPMENT

(PAI as of Sept. 30, 2001)

Bomber (B-1)	16
Fighter/Attack (A/OA-10, F-15, F-16)	650
Helicopter (HH-60)	15
Recon/BM/C^{3}I (EC-130)	3
Special Ops (MC-130)	4
Tanker (HC-130, KC-135)	211
Transport (C-5, C-21, C-22, C-26, C-38, C-130, C-141)	259

USAF photo by Lt. Col. William Ramsay

An ANG F-15 from the 102nd Fighter Wing, Otis ANGB, Mass., patrols the sky over New York City as part of Noble Eagle.

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

Commander
Maj. Gen. Larry K. Arnold

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, 2002)

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.
B-1B	
116th Bomb Wing	Robins AFB, Ga.
184th Bomb Wing	McConnell AFB, Kan.
F-15	
131st Fighter Wing	Lambert–St. Louis Arpt., Mo.
159th Fighter Wing	NAS New Orleans JRB[b]
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.
119th Fighter Wing	Hector Arpt., N.D.
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	Capital Arpt., Ill.
185th Fighter Wing	Sioux Gateway Arpt., Iowa
187th Fighter Wing	Dannelly Field, 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.
HC-130/HH-60	
106th Rescue Wing	Francis S. Gabreski Arpt., N.Y.
MC-130/HH-60	
129th Rescue Wing	Moffett Federal Airfield, Calif.[c]

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.

Air Mobility Command

C-5A	
105th Airlift Wing	Stewart Arpt., N.Y.
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 Fort Worth JRB, Tex.[b]
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.
156th Airlift Wing	Luis Munoz Marin Arpt., Puerto Rico
165th Airlift Wing	Savannah 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.
C-141C	
164th Airlift Wing	Memphis Arpt., Tenn.
172nd Airlift Wing	Jackson Arpt., Miss.
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 Arpt., Ohio
126th Air Refueling Wing	Scott AFB, Ill.
128th Air Refueling Wing	General Mitchell Arpt./ARS, Wis.
134th Air Refueling Wing	McGhee Tyson ANGB, 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
186th Air Refueling Wing	Key Field, Miss.
190th Air Refueling Wing	Forbes Field, Kan.

Pacific Air Forces

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

[a] Also flies C-130s.
[b] Naval base.
[c] NASA installation.
[d] Includes 210th Rescue Squadron with HC-130 and HH-60G aircraft.
[e] Includes 203rd Air Refueling Squadron with KC-135 aircraft.

USAF Almanac

Field Operating Agencies

A Field Operating Agency is a subdivision of the Air Force that carries out field activities under the operational control of an Hq. USAF functional manager. Though the FOAs have the same administrative and organizational responsibilities as the major commands, their missions remain separate from those of the major commands.

Air Force Agency for Modeling and Simulation

Hq.: Orlando, Fla.
Estab.: June 3, 1996
Cmdr.: Col. Grant F. Herring

MISSION, PURPOSE, OPERATIONS

Support development and use of the Joint Synthetic Battlespace for training, analysis, acquisition, test and evaluation, and operations; corporate USAF modeling and simulation operations
Implement USAF, joint, and DOD modeling and simulation policies and standards
Manage, coordinate, and integrate major USAF/joint modeling and simulation programs and initiatives
Promote and support technology improvements

STRUCTURE

Two divisions
Two operating locations

PERSONNEL

Active duty		20
Officers	17	
Enlisted	3	
Civilians		12
Total		**32**

Air Force Audit Agency

Hq.: Washington, D.C.
Estab.: July 1, 1948
Dir.: James R. Speer

MISSION, PURPOSE, OPERATIONS

Provide all levels of Air Force management with independent and quality audit services
Produce audit products that evaluate the efficiency, effectiveness, and economy of Air Force programs and activities

STRUCTURE

Three directorates at Arlington, Va., March ARB, Calif., and Wright–Patterson AFB, Ohio
Three regional offices
19 field offices

PERSONNEL

Civilians	862

The director of AFAA is the auditor general of the Air Force.

Air Force Base Conversion Agency

Hq.: Arlington, Va.
Estab.: Nov. 15, 1991
Dir.: Albert F. Lowas Jr.

MISSION, PURPOSE, OPERATIONS

Execute environmental programs and real and personal property disposal for major Air Force bases in the US being closed or realigned under the authorities of the Base Closure and Realignment Act of 1988 and the Defense Base Closure and Realignment Act of 1990
Assist communities in the conversion of closing and realigning bases from military to civilian use and ensure that property at these Air Force installations is made available for reuse as quickly and efficiently as possible

STRUCTURE

Regional divisions
Base-level operating locations

PERSONNEL

Civilians	226

Air Force Center for Environmental Excellence

Hq.: Brooks AFB, Tex.
Estab.: July 23, 1991
Dir.: Gary M. Erickson

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Four directorates
Three regional environmental offices

PERSONNEL

Active duty		41
Officers	39	
Enlisted	2	
Reserve components		15
ANG	0	
AFRC	15	
Civilians		397
Total		**453**

Air Force Civil Engineer Support Agency

Hq.: Tyndall AFB, Fla.
Estab.: Aug. 1, 1991
Cmdr.: Col. Bruce R. Barthold

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Four directorates

PERSONNEL

Active duty		85
Officers	19	
Enlisted	66	
Reserve components		22
ANG	0	
AFRC	22	
Civilians		109
Total		**216**

Air Force Communications Agency

Hq.: Scott AFB, Ill.
Estab.: June 13, 1996
Cmdr.: Col. Thomas J. Verbeck

MISSION, PURPOSE, OPERATIONS

Serve as center of excellence for command, control, communications, computers, and information technology
Provide seamless connectivity for C^2 of air and space forces.
Drive innovative information superiority solutions

Deploy specialized strike teams and network assessment capabilities for assured USAF communications and information combat power
Serve as leader for USAF–wide information infrastructure and information protection
Evaluate commercial information technologies for potential USAF use

STRUCTURE

Five functional areas

PERSONNEL

Active duty		189
Officers	66	
Enlisted	123	
Civilians		307
Total		**496**

Air Force Cost Analysis Agency

Hq.: Arlington, Va.
Estab.: Aug. 1, 1992
Exec. Dir.: Joseph T. Kammerer

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

PERSONNEL

Active duty		19
Officers	17	
Enlisted	2	
Civilians		32
Total		**51**

Air Force Flight Standards Agency

Hq.: Andrews AFB, Md.
Estab.: Oct. 1, 1991
Cmdr.: Col. Scott L. Grunwald

MISSION, PURPOSE, OPERATIONS

Develop, standardize, evaluate, and certify USAF policy, procedures, and equipment for global flight operations and centrally manage the Air Force Air Traffic Control and Landing Systems
Perform worldwide flight inspection of airfields and flight instrument/navigation systems during combat, contingencies, and JCS exercises
Represent USAF in FAA airspace management and ATC issues; DOD in international airspace and ATC issues
Provide procedures for ATC, airfield, operational evaluation of ATC systems, airspace management, and Terminal Instrument Procedures

STRUCTURE

Two detachments at Oklahoma City and Washington, D.C.
Three directorates

PERSONNEL

Active duty		116
Officers	54	
Enlisted	62	
Reserve components		4
ANG	0	
AFRC	4	
Civilians		34
Total		**154**

Air Force Frequency Management Agency

Hq.: Alexandria, Va.
Estab.: Oct. 1, 1991
Cmdr.: Col. Steven L. Woolf

MISSION, PURPOSE, OPERATIONS

Obtain radio frequency spectrum access for Air Force and selected DOD activities in support of national policy objectives, systems development, and global operations
Coordinate Air Force radio frequency spectrum policy and guidance. Responsible for USAF representation in spectrum negotiations with civil, military, national, and international regulatory organizations
Provide curriculum oversight for the Interservice Radio Frequency Management School and Joint Task Force Spectrum Managers Course

STRUCTURE

Two directorates
Technical director

PERSONNEL

Active duty		9
Officers	3	
Enlisted	6	
Civilians		19
Total		**28**

Photo by Paul Kennedy

The Air Force Historical Research Agency at Maxwell AFB, Ala., determines the lineage and honors of USAF organizations.

Air Force Historical Research Agency

Hq.: Maxwell AFB, Ala.
Estab.: May 25, 1979
Cmdr.: Col. Dieter Barnes

MISSION, PURPOSE, OPERATIONS

Collect, preserve, and manage USAF historical document collection and oral history program
Answer requests for historical information
Operate research facilities; a USAF–wide automated historical data system
Determine the lineage and honors of Air Force organizations
Maintain official emblem records of Air Force organizations
Verify Air Force aerial victory credits
Prepare historical data, analyses, and manuscripts

STRUCTURE

Two divisions

PERSONNEL

Active duty		5
Officers	1	
Enlisted	4	
Reserve components		17
ANG	0	
AFRC	17	
Civilians		59
Total		**81**

Air Force History Support Office

Hq.: Washington, D.C.
Estab.: Sept. 30, 1994
Cmdr.: Col. Carol B. Sikes

MISSION, PURPOSE, OPERATIONS

Research, write, and publish books and other studies on the history of the Air Force
Provide historical support to USAF, DOD, and other government agencies
Support scholars with research and teaching materials
Record and disseminate USAF history to enable decision-makers and planners to formulate strategy, plans, and doctrine; educate USAF students at professional military institutions; inform the public about the role of USAF and airpower in national security

STRUCTURE

Two divisions

PERSONNEL

Active duty		5
Officers	2	
Enlisted	3	
Reserve components		3
ANG	0	
AFRC	3	
Civilians		25
Total		**33**

Air Force Inspection Agency

Hq.: Kirtland AFB, N.M.
Estab.: Aug. 1, 1991
Cmdr.: Col. J. Worth Carter

MISSION, PURPOSE, OPERATIONS

Provide USAF leadership with independent assessments to improve USAF operations and support
Serve as single comprehensive inspection agency of USAF medical organizations
Recommend improvements to existing processes, practices, and programs for fulfilling peacetime, contingency, and wartime missions
Conduct special reviews and inquiries
Publish *TIG Brief* magazine

STRUCTURE

Four directorates

PERSONNEL

Active duty		103
Officers	79	
Enlisted	24	
Reserve components		2
ANG	1	
AFRC	1	
Civilians		20
Total		**125**

Air Force Legal Services Agency

Hq.: Bolling AFB, D.C.
Estab.: Sept. 1, 1991
Cmdr.: Brig. Gen. (sel.) Michael Madrid

MISSION, PURPOSE, OPERATIONS

Provide commanders and personnel with specialized legal services: administering military justice to protect individual rights and ensure good order and discipline; preserving command freedom of action through robust defense of USAF interests in civil litigation; training and advising the headquarters and field in military justice and civil law matters; providing programs to benefit the Air Force family; and supporting legal services worldwide with state-of-the-art, specialized information technology

STRUCTURE

Three directorates

PERSONNEL

Active duty		368
Officers	256	
Enlisted	112	
Civilians		113
Total		**481**

Air Force Logistics Management Agency

Hq.: Maxwell AFB, Gunter Annex, Ala.
Estab.: Sept. 30, 1975
Cmdr.: Col. Ronne G. Mercer

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

Seven divisions

PERSONNEL

Active duty		54
Officers	36	
Enlisted	18	
Civilians		20
Total		**74**

Air Force Manpower and Innovation Agency

Hq.: Randolph AFB, Tex.
Estab.: Sept. 1, 1999
Cmdr.: Col. Ronnie D. Sullivan

MISSION, PURPOSE, OPERATIONS

Determine current and future resource requirements, through manpower studies, to improve mission performance of USAF organizations
Research and develop innovative management concepts and best practices; studies to identify optimal staffing, resource allocation, and outsourcing and privatization options
Serve as USAF focal point for emerging government and industry manpower/quality issues
Develop and manage USAF–level manpower training architecture

STRUCTURE

Two squadrons and two divisions

PERSONNEL

Active duty		103
Officers	29	
Enlisted	74	
Civilians		80
Total		**183**

Air Force Medical Operations Agency

Hq.: Bolling AFB, D.C.
Estab.: July 1, 1992
Cmdr.: Brig. Gen. Gary H. Murray

MISSION, PURPOSE, OPERATIONS

Develop and execute policies and programs to improve aerospace medicine and preventive and clinical health care services to enhance the capabilities of the Air Force

STRUCTURE

Nine divisions
Four offices

PERSONNEL

Active duty		95
Officers	73	
Enlisted	22	
Civilians		57
Total		**152**

Air Force Medical Support Agency

Hq.: Brooks AFB, Tex.
Estab.: July 1, 1992
Cmdr.: Col. William J. Germann

MISSION, PURPOSE, OPERATIONS

Improve global performance and capability of the Medical Service in supporting combat forces and maintaining the health of beneficiaries
Serve as the Air Force surgeon general's focal point for policy development, strategies, plans, consultant services, and validated requirements dealing with facilities, supplies, equipment, acquisition, information systems, and resources

STRUCTURE

Three divisions
Two offices

PERSONNEL

Active duty		45
Officers	34	
Enlisted	11	
Civilians		20
Total		**65**

Air Force News Agency

Hq.: San Antonio
Estab.: June 1, 1978
Cmdr.: Col. Anthony J. Epifano

MISSION, PURPOSE, OPERATIONS

Create and deliver timely and credible information products and services
Communicate and broadcast news, information, and entertainment through print and electronic means
Operate all USAF–managed American Forces Radio and Television Service outlets
Produce news and feature stories on soldiers and airmen for release to civilian broadcast, print, and Web media

STRUCTURE

Air Force Broadcasting Service
Army and Air Force Hometown News Service
Air Force News Service

PERSONNEL

Active duty		307
Officers	17	
Enlisted	290	
Reserve components		34
ANG	0	
AFRC	34	
Civilians		91
Total		**432**

Air Force Office of Special Investigations

Hq.: Andrews AFB, Md.
Estab.: Aug. 1, 1948
Cmdr.: Brig. Gen. Leonard E. Patterson

MISSION, PURPOSE, OPERATIONS

Provide professional criminal and counterintelligence investigative services to commanders of all Air Force activities
Exploit counterintelligence activities for force protection
Resolve violent crime affecting USAF
Combat threats to Air Force information systems and technologies
Defeat and deter acquisition fraud
Serve as DOD's executive agent for Defense Cyber Crime Center

STRUCTURE

USAF Special Investigations Academy
Eight regional offices
Eight squadrons
180 detachments and operating locations

PERSONNEL

Active duty		1,426
Officers	374	
Enlisted	1,052	
Reserve components		472
ANG	0	
AFRC	472	
Civilians		478
Total		**2,376**

Air Force Operations Group

Hq.: Washington, D.C.
Estab.: July 26, 1977
Cmdr.: Col. Dave P. Jones

MISSION, PURPOSE, OPERATIONS

Support USAF Chief of Staff and DCS for Air and Space Operations 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, NMCC, Army Operations Center, and other federal agencies

STRUCTURE

Five divisions

PERSONNEL

Active duty		200
Officers	134	
Enlisted	66	
Reserve components		5
ANG	0	
AFRC	5	
Civilians		10
Total		**215**

Air Force Pentagon Communications Agency

Hq.: Washington, D.C.
Estab.: Oct. 1, 1984
Cmdr.: Col. Howard A. Bower

MISSION, PURPOSE, OPERATIONS

Provide effective and timely information systems services and capabilities for Hq. USAF, OSD, and Joint Staff for military operations and missions

STRUCTURE

Eight directorates

PERSONNEL

Active duty		408
Officers	71	
Enlisted	337	
Civilians		231
Total		**639**

USAF photo by MSgt. Jerry King

USAF MSgt. Ron Przysucha (left), a TV news branch chief from the Air Force News Agency, prepares a security forces squadron member for an interview.

Air Force Personnel Center

Hq.: Randolph AFB, Tex.
Estab.: Oct. 1, 1995
Cmdr.: Maj. Gen. Michael C. McMahan

MISSION, PURPOSE, OPERATIONS

Provide personnel operations service

STRUCTURE

Eight divisions

PERSONNEL

Active duty		961
Officers	296	
Enlisted	665	
Reserve components		39
ANG	2	
AFRC	37	
Civilians		1,050
Total		**2,050**

AFPC was formerly the Air Force Military Personnel Center and the Air Force Civilian Personnel Management Center.

Air Force Personnel Operations Agency

Hq.: Washington, D.C.
Estab.: Aug. 15, 1993
Dir.: Brig. Gen. Toreaser A. Steele

MISSION, PURPOSE, OPERATIONS

Execute personnel programs and provide personnel support to Hq. USAF personnel in the Washington, D.C., area
Develop and operate officer, enlisted, and civilian models and databases for management information
Support DCS, Personnel, computer operations

STRUCTURE

Two divisions

PERSONNEL

Active duty		37
Officers	21	
Enlisted	16	
Civilians		11
Total		**48**

Air Force Program Executive Office

Hq.: Washington, D.C.
Estab.: November 1990
Exec.: Marvin R. Sambur

MISSION, PURPOSE, OPERATIONS

Manage and account for the execution of major and selected Air Force acquisition programs

STRUCTURE

Program Executive Officers:
Brig. Gen. Ted F. Bowlds, Airlift, Trainers
Brig. Gen. (sel.) Robert E. Dehnert Jr., C^2 & Combat Support Programs
Brig. Gen. William J. Jabour, Fighter & Bomber Programs
Brig. Gen. John L. Hudson, Joint Strike Fighter
Timothy Beyland, Services Programs
Judy Stokley, Weapons Programs

PERSONNEL

Active duty		31
Officers	30	
Enlisted	1	
Civilians		9
Total		**40**

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 and act for the Secretary of the Air Force in deciding individual cases before the boards and civilian appellate processes
Ensure due process and fair and impartial treatment in all cases

STRUCTURE

Air Force Board for Correction of Military Records
Air Force Civilian Appellate Review Office
Air Force Personnel Council

PERSONNEL

Active duty		10
Officers	5	
Enlisted	5	
Reserve components		4
ANG	1	
AFRC	3	
Civilians		43
Total		**57**

Air Force Safety Center

Hq.: Kirtland AFB, N.M.
Estab.: Jan. 1, 1996
Cmdr.: Maj. Gen. Kenneth W. Hess

MISSION, PURPOSE, OPERATIONS

Manage USAF mishap prevention programs and the Nuclear Surety Program
Develop regulatory guidance
Provide technical assistance in flight, ground, and 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

Five divisions

PERSONNEL

Active duty		65
Officers	48	
Enlisted	17	
Reserve components		2
ANG	0	
AFRC	2	
Civilians		49
Total		**116**

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. Donald T. Knowles

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
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 requirement taskings

STRUCTURE

Four divisions
Force Protection Battlelab
Three detachments at Ft. Leavenworth, Kan., NAS Miramar, Calif., and Charleston NWC, S.C.

PERSONNEL

Active duty		259
Officers	46	
Enlisted	213	
Reserve components		7
ANG	1	
AFRC	6	
Civilians		12
Total		**278**

Air Force Security Police Agency was redesignated Air Force Security Forces Center, a DRU, March 17, 1997; it was redesignated an FOA Oct. 1, 1998.

Air Force Services Agency

Hq.: San Antonio
Estab.: Feb. 5, 1991
Cmdr.: Col. Joseph W. Mazzola

MISSION, PURPOSE, OPERATIONS

Support the bases, major commands, and Air Staff by providing technical assistance, fielding new initiatives, developing procedures, and managing selected central support functions to ensure successful service programs

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		68
Officers	20	
Enlisted	48	
Reserve components		4
ANG	3	
AFRC	1	
Civilians		179
Total		**251**

Air Force Technical Applications Center

Hq.: Patrick AFB, Fla.
Estab.: July 7, 1959
Cmdr.: Col. Roy E. Horton III

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
Operate analytical laboratories that provide national authorities with technical measurements with which to monitor foreign nuclear tests

STRUCTURE
Analysis Center, Patrick AFB, Fla.
Operational sites/detachments in 18 countries

PERSONNEL

Active duty		524
Officers	132	
Enlisted	392	
Total		**524**

EQUIPMENT
25 seismic arrays and 11 single-instrument locations consisting of seismometers and associated data acquisition systems and workstations
Seven hydroacoustic recording locations
More than 100 sensors and 35 satellites, with associated ground systems instrumentation and data-processing equipment
Ground-based equipment to collect nuclear event debris

USAF photo by SSgt. Timothy Cook

MSgt. Dido Moran, 363rd Expeditionary Operation Support Squadron weather superintendent, checks a remote weather receiving system. Air Force Weather personnel provide timely weather information to USAF and Army forces.

Air Force Weather Agency

Hq.: Offutt AFB, Neb.
Estab.: Oct. 15, 1997
Cmdr.: Col. Robert H. Allen

MISSION, PURPOSE, OPERATIONS
Enhance the nation's combat capability by delivering timely, accurate, and reliable weather support worldwide to Air Force and Army forces, unified commands, national programs, and national leaders

STRUCTURE
Air Force Combat Climatology Center, Asheville, N.C.
Air Force Combat Weather Center, Hurlburt Field, Fla.
55th Space Weather Squadron, Schriever AFB, Colo. (with six solar observatories around the world)
One detachment at Tinker AFB, Okla. (with six operating locations)

PERSONNEL

Active duty		553
Officers	117	
Enlisted	436	
Reserve components		7
ANG	0	
AFRC	7	
Civilians		200
Total		**760**

Formerly Air Weather Service, established July 1, 1937.

ANG Readiness Center

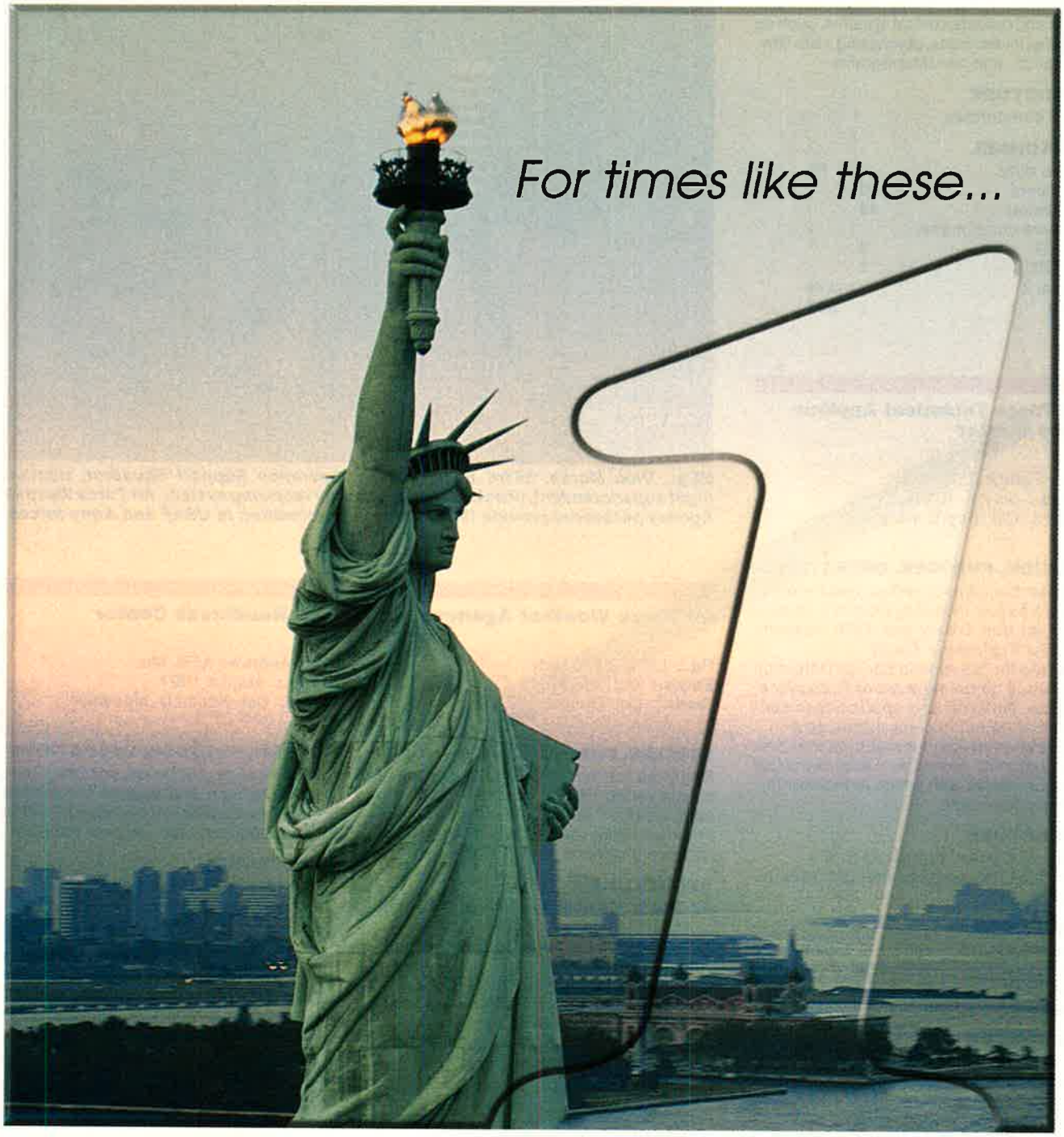
Hq.: Andrews AFB, Md.
Estab.: August 1997
Cmdr.: Col. Naomi D. Manadier

MISSION, PURPOSE, OPERATIONS
Provide policy, guidance, and resources to prepare men and women for combat and serve as a channel of communication for contingencies and national policies

STRUCTURE
201st Mission Support Squadron
13 directorates

PERSONNEL

Active duty		138
Officers	73	
Enlisted	65	
Reserve Components		496
ANG	494	
AFRC	2	
Civilians		435
Total		**1,069**



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USAF Almanac

Direct Reporting Units

A Direct Reporting Unit is a subdivision of the Air Force, 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 Doctrine Center

Hq.: Maxwell AFB, Ala.
Estab.: Feb. 24, 1997
Cmdr.: Maj. Gen. David F. MacGhee Jr.

MISSION, PURPOSE, OPERATIONS

Provide a focal point for air and space doctrine
Develop basic and operational doctrine for USAF Total Force
Advocate doctrinally correct representation of air and space power in service and joint campaign models and exercise scenarios
Collect inputs from exercises and operations for lessons learned
Participate in development and investigation of future operational concepts, technologies, and strategies
Present USAF doctrine to Army officers at various combat arms branch schools

STRUCTURE

Det. 1, Langley AFB, Va.
Six operating locations
Joint and Air Staff Liaison, Pentagon

PERSONNEL

Active duty		63
Officers	55	
Enlisted	8	
Reserve components		9
ANG	0	
AFRC	9	
Civilians		12
Total		**84**

Air Force Operational Test and Evaluation Center

Hq.: Kirtland AFB, N.M.
Estab.: Jan. 1, 1974
Cmdr.: Maj. Gen. William A. Peck Jr.

MISSION, PURPOSE, OPERATIONS

Plan, execute, and report independent OT&Es
Determine operational capabilities and limitations of USAF and joint systems to meet warfighter mission needs
Provide operational effectiveness, suitability, and evaluation expertise from concept development to system employment to support USAF, DOD, and other government agencies

STRUCTURE

Four geographically separate units at Edwards AFB, Calif. (two), Eglin AFB, Fla., and Peterson AFB, Colo.

PERSONNEL

Active duty		497
Officers	323	
Enlisted	174	
Civilians		205
Total		**702**

Air Force Studies and Analyses Agency

Hq.: Washington, D.C.
Estab.: Feb. 5, 1991 (as a FOA)
Dir.: Jacqueline V. Henningsen

MISSION, PURPOSE, OPERATIONS

Perform independent, timely, and objective analyses of key Air Force programs, critical operational and acquisition issues, and resource allocation processes in direct support of senior Air Force decision-makers
Provide operational assessment of requirements, plans, tactics, strategy, and effectiveness of current and future aerospace systems
Ensure effective USAF–wide use of analytic resources, centralized synthesis of analyses and studies, and management of studies and supporting data

STRUCTURE

Senior Analysis Review Group
Four directorates

PERSONNEL

Active duty		64
Officers	54	
Enlisted	10	
Civilians		17
Total		**81**

US Air Force Academy

Hq.: Colorado Springs, Colo.
Estab.: April 1, 1954
Supt.: Lt. Gen. John R. Dallager

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 nine squadrons each, with more than 100 cadets assigned to a squadron. Each squadron consists of members of all four classes

PERSONNEL

Active duty		2,257
Officers	970	
Enlisted	1,287	
Reserve components		26
ANG	1	
AFRC	25	
Civilians		1,835
Total		**4,118**

EQUIPMENT

31 aircraft (TG-9 sailplanes; Cessna 150s; TG-3 and TG-4 gliders; and TG-7A and TG-11A motorized gliders; T-41s; UV-18 jump airplanes)

Cadets complete four years of study for a bachelor of science degree, choosing from 30 different academic majors. Four primary areas of military development are stressed in military art and science, theoretical and applied leadership experiences, aviation science and airmanship programs, and military training.

11th Wing

Hq.: Bolling AFB, D.C.
Estab.: July 15, 1994
Cmdr.: Col. William A. Chambers

MISSION, PURPOSE, OPERATIONS

Provide administrative and ceremonial support to USAF members in the National Capital Region, all 50 states, and more than 100 countries
Support the President, SECAF, and CSAF via the United States Air Force Band and Honor Guard
Provide personnel, operations, comptroller, accounting and finance, and recreation services for wing assets, including the day-to-day operations of Bolling
Manage physical, personal, electronic, and information security within the Pentagon

STRUCTURE

Objective wing

PERSONNEL

Active duty		1,599
Officers	183	
Enlisted	1,416	
Reserve components		28
ANG	0	
AFRC	28	
Civilians		853
Total		**2,480**

Cold War Intercept

In the early days of the Cold War, aircraft such as these Northrop F-89D Scorpion all-weather, twin-jet interceptors flew round-the-clock combat air patrols. These six Air Defense Command fighters, armed with 104 high-explosive, air-to-air rockets, are flying over the Pacific Northwest from their home station at Portland, Ore. The Scorpions were designed to operate at high speeds and high altitudes to locate, intercept, and destroy enemy aircraft.

At right, an F-89D releases a salvo of 2.75-inch folding-fin "Mighty Mouse" rockets from its wingtips.

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USAF Almanac

Guide to Air Force Installations Worldwide

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:** 6,593 acres. **Runways:** 13,440 ft., 9,000-ft. parallel runway, and 3,500-ft. assault strip. **Altitude:** 1,381 ft. **Personnel:** permanent party military, 1,886; DOD civilians, 1,321. **Housing:** single family, officer, 212, enlisted, 758; unaccompanied, UAQ/UEQ, 478; visiting, VOQ, 320, VAQ/VEQ, 272, TLF, 50. **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 Air Base 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:** 13th Air Force (PACAF); Det. 5, 22nd Space Operations Sq. (AFSPC); 613th Contingency Response Sq. (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, 74, VAQ/VEQ, 204, TLF, 18. **Clinic.**

Andrews AFB, Md. 20762-5000; 10 mi. SE of Washington. **Phone:** 301-981-1110; DSN 858-1110. **Majcom:** AMC. **Host:** 89th Airlift Wing. **Mission:** gateway to nation's capital and home of Air Force One. Provides worldwide airlift for the President, vice president, top US officials, and foreign heads of state. Also responsible for Presidential support and base operations; supports all branches of the armed services, several major commands, and federal agencies. **Major tenants:** Air Force Flight Standards Agency; Hq. AFOSI; AFOSI Academy; Air National Guard Readiness Center; 113th Wing (ANG), F-16; 459th AW (AFRC), C-141; 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, 4,400; DOD civilians, 1,202. **Housing:** single family, officer, 383, enlisted, 1,694; leased units, 414 off base; unaccompanied, UAQ/UEQ, 923; visiting, VOQ, 112, VAQ/VEQ, 73, TLF, 68. **Hospital.**

Arnold AFB, Tenn. 37389; approx. 7 mi. SE of Manchester. **Phone:** 931-454-3000; DSN 340-5011. **Majcom:** AFMC. **Host:** Arnold Engineering Development Center. **Mission:** supports acquisition of new aerospace systems by conducting 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, 102; DOD civilians, 254; **Housing:** single family, officer, 14, enlisted, 26; unaccompanied, UAQ/UEQ. 974; visiting, VOQ, 111, VAQ/VEQ 65, TLF, 68. **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) 011-39-0434-66-7111; DSN 632-1110. **Majcom:** USAFE. **Host:** 31st Fighter Wing. **Mission:** maintains two LANTIRN–equipped F-16 fighter squadrons, the 510th and the 555th. **Major tenants:** 16th Air Force (USAFE); Hq. 16th Aerospace Expeditionary Wing. **Geographically Separated Units:** 2nd Expeditionary Air Support Operations Sq., Camp Bondsteel, Kosovo; 16th Ex. Air Support Ops Gp., Sarajevo, Bosnia; 16th Ex. Ops Gp., Istres AB, France; 16th Ex. Support Sq., Rhein–Main AB, Germany; 31st RED HORSE Flt. and 31st Munitions Sq., Camp Darby, Italy; 31st Munitions Support Sq., Ghedi AB, Italy; 99th Ex. Recon. Sq., NAS Sigonella, Italy; 401st Ex. Air Base Gp., Tuzla, Bosnia; 406th Ex. ABG, Taszar AB, Hungary; 496th Air Base Sq., Morón AB, Spain; 620th Ex. ABG, Camp Able Sentry, Macedonia; Det. 1, Ex. Air Control Sq., Jacotenente, Italy. **History:** one of the oldest Italian air bases, dating to 1911. USAF began operations 1954. **Area:** 1,467 acres. **Runway:** 8,596 ft. **Altitude:** 413 ft. **Personnel:** permanent party military, 3,900; DOD civilians, 208. **Housing:** single family, officer, 206 (including 184 govt.-leased), enlisted, 888 (including 380 govt.-leased); unaccompanied, UAQ/UEQ, 680; visiting, VOQ, 8, VAQ/VEQ, 12. **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. 3, 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:** 11,300 ft. **Altitude:** 166 ft. **Personnel:** permanent party military, 5,075; DOD civilians, 1,050. **Housing:** single family, officer, 135, enlisted, 594; visiting, VOQ, 138, VAQ/VEQ, 103, TLF, 24. **Superclinic.**

Beale AFB, Calif. 95903-5000; 13 mi. E of Marysville. **Phone:** 530-634-1110; DSN 368-1110. **Majcom:** ACC. **Host:** 9th Reconnaissance Wing. **Mission:** RC-135 and U-2 operations. **Major tenants:** 940th ARW (AFRC), KC-135; 7th Space Warning Sq. (AFSPC), Pave Paws; 13th and 48th Intelligence Sqs. (ACC). **History:** originally US Army's Camp Beale; transferred to Air Force April 1948; became Air Force base in November 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, 3,442; DOD civilians, 2,099. **Housing:** single family, officer, 6, enlisted, 545; unaccompanied, UOQ, 1,346, UAQ/UEQ, 159; visiting, VOQ, 53, VAQ/VEQ, 328, TLF, 17. **Clinic.**

Bolling AFB, D.C. 20332-5000; 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:** Hq. USAF direct reporting unit with support responsibilities for 40,000 USAF members worldwide. **Major tenants:** Air Force Chief of Chaplains; Air Force Surgeon General; Air Force History Support Office; Air Force Medical Operations Agency; Defense Intelligence Agency; Air Force Legal Services 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.

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Personnel: permanent party military, 1,728; DOD civilians, 816. **Housing:** single family, officer, 281, enlisted, 1,100; unaccompanied, UAQ/UEQ, 371 dorm spaces; visiting, VOQ, 76, VAQ/VEQ, 71, TLF, 100. **Clinic.**

Brooks AFB, Tex. 78235; in SE San Antonio. **Phone:** 210-536-1110; DSN 240-1110. **Majcom:** AFMC. **Host:** 311th Human Systems Wing. **Mission:** force protection, centered around aerospace medicine and the human in the system; assesses and manages health, safety, and environmental risks for USAF and DOD; trains 6,000+ aeromedical personnel annually; manages more than 140 technical acquisition and sustainment programs. **Major tenants:** USAF School of Aerospace Medicine; Human Effectiveness Directorate (Armstrong Research site) of the Air Force Research Laboratory; Air Force Institute for Environment, Safety, and Occupational Health Risk Analysis; Air Force Medical Support Agency; Air Force Center for Environmental Excellence; Medical Systems Implementation and Training Element; Air Force Outreach Program Office. **History:** activated Dec. 8, 1917. Named for Cadet Sidney J. Brooks Jr., killed Nov. 13, 1917, on his commissioning flight. **Area:** 1,310 acres. **Runway:** none. **Altitude:** 600 ft. **Personnel:** permanent party military, 1,412; DOD civilians, 1,368. **Housing:** single family, officer, 36, enlisted, 134; unaccompanied, UAQ/UEQ, 95; visiting, VOQ, 175, TLF, 8. **Clinic.**

Buckley AFB, Colo. 80011-9524; 8 mi. E of Denver. **Phone:** 303-677-9011; DSN 877-9011. **Majcom:** AFSPC. **Host:** 460th Air Base Wing. **Mission:** provides space-based missile warning data, space communications processing and relay; focal point for transition to Space Based Infrared System. **Major tenants:** 2nd SWS, 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 Lt. John H. Buckley, National Guardsman, 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, 3,800; DOD civilians, 3,337. **Housing:** unaccompanied, UAQ/UEQ, 236 dorm rooms. **Clinic.**

Cannon AFB, N.M. 88103-5000; 7 mi. W of Clovis. **Phone:** 505-784-4131; 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:** 87,929 acres. **Runways:** 10,000 ft. and 8,200 ft. **Altitude:** 4,295 ft. **Personnel:** permanent party military, 3,200; DOD civilians, 700. **Housing:** single family, officer, 143, enlisted, 1,579; visiting, VOQ, 6, VAQ/VEQ, 64, TLF, 36. **Ambulatory care clinic.**

Charleston AFB, S.C. 29404-5000; 10 mi. from downtown Charleston. **Phone:** 843-963-1110; DSN 673-1110. **Majcom:** AMC. **Host:** 437th Airlift Wing. **Mission:** C-17 operations. **Major tenant:** 315th AW (AFRC Assoc.), C-141. **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, 3,806; DOD civilians, 1,318. **Housing:** single family, officer, 151, enlisted, 1,314; unaccompanied, UAQ/UEQ, 655 dorm spaces; visiting, VOQ, 68, VAQ/VEQ, 40, TLF, 38. **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. **History:** activated 1941 for pilot training. **Area:** 6,017 acres. **Runways:** 12,000 ft., 8,000 ft., and 6,300 ft. **Altitude:** 219 ft. **Personnel:** permanent party military, 1,347; DOD civilians, 452. **Housing:** single family, officer, 167, enlisted, 404; unaccompanied, UOQ, 180, UAQ/UEQ, 160; visiting, VOQ, 18, VAQ/VEQ, 29, 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 training and operations; and EC-130E and EC-130H operations. **Major tenants:** 12th Air Force (ACC); Aerospace Maintenance and Regeneration Center (AFMC), storage location for excess DOD aerospace vehicles; 305th Rescue Sq., HH-60; US Customs. **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, 5,988; DOD civilians, 1,524. **Housing:** single family, officer, 127, enlisted, 1,129; unaccompanied, UAQ/UEQ, 744 dorm spaces; visiting, VOQ, 181, VAQ/VEQ, 65, TLF, 50. **Clinic.**

Dover AFB, Del. 19902-7219; 3 mi. SE of Dover. **Phone:** 302-677-3000; DSN 445-3000. **Majcom:** AMC. **Host:** 436th AW. **Mission:** provides 25 percent of nation's intertheater airlift capability; only combat-ready C-5 wing capable of employing airdrop and special operations tactics for worldwide airlift; 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:** 3,908 acres. **Runway:** 12,900 ft. **Altitude:** 28 ft. **Personnel:** permanent party military, 3,580; DOD civilians, 1,620. **Housing:** single family, officer, 108, enlisted, 1,440; unaccompanied, UAQ/UEQ, 726 dorm spaces; visiting, VOQ, 140, VAQ/VEQ, 139, TLF, 24. **Clinic.**

Dyess AFB, Tex. 79607-1980; WSW border of Abilene. **Phone:** 915-696-1110; DSN 461-1110. **Majcom:** ACC. **Host:** 7th BW. **Mission:** B-1B 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, 4,630; DOD civilians, 930. **Housing:** single family, 1,135 (plus 402 privatized units under construction); unaccompanied, UOQ/UAQ/UEQ, 1,360. **Clinic.**

Edwards AFB, Calif. 93524; adjacent to Rosamond. **Phone:** 661-277-1110; DSN 527-1110. **Majcom:** AFMC. **Host:** Air Force Flight Test Center. **Mission:** conducts developmental and follow-on testing and evaluation of manned and unmanned aircraft and related avionics, and flight-control and weapon systems. AFFTC also operates the USAF Test Pilot School, which trains test pilots, flight-test engineers, and flight-test navigators. Base is a secondary landing site for space shuttle missions. **Major tenants:** AFRL's Propulsion Directorate (AFMC); Dryden Flight Research Center (NASA); USMC Air Sqs. HMM 764 and HMM 769. **History:** activities began September 1933. Originally Muroc AAF; 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, 3,623; DOD civilians, 3,675. **Housing:** single family, officer, 310, enlisted, 1,360; unaccompanied, UOQ, 62, UAQ/UEQ, 758; visiting, VOQ, 46, VAQ/VEQ, 110, TLF, 50. **Clinic.**

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:** Air Armament Center. **Mission:** responsible for development, acquisition, testing, deployment, and sustainment of all air-delivered weapons. **Major tenants:** AFRL's Munitions Directorate (AFMC); 33rd FW (ACC), F-15; 53rd Wing (ACC), A-10, F-15, F-16, F-117, HH-60; 919th Special Operations Wing (AFRC) at Duke Field, MC-130; Air Force Armament Museum; Army 6th Ranger Battalion; Naval Explosive Ordnance Disposal School. **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, 6,982; DOD civilians, 3,341 (excluding Hurlburt Field). **Housing:** single family, officer, 218, enlisted, 2,116; unaccompanied, UAQ/UEQ, 1,225; visiting, VOQ, 188, VAQ/VEQ, 153, TLF, 35. **Hospital.**

Eielson AFB, Alaska 99702-5000; 26 mi. SE of Fairbanks. **Phone:** 907-377-1110; DSN 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. **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, 2,879; DOD civilians, 826. **Housing:** single family, officer, 181, enlisted, 1,295; unaccompanied, UOQ, 16, UAQ/UEQ, 8, VOQ 218, VAQ/VEQ, 350, TLF, 53. **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-1B operations. **Major tenants:** Det. 2, 79th Test and Evaluation Sq. (AFMC); Det. 4, 57th Wing (ACC); Det. 8, 372nd Training Sq. (AETC); South Dakota Air and Space Museum. **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:** 13,497 ft. **Altitude:** 3,276 ft. **Personnel:** permanent party military, 3,300; DOD civilians, 440. **Housing:** single family, officer, 208, enlisted, 1,828; unaccompanied, UAQ/UEQ, 742 dorm spaces; visiting, VOQ, 126, VAQ/VEQ, 57, TLF, 30. **Clinic.**

Elmendorf AFB, Alaska 99506-5000; bordering Anchorage. **Phone:** 907-552-1110; DSN 317-552-1110. **Majcom:** PACAF. **Host:** 3rd Wing. **Mission:** F-15C/D, F-15E, C-130, C-12, and E-3 Airborne Warning and Control System operations. Hub for air traffic to and from Far East. **Major tenants:** Alaskan Command; 11th Air Force (PACAF); Alaskan NORAD Region; 11th Rescue Coordination Center (ANG). **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, 6,526; DOD civilians, 1,043. **Housing:** single family, officer, 174, enlisted, 812; unaccompanied, UOQ/UAQ/UEQ, 794; visiting, VOQ, 196, VAQ/VEQ, 203, TLF, 100. **Hospital.**

Fairchild AFB, Wash. 99011-5000; 12 mi. WSW of Spokane. **Phone:** 509-247-1110; DSN 657-1110. **Majcom:** AMC. **Host:** 92nd ARW. **Mission:** KC-135R and KC-135T operations. **Major tenants:** 336th Training Gp. (USAF Survival School, AETC); 141st ARW (ANG), KC-135E. **History:** activated January 1942. Named for Gen. Muir S. Fairchild, USAF vice chief of staff at his death in 1950. **Area:** 4,529 acres. **Runway:** 13,901 ft. **Altitude:** 2,426 ft. **Personnel:** permanent party military, 3,128; DOD civilians, 1,000. **Housing:** single family, officer, 142, enlisted, 1,217; unaccompanied, UAQ/UEQ, 756; visiting, VOQ, 41, VAQ/VEQ, 47, TLF, 18. **Clinic.**

F.E. Warren AFB, Wyo. 82005-5000; adjacent to Cheyenne. **Phone:** 307-773-1110; DSN 481-1110. **Majcom:** AFSPC. **Host:** 90th Space Wing. **Mission:** controls, maintains, and operates 50 Peacekeeper and 150 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, 3,670; DOD civilians, 500. **Housing:** single family, officer, 114, enlisted, 717; unaccompanied, UAQ/UEQ, 774; visiting, VOQ/VAQ/VEQ, 40, TLF, 35. **Clinic.**

Goodfellow AFB, Tex. 76908-4410; SE of San Angelo. **Phone:** 915-654-3231; 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 (US Army); Navy Technical Training Center det.; Marine Corps 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:** 1,135 acres. **Runway:** none. **Altitude:** 1,877 ft. **Personnel:** permanent party military, 1,450; DOD civilians, 573. **Housing:** single family, officer, 2, enlisted, 296; unaccompanied, UOQ, 144, UAQ/UEQ, 1,298; visiting, VOQ, 117, VAQ/VEQ, 410, TLF, 29. **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, 2,809; DOD civilians, 341. **Housing:** single family, officer, 244, enlisted, 1,147; unaccompanied, UOQ, 18, UAQ/UEQ, 613; visiting, VOQ, 31, VAQ/VEQ, 34, TLF, 24. **Hospital.**

Hanscom AFB, Mass. 01731-5000; 17 mi. NW of Boston. **Phone:** 781-377-4441; DSN 478-5980. **Majcom:** AFMC. **Host:** Electronic Systems Center (AFMC). **Mission:** 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, 1,413; DOD civilians, 1,590. **Housing:** single family, officer, 388, enlisted, 472; unaccompanied, UOQ, 40; visiting, VOQ 107, VAQ/VEQ, 24, TLF, 44. **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 Air Base Wing. **Mission:** provides base and logistical support for 140 associate and tenant units in Hawaii and other Pacific–region locations; airlift for Commander in Chief, Pacific Command, and commander, PACAF; and maintenance and refueling support for aircraft transiting between the US mainland and the western Pacific. **Major tenants:** PACAF; 154th Wing (ANG), C-130, F-15, KC-135; Central Identification Lab (Army). **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.; Johnson Atoll runway, 9,000 ft. **Altitude:** 13 ft. **Personnel:** permanent party military, 4,579; DOD civilians, 1,316. **Housing:** single family, officer, 471, enlisted, 2,261; unaccompanied, UOQ, 24, UAQ/UEQ, 770; visiting, VOQ, 173, VAQ/VEQ, 118, 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:** Ogden Air Logistics Center. **Mission:** 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 and Peacekeeper ICBMs; provides sustainment and logistics support for space and C^3I 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; Area Command Ogden; Hill Aerospace Museum; Defense Information Systems Agency; 372nd USAF Recruiting Group; Defense Logistics Agency. **History:** activated 1940. Named for Maj. Ployer P. Hill, killed Oct. 30, 1935, while test flying the first B-17. **Area:** 6,698 acres; manages 962,076 acres (Utah Test and Training Range). **Runway:** 13,500 ft. **Altitude:** 4,788 ft. **Personnel:** permanent party military, 4,769; DOD civilians, 11,261. **Housing:** single family, officer, 179, enlisted, 962; unaccompanied, UAQ/UEQ, 642; visiting, VOQ/VAQ/VEQ, 219, TLF, 64. **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-117 operations. **Major tenants:** 46th Test Gp. (AFMC); 4th Space Surveillance Sq. (AFSPC); German Air Force Flying Training Center. **History:** activated 1942. 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, 4,200; DOD civilians, 1,700. **Housing:** unaccompanied, UAQ/UEQ, 935; visiting, VOQ/VAQ/VEQ, 195, TLF, 50. **Clinic.**

Hurlburt Field, Fla. 32544-5000; 5 mi. W of Fort Walton Beach. **Phone:** 850-884-7467; DSN 579-1110. **Majcom:** AFSOC. **Host:** 16th SOW. **Mission:** specialized airpower, equipped with AC-130H/U, EC-137, C-41A, MC-130H, MC-130P, MH-53M (located at Eglin AFB), and UH-1. **Major tenants:** Air Force Special Operations Command; USAF C^2 Training Innovation Gp.; 823rd RED HORSE Sq.; USAF Combat Weather Center; C^2 Warrior School; USAF Special Operations School; Joint Special Operations University. **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, 7,506; DOD civilians, 560. **Housing:** single family, officer, 52, enlisted, 628; unaccompanied, UAQ/UEQ, 959; visiting, VOQ, 92, VAQ/VEQ, 127, TLF, 24. **Clinic.**

Incirlik AB, Turkey, APO AE 09824; 6 mi. E of Adana. **Phone:** (cmcl, from CONUS) 011-90-322-316-0114; DSN (from CONUS) 676-1110. **Majcom:** USAFE. **Host:** 39th Wing. **Mission:** supports rotational weapons training deployments and contingency actions, as well as Operation Northern Watch with Combined Task Force assets, including Turkish KC-135s, British Jaguars and VC-10s, and USAF, USN, and USMC air assets, including the C-12, C-130, E-3, EA-6B, EP-3, F-15, F-16, KC-135, HH-60, and MH-60. **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, 1,600; DOD civilians, 114; local nationals, 1,427. **Housing:** single family, officer, 200, enlisted, 686; unaccompanied, UOQ, 20 dorm rooms, 50 town house, UAQ/UEQ, 607 dorm

Air Force Installations

Major installations	FY97	FY98	FY99	FY00	FY01	FY02
US and possessions	75	74	74	74	74	72
Foreign	13	13	13	13	13	13
Worldwide	88	87	87	87	87	85
Minor installations						
US and possessions	81	80	81	80	80	80
Foreign	4	3	3	3	2	2
Worldwide	85	83	84	83	82	82

Includes Air National Guard and Air Force Reserve Command.

Major Air Force Installations in the US

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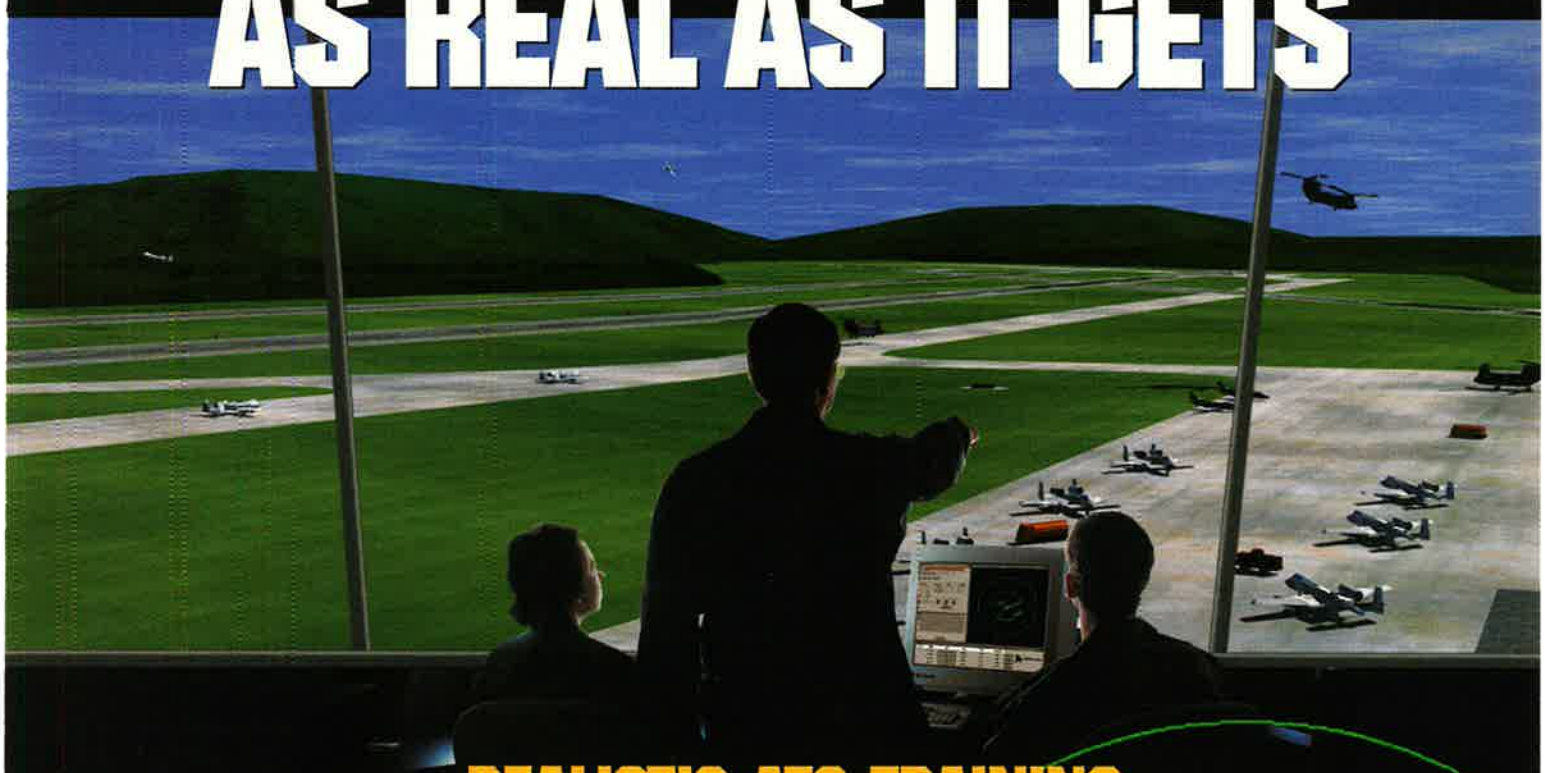

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rooms; visiting, VOQ, 97, VAQ/VEQ, 312, TLF, 80. **Hospital.**

Kadena AB, Japan, APO AP 96368-5000; 15 mi. N of Naha. **Phone:** (cmcl, from CONUS) 011-81-98-938-1111; DSN 634-1110. **Majcom:** PACAF. **Host:** 18th Wing. **Mission:** E-3, F-15C/D, KC-135R, and HH-60 operations. **Major tenants:** Support Center Pacific (AFMC); 353rd Special Operations Gp. (AFSOC), 390th Intelligence Sq.; 82nd Reconnaissance Sq. (ACC); 633rd Air Mobility Support Sq. (AMC); Commander, Fleet Activities Kadena (US Navy). **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, 6,500; DOD civilians, 550. **Housing:** single family, officer, 1,875, enlisted, 6,265; unaccompanied, UOQ, 56, UAQ/UEQ, 1,998; visiting, VOQ, 229, VAQ/VEQ, 201, TLF, 122. **Clinic.**

Keesler AFB, Miss. 39534-5000; located in Biloxi. **Phone:** 228-377-1110; DSN 597-1110. **Majcom:** AETC. **Host:** 81st Training Wing. **Mission:** conducts Air Force, joint service, and international training for avionics, communications, electronics, radar systems, computer and C^2 systems, weather precision equipment, physician residencies, specialized nursing, and medical technicians. **Major tenants:** 2nd Air Force (AETC); 45th Airlift Flight (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. **Runway:** 5,630 ft. **Altitude:** 26 ft. **Personnel:** permanent party military, 12,110; DOD civilians, 1,911. **Housing:** single family, officer, 287, enlisted, 1,660; unaccompanied, UAQ/UEQ, 907; visiting, VOQ, 317, VAQ/VEQ, 1,172, TLF, 70. **Keesler Medical Center.**

Kirtland AFB, N.M. 87117-5606; SE quadrant of Albuquerque. **Phone:** 505-846-0011; DSN 246-0011. **Majcom:** AFMC. **Host:** 377th Air Base Wing. **Mission:** provides munitions maintenance; worldwide training; research, development, and testing; base operating support. **Major tenants:** 58th SOW (AETC), MC-130, MH-53, UH-1; Air Force Operational Test and Evaluation Center; Air Force Research Laboratories (AFMC); 150th FW (ANG), F-16; Defense Threat Reduction Agency, Albuquerque Field Operations; Sandia National Laboratories; DOE's Albuquerque Operations Office; 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:** 13,000 ft., two, each 10,000 ft., and 6,000 ft. **Altitude:** 5,352 ft. **Personnel:** permanent party military, 4,855; DOD civilians, 3,898. **Housing:** single family, officer, 280, enlisted, 1,503; visiting, VOQ, 130, VAQ/VEQ, 180. **Air Force–VA joint medical center.**

Kunsan AB, Republic of 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 Echo and Foxtrot Batteries, 1st Battalion, 143rd Air Defense Artillery; US Army Contracting Command Korea. **History:** built by the Japanese in 1938. **Area:** 2,556 acres. **Runway:** 9,000 ft. **Altitude:** 29 ft. **Personnel:** permanent party military, 2,511; DOD civilians, 48. **Housing:** unaccompanied, UOQ, 247, UAQ/UEQ, 1,733; visiting, VOQ, 28, VAQ/VEQ, 108. **Clinic.**

Lackland AFB, Tex. 78236-5000; 8 mi. SW of downtown San Antonio. **Phone:** 210-671-1110; DSN 473-1110. **Majcom:** AETC. **Host:** 37th Training Wing. **Mission:** largest USAF training wing. Its four primary training functions graduate more than 75,000 students annually. Provides basic military training for civilian recruits entering Air Force, ANG, and AFRC; conducts courses in base support functions, English language training for international and US military students, and professional operations and management training in Spanish to military forces and government agencies from Latin American and Caribbean nations. **Major tenants:** 59th Medical Wing; Air Force Security Forces Center; Force Protection Battlelab; Cryptologic Systems Group. **History:** activated 1941. Named for Brig. Gen. Frank D. Lackland, early commandant of Kelly Field flying school, who died in 1943. **Area:** 6,725 acres. **Runway:** none. **Altitude:** 745 ft. **Personnel:** permanent party military, 13,143; DOD civilians, 5,393. **Housing:** single family, officer, 151, enlisted, 1,100; unaccompanied, UAQ/UEQ, 622; visiting, VOQ, 388, VAQ/VEQ, 1,480, TLF, 98. **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 245-1110. **Majcom:** ACC. **Host:** 65th Air Base Wing. **Mission:** provides support to US and allied aircraft and personnel transiting the Atlantic, through US military and host-nation coordination. **Major tenants:** US Forces Azores; 629th AMSS (AMC). **History:** US operations began at Lajes Field 1946. **Area:** 1,179 acres. **Runway:** 10,865 ft. **Altitude:** 180 ft. **Personnel:** permanent party military, 879; DOD civilians, 47. **Housing:** single family, officer, 68, enlisted, 380; unaccompanied, UOQ, 31, UAQ/UEQ, 325; visiting, VOQ, 184, VAQ/VEQ, 173, 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 air superiority operations. **Major tenants:** Air Combat Command; Air Force Rescue Coordination Center; Aerospace C^2ISR Center (ACC); USAF Heritage of America Band; 12th Airlift Flight (AMC); 480th Intelligence Gp. (ACC); Aerospace 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, 7,500; DOD civilians, 2,000. **Housing:** single family, officer, 380, enlisted, 1,222; unaccompanied, UAQ/UEQ, 650; visiting, VOQ, 100, VAQ/VEQ, 169, TLF, 100. **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. **History:** activated July 1942. Named for 1st Lt. Jack Thomas Laughlin, Del Rio native, B-17 pilot, killed Jan. 29, 1942. **Area:** 4,516 acres. **Runways:** 8,858 ft., 8,310 ft., and 6,246 ft. **Altitude:** 1,082 ft. **Personnel:** permanent party military, 1,306; DOD civilians, 953. **Housing:** single family, officer, 308, enlisted, 248; unaccompanied, UOQ, 200, UAQ/UEQ, 264; visiting, VOQ, 38, 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 DOD; trains crew members from all services and 27 foreign countries. **Major tenants:** 463rd AG (AMC), C-130; 189th AW (ANG), C-130; Air Mobility Warfare Center Combat Aerial Delivery School (AMC); Hq. Ark. ANG. **History:** activated Oct. 9, 1955. **Area:** 6,130 acres. **Runway:** 12,000 ft. **Altitude:** 310 ft. **Personnel:** permanent party military, 4,599; DOD civilians, 503. **Housing:** single family, officer, 185, enlisted, 1,350; unaccompanied, UAQ/UEQ, 764; visiting, VOQ, 121, VAQ/VEQ, 160, TLF, 110. **Clinic.**

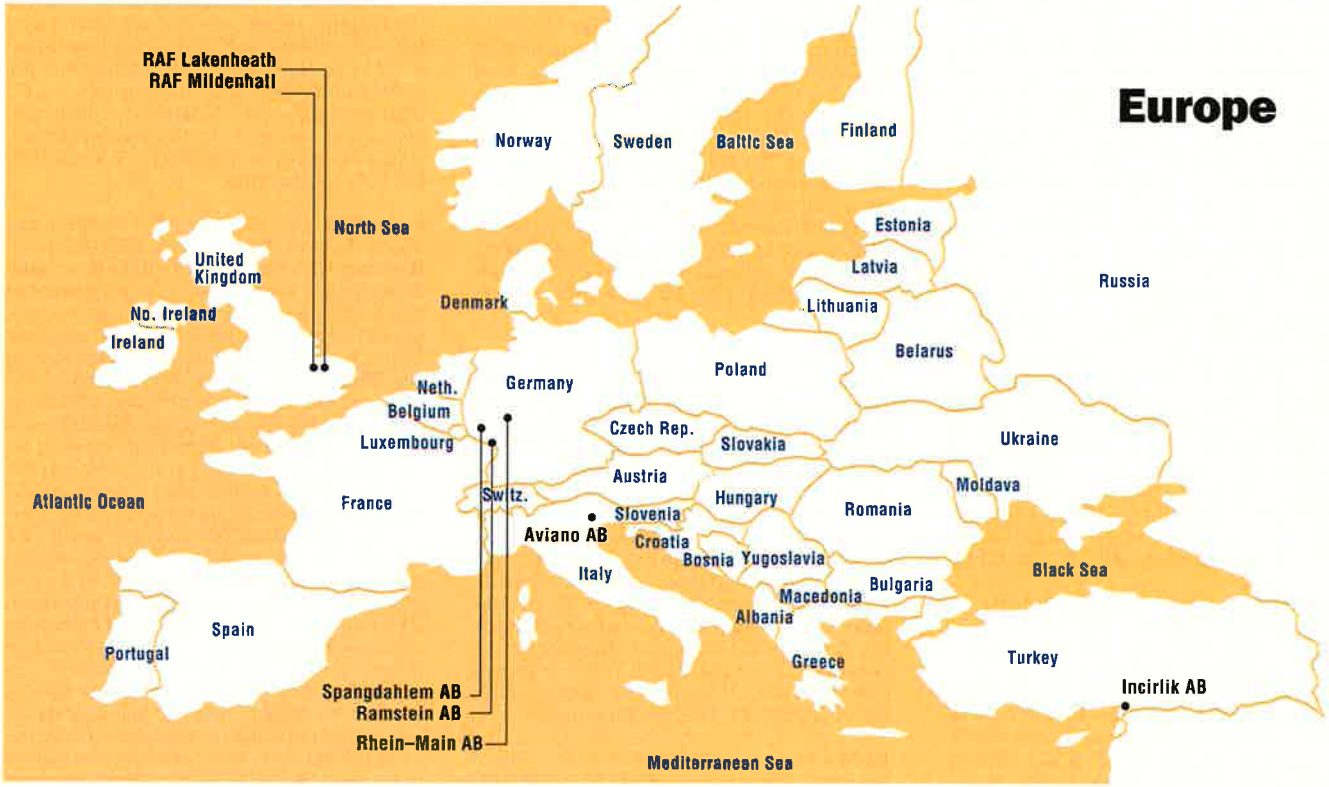
Los Angeles AFB, Calif. 90245-4657; in El Segundo, 3 mi. SE of Los Angeles Arpt.; base housing and support facilities 18 mi. S of the main base, in San Pedro. **Phone:** 310-363-1110; DSN 833-1110. **Majcom:** AFSPC. **Host:** Space and Missile Systems Center. **Mission:** responsible for research, development, 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:** 112 acres at Los Angeles AFB and 127 acres at Ft. MacArthur Military Family Housing Annex. **Runway:** none. **Altitude:** 95 ft. **Personnel:** permanent party military, 1,484; DOD civilians, 1,075. **Housing:** single family, officer, 281, enlisted, 352; unaccompanied, UAQ/UEQ, 52; visiting, VOQ/VAQ/VEQ, 32, TLF, 24. **Clinic.**

Luke AFB, Ariz. 85309-5000; 20 mi. WNW of downtown Phoenix. **Phone:** 602-856-7411; DSN 896-1110. **Majcom:** AETC. **Host:** 56th FW. **Mission:** F-16 operations; conducts USAF and allied F-16 aircrew 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 2.7-million-acre Barry M. Goldwater Range. **Runways:** 10,000 ft. and 9,910 ft. **Altitude:** 1,090 ft. **Personnel:** permanent party military, 5,500; DOD civilians, 1,060. **Housing:** single family, officer, 80, enlisted, 794; unaccompanied, UAQ/UEQ, 996; visiting, VOQ, 184, VAQ/VEQ, 87, TLF, 40. **Hospital.**

MacDill AFB, Fla. 33621-5000; on the Interbay Peninsula in southern Tampa. **Phone:** 813-828-1110; DSN 968-1110. **Majcom:** AMC. **Host:** 6th ARW. **Mission:** KC-135 operations; provides worldwide air refueling and CINC support. **Major tenants:** US Special Operations Command; Central Command; 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, 2,500; DOD civilians, 325. **Housing:** single family, officer, 27, enlisted, 657; unaccompanied, UAQ/UEQ, 610; visiting, VOQ, 113, VAQ/VEQ, 198, TLF, 32. **Hospital.**

Malmstrom AFB, Mont. 59402-5000; 1.5 mi. E of Great Falls. **Phone:** 406-731-1110; DSN 632-1110. **Majcom:** AFSPC. **Host:** 341st Space Wing. **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:** 4,041 acres, plus about 24,000 sq. mi. for missile sites. **Runway:** closed. **Altitude:** 3,525 ft. **Personnel:** permanent party military, 3,363; DOD civilians, 370. **Housing:** single family, officer, 258, enlisted, 1,148; unaccompanied, UAQ/UEQ, 738; visiting, VOQ/VAQ/VEQ, 53, TLF, 30. **Clinic.**

Major Air Force Installations Overseas



Bases in Gulf Cooperation Council nations do not meet criteria for major installations; however, several thousand USAF personnel are deployed in these locations.

Maxwell AFB, Ala. 36112-5000; 1 mi. WNW of Montgomery. **Phone:** 334-953-1110; DSN 493-1110. **Majcom:** AETC. **Host:** 42nd Air Base Wing. **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 Airpower 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; Standard Systems Gp. **History:** activated 1918. Named for 2nd Lt. William C. Maxwell, killed in air accident Aug. 12, 1920. **Area:** 3,903 acres (includes Gunter Annex). **Runway:** 8,000 ft. **Altitude:** 172 ft. **Personnel:** permanent party military, 4,150; DOD civilians, 2,150. **Housing:** single family, officer, 312, enlisted, 656; unaccompanied, UOQ, 1, UAQ/UEQ, 428; visiting, VOQ, 1,324, VAQ/VEQ, 565, TLF, 33. **Clinic.**

McChord AFB, Wash. 98438-5000; 10 mi. S of Tacoma. **Phone:** 253-982-1110; DSN 382-1110. **Majcom:** AMC. **Host:** 62nd AW. **Mission:** C-17 and C-141 operations. Base is adjacent to Ft. Lewis, its primary customer for strategic airlift worldwide. **Major tenants:** 446th AW (AFRC Assoc.); Western Air Defense Sector (ANG); 22nd Special Tactics Sq. (AFSOC). **History:** activated May 5, 1938. Named for Col. William C. McChord, killed Aug. 18, 1937. **Area:** 4,616 acres. **Runway:** 10,100 ft. **Altitude:** 323 ft. **Personnel:** permanent party military, 3,631; DOD civilians, 1,118. **Housing:** single family, officer, 115, enlisted, 868; unaccompanied, UAQ/UEQ, 752; visiting, VOQ, 70, VAQ/VEQ, 287, 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. **Majcom:** AMC. **Host:** 22nd ARW. **Mission:** KC-135 operations. **Major tenants:** 184th BW (ANG), B-1B; 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:** 3,113 acres. **Runways:** two, 12,000 ft. each. **Altitude:** 1,371 ft. **Personnel:** permanent party military, 2,609; DOD civilians, 366. **Housing:** single family, officer, 83, enlisted, 506; unaccompanied, UAQ/UEQ, 615; visiting, VOQ, 20, VAQ/VEQ, 65, 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-141 and KC-10 operations. **Major tenants:** 21st Air Force (AMC); Air Mobility Warfare 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, 5,000, DOD civilians, 1,096. **Housing:** single family, officer, 189, enlisted, 1,552; unaccompanied, UAQ/UEQ, 1,162; visiting, VOQ, 33, VAQ/VEQ, 274, 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 Space Wing (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:** 5,049 acres, plus additional 8,500 acres for missile sites. **Runway:** 13,200 ft. **Altitude:** 1,668 ft. **Personnel:** permanent party military, 4,420; DOD civilians, 520. **Housing:** single family, officer, 474, enlisted, 1,965; unaccompanied, UOQ, 6; visiting, VOQ, 20, VAQ/VEQ, 15, TLF, 34. **Clinic.**

Misawa AB, Japan, APO AP 96319-5000; within Misawa city limits. **Phone:** (cmcl, from CONUS) 011-81-311-766-1110; DSN 315-226-1110. **Majcom:** PACAF. **Host:** 35th FW. **Mission:** F-16C/D operations. **Major tenants:** 3rd Space Surveillance Sq. (AFSPC); 301st Intelligence Sq. (ACC); Naval Air Facility; Naval Security Gp. Activity; 750th Military Intelligence Det. (US 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, 5,465; DOD civilians, 116. **Housing:** single family, officer, 356, enlisted, 1,183; 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:** 347th Rescue Wing. **Mission:** HC-130, and HH-60 operations. **Major tenants:** 479th Flying Training Gp. (AETC); 820th Security Forces Gp. (ACC). **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, 3,400; DOD civilians, 600. **Housing:** single family, officer, 33, enlisted, 270; unaccompanied, UOQ/UAQ/UEQ, 32; visiting, VOQ/VAQ/VEQ, 17, TLF, 32. **Clinic.**

Mountain Home AFB, Idaho 83648-5000; 45 mi. SE of Boise. **Phone:** 208-828-6800; DSN 728-1110. **Majcom:** ACC. **Host:** 366th Wing. **Mission:** USAF's Air Expeditionary Wing, B-1B, F-15C/D, F-15E, F-16CJ, and KC-135R operations. **Major tenant:** Air Expeditionary Force Battlelab. **History:** activated August 1943. **Area:** 9,112 acres. **Runway:** 13,500 ft. **Altitude:** 3,000 ft. **Personnel:** permanent party military, 4,017; DOD civilians, 829. **Housing:** single family, officer, 186, enlisted, 1,340; unaccompanied, UAQ/UEQ, 884; visiting, VOQ, 43, VAQ/VEQ, 56, TLF, 16. **Hospital.**

Nellis AFB, Nev. 89191-5000; 8 mi. NE of Las Vegas. **Phone:** 702-652-1110; DSN 682-1110. **Majcom:** ACC. **Host:** 99th Air Base Wing. **Mission:** Air Warfare Center manages advanced pilot training and tactics development and integrates test and evaluation programs; oversees Tonopah Test Range, three electronic scoring site GSUs, 5,000-sq.-mile Nellis Range Complex, and two emergency airfields. 57th Wing, A-10A, F-15C/D/E, F-16C/D, HH-60G, and Predator RQ-1A UAV. 57th Wing missions include Red Flag exercises (414th Combat Training Sq.); graduate-level pilot training (USAF Weapons School); support for US Army exercises (549th Combat Training Sq.); training for international personnel in joint firepower procedures and techniques (Hq. USAF Air Ground Operations School); 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. **Major tenants:** Aerospace Integration Center, OSD Joint Suppression of Enemy Air Defenses, Triservice Reserve Center, 67th Intelligence Gp. (ACC), 820th RED HORSE Sq. (ACC); 896th Munitions Sq. (AFMC). **History:** activated July 1941 as Las Vegas AAF with Army Air Corps Flexible Gunnery School; closed 1947; reopened 1949. 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 2.9 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, 7,138; DOD civilians, 2,743. **Hous-**

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.

Cape Canaveral AFS, Fla. 32925-5000 (AFSPC)	DSN 467-1110
Cape Cod AFS, Mass. 02561-9314 (AFSPC)	DSN 557-2277
Cavalier AFS, N.D. 58220-5000 (AFSPC)	DSN 330-3292
Cheyenne Mountain AFS, Colo. 80914-5515 (AFSPC)	DSN 268-11110
Clear AFS, Alaska, APO AP 99704 (AFSPC)	DSN 317-585-6110
Indian Springs AFAF, Nev. 89018-1230 (ACC)	DSN 682-1110
Onizuka AFS, Calif. 94088-3430 (AFSPC)	DSN 561-3000
RAF Croughton, UK, APO AE 09494 (USAFE)	DSN 314-236-1110
Thule AB, Greenland, APO AE 09704-5000 (AFSPC) (ask for Thule operator)	DSN 268-1211

ing: single family, officer, 118, enlisted, 1,180; visiting, VOQ, 319, VAQ/VEQ, 637, 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, C^2, and combat support to warfighting commanders and national leadership. **Major tenants:** Strategic Command; 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, 7,574; DOD civilians, 1,579. **Housing:** single family, officer, 343, enlisted, 2,211; unaccompanied, UAQ/UEQ, 1,006; visiting, VOQ, 125 VAQ/VEQ, 10, TLF, 60. **Hospital.**

Osan AB, Republic of 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 tenant:** 7th Air Force (PACAF); 5th RS (ACC); 31st SOS (AFSOC); 33rd Rescue Sq. (PACAF); 303rd Intelligence Sq. (AIA). **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, 6,529; DOD civilians, 223. **Housing:** single family, officer, 133, enlisted, 61; unaccompanied, UOQ, 396, UAQ/UEQ, 5,062; visiting, VOQ, 68, VAQ/VEQ, 158, TLF, 64. **Hospital.**

Patrick AFB, Fla. 32925-3237; 2 mi. S of Cocoa Beach. **Phone:** 321-494-1110; DSN 854-1110. **Majcom:** AFSPC. **Host:** 45th Space Wing. **Mission:** supports DOD, NASA, US 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 Gp. (AFRC), HC-130, HH-60; Army Training Support Brigade; 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, 2,250; DOD civilians, 1,244. **Housing:** single family, officer, 239, enlisted, 1,005; unaccompanied, UAQ/UEQ, 278; visiting, VOQ, 47, VAQ/VEQ, 94, TLF, 50. **Clinic.**

Peterson AFB, Colo. 80914-5000; at eastern edge of Colorado Springs. **Phone:** 719-556-7011; DSN 834-7011. **Majcom:** AFSPC. **Host:** 21st Space Wing. **Mission:** provides missile warning and space control; detects, tracks, and catalogs objects in space. **Major tenants:** NORAD; US Space Command; Air Force Space Command; Army Space Command; 302nd AW (AFRC), C-130; Edward J. Peterson Air and Space Museum. **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, 3,175; DOD civilians, 1,593. **Housing:** single family, officer, 107, enlisted, 384; unaccompanied, UAQ/UEQ, 594; visiting, VOQ, 75, VAQ/VEQ, 79, TLF, 40. **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 Group (ACC), A/OA-10; 18th Air Support Operations Gp. (ACC); 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, 5,300; DOD civilians, 306. **Housing:** single family, officer, 89, enlisted, 538; unaccompanied, UAQ/UEQ, 600; visiting, VOQ, 124, VAQ/VEQ, 70, TLF, 22. **Clinic.**

RAF Lakenheath, United Kingdom, APO AE 09464-5000; 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:** 2,004 acres. **Runway:** 9,000 ft. **Altitude:** 32 ft. **Personnel:** permanent party military, 4,654; DOD civilians, 351; **Housing:** single family, officer, 355, enlisted, 1,966; unaccompanied, UAQ/UEQ, 984; visiting, VOQ, 99, VAQ/VEQ, 46, TLF, 32. **Regional medical center.**

RAF Mildenhall, United Kingdom, 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:** 3rd Air Force (USAFE); 352nd SOG (AFSOC), MC-130, MH-53; 95th RS (ACC); 488th Intelligence Sq. (ACC); Naval Air Facility, UC-12M aircraft. **GSUs:** 422nd Air Base Support, RAF Croughton; 423rd ABS, RAF Molesworth; 424th ABS, RAF Fairford; 426th ABS, Stavanger, Norway. **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, 4,774; DOD civilians, 226. **Housing:** single family, officer, 40, enlisted, 61; unaccompanied, UAQ/UEQ, 783 dorm rooms; visiting, VOQ/VAQ/VEQ, 300, 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 480-1110. **Majcom:** USAFE. **Host:** 86th AW. **Mission:** C-9, C-20, C-21, and C-130E operations; provides inter- and intratheater airlift, intratheater aeromedical evacuation, and CONUS staging and aeromedical evacuation. Wing commander also serves as commander of the Kaiserslautern Military Community. **History:** activated and US presence began 1953. **Area:** 10,261 acres. **Runway:** 8,015 ft. **Altitude:** 782 ft. **Personnel:** permanent party military, 13,054; DOD civilians, 1,907. **Housing:** single family, officer, 465, enlisted, 4,674; unaccompanied, UOQ, 60, UAQ/UEQ, 1,724; visiting, VOQ, 616, VAQ/VEQ, 1,469, TLF, 182. **Clinic.**

Randolph AFB, Tex. 78150-5000; 17 mi. ENE of San Antonio. **Phone:** 210-652-1110; DSN 487-1110. **Majcom:** AETC. **Host:** 12th FTW. **Mission:** conducts AT-38, T-1A, T-6, T-37, and T-38 instructor pilot training; Introduction to Fighter Fundamentals in AT-38; Joint Undergraduate Navigator Training in the T-43; electronic warfare officer training; C-21A airlift. **Major tenants:** AETC; 19th Air Force; Air Force Personnel Center; Air Force Manpower and Innovation Agency; Air Force Services Agency; Air Force Recruiting Service. **History:** dedicated June 1930. Named for Capt. William M. Randolph, killed Feb. 17, 1928. **Area:** 5,044 acres. **Runways:** 9,350 ft. and 8,350 ft. **Altitude:** 761 ft. **Personnel:** permanent party military, 6,070; DOD civilians, 3,750. **Housing:** single family, officer, 218, enlisted, 801; unaccompanied, UOQ, 202, UAQ/UEQ, 316; visiting, VOQ, 348, VAQ/VEQ, 171, TLF, 30. **Clinic.**

Rhein–Main AB, Germany, APO AE 09050-5000; 5 mi. S of Frankfurt. **Phone:** (cmcl, from CONUS) 011-49-69-699-1110; DSN 330-1110. **Majcom:** USAFE. **Host:** 469th Air Base Gp. **Mission:** Contingency operations; provides support for major airlift contingencies. **Major tenants:** 726th Air Mobility Sq., US Army 64th Replacement Co. **History:** activated July 1936. US forces began operations March 1945. Named after the confluence of the Rhein and Main Rivers west of Frankfurt. Base returns to Germany Dec. 31, 2005. **Area:** 532 acres. **Runways:** three, each 13,123 ft. **Altitude:** 365 ft. **Personnel:** permanent party military, 680; DOD civilians, 1,105. **Housing:** single family, officer, 98, enlisted, 396; visiting, VOQ, 172, VAQ/VEQ, 147, TLF, 12. **Clinic.**

Robins AFB, Ga. 31098; 15 mi. SSE of Macon at Warner Robins. **Phone:** 478-926-1110; DSN 468-1110. **Majcom:** AFMC. **Host:** Warner Robins Air Logistics Center. **Mission:** provides worldwide logistics management for the C-5, C-130, C-141, and F-15, helicopters, missiles, and remotely piloted vehicles; LANTIRN system, JTIDS, avionics, most Air Force airborne electronic warfare equipment, airborne communications equipment, airborne bomb- and gun-directing systems, fire-fighting equipment, general-purpose vehicles, and the USAF portion of the Global Command and Control System. **Major tenants:** Air Force Reserve Command; 93rd Air Control Wing (ACC), E-8; 116th BW (ANG), B-1B; 19th ARG (AMC), KC-135; 5th Combat Communications Gp. (ACC). **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:** more than 8,700 acres. **Runway:** 12,000 ft. **Altitude:** 294 ft. **Personnel:** permanent party military, 7,209; DOD civilians, 13,119. **Housing:** single family, officer, 244, enlisted, 1,225; visiting, VOQ, 134, VAQ/VEQ, 140, TLF, 50. **Clinic.**

Schriever AFB, Colo. 80912-5000; 10 mi. E of Colorado Springs. **Phone:** 719-567-1110; DSN 560-1110. **Majcom:** AFSPC. **Host:** 50th Space Wing. **Mission:** Command and Control of DOD satellites. **Major tenants:** Joint National Test Facility; Space Warfare Center; Space Battlelab; 310th Space Gp. (AFRC). **History:** activated October 1985 as Falcon AFB. Renamed in June 1998 for Gen. Bernard A. Schriever. **Area:** 3,840 acres. **Runway:** none. **Altitude:** 6,267 ft. **Personnel:** permanent party military, 2,075; DOD civilians, 309. **Housing:** none. **Medical aid station 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-9 and C-21 operations. **Major tenants:** Transportation Command; Air Mobility Command; Air Force Communications Agency; Defense Information Technology Contracting Office; 126th ARW (ANG), KC-135; 932nd AW (AFRC), C-9. **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, 6,033; DOD civilians, 2,280. **Housing:** single family, officer, 304, enlisted, 1,122; unaccompanied, UAQ/UEQ, 564; visiting, VOQ, 220, VAQ/VEQ, 169, TLF, 36. **Hospital.**

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:** 4,107 acres. **Runway:** 11,758 ft. **Altitude:** 110 ft. **Personnel:** permanent party military, 4,400; DOD civilians, 1,200. **Housing:** single family, officer, 153, enlisted, 1,536; unaccompanied, UOQ, 20, UAQ/UEQ, 622; visiting, VOQ, 72, VAQ/VEQ, 39, TLF, 69. **Clinic.**

Shaw AFB, S.C. 29152-5000; 10 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); Central Command 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:** 3,363 acres; supports another 13,000 acres. **Runways:** 10,000 ft. and 8,000 ft. **Altitude:** 242 ft. **Personnel:** permanent party military, 5,800; DOD civilians, 900. **Housing:** single family, officer, 160, enlisted, 932; unaccompanied, UAQ/UEQ, 988; visiting, VOQ/ VAQ/VEQ, 136, TLF, 39. **Hospital** (no emergency room).

Sheppard AFB, Tex. 76311-5000; 4 mi. N of Wichita Falls. **Phone:** 940-676-2511; DSN 736-2511. **Majcom:** AETC. **Host:** 82nd Training Wing. **Mission:** largest of AETC's four technical training centers. Conducts resident training in aircraft maintenance, civil engineering, communications, comptroller, transportation, and various medical 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., 8,800 ft., 7,000 ft., and 6,000 ft. **Altitude:** 1,015 ft. **Personnel:** permanent party military, 3,607; DOD civilians, 1,450. **Housing:** single family, officer, 200, enlisted, 1,088; unaccompanied, UOQ, 196, UAQ/UEQ, 330; visiting, VOQ, 426, VAQ/VEQ, 1,448, TLF, 80. **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 ops 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:** 1,282 acres. **Runway:** 10,000 ft. **Altitude:** 1,196 ft. **Personnel:** permanent party military, 5,689; DOD civilians, 264. **Housing:** single family, officer, 73, enlisted, 1,531; unaccompanied, UOQ, 4, UAQ/UEQ, 985 dorm rooms; visiting, VOQ/VAQ/VEQ, 119, TLF, 47. **Hospital.**

Tinker AFB, Okla. 73145-3010; 8 mi. SE of Oklahoma City. **Phone:** 405-732-7321; DSN 884-1110. **Majcom:** AFMC. **Host:** Oklahoma City Air Logistics Center. **Mission:** manages and provides logistics support and depot maintenance for more than 850 aircraft, including the B-1B, B-2, B-52, E-3, E-6, and KC-135. **Major tenants:** 552nd Air Control Wing (ACC), E-3; 507th ARW (AFRC), KC-135; 513th Air Control Gp. (AFRC Assoc.); Navy Strategic Communications Wing One; Defense Logistics Agency's Defense Distribution Depot Oklahoma City; 3rd Combat Communications Gp. (ACC); 38th Engineering Installation Gp. (AFMC); Defense Megacenter Oklahoma City. **History:** activated March 1942. Named for Maj. Gen. Clarence L. Tinker, who went down at sea June 7, 1942. **Area:** 5,020 acres. **Runways:** 11,100 ft. and 10,000 ft. **Altitude:** 1,291 ft. **Personnel:** permanent party military, 8,286; DOD civilians, 15,490. **Housing:** single family, officer, 107, enlisted, 622; unaccompanied, UAQ/UEQ, 754. **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 and KC-10 operations. **Major tenants:** 15th Air 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, each approx. 11,000 ft. **Altitude:** 62 ft. **Personnel:** permanent party military, 7,135; DOD civilians, 1,835. **Housing:** single family, officer, 274, enlisted, 2,181; unaccompanied, UAQ/UEQ, 1,627; visiting, VOQ, 130, VAQ/VEQ, 283, TLF, 84. **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 operations; trains USAF F-15 air-to-air 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., 8,075 ft., and 7,000 ft. **Altitude:** 18 ft. **Personnel:** permanent party military, 3,700; DOD civilians, 694. **Housing:** single family, officer, 123, enlisted, 940; unaccompanied, UAQ/UEQ, 448; visiting, VOQ, 219, VAQ/VEQ, 406, TLF, 40. **Clinic.**

US Air Force Academy, Colo. 80840-5025; N of Colorado Springs. **Phone:** 719-333-1818; 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:** 18,325 acres. **Runways:** 4,500 ft., 3,500 ft., and 2,300 ft. **Altitude:** 7,200 ft. **Personnel:** permanent party military, 1,796, cadets, 4,299; DOD civilians, 1,859. **Housing:** single family, officer, 393, enlisted, 850; unaccompanied, UAQ/UEQ, 164; visiting, VOQ/VAQ/VEQ, 83, TLF, 30. **Hospital.**

Vance AFB, Okla. 73705-5000; 3 mi. SSW of Enid. **Phone:** 580-213-7111; DSN 448-7110. **Majcom:** AETC. **Host:** 71st FTW. **Mission:** provides Joint SUPT in T-1, T-37, 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:** 4,555 acres. **Runways:** two, each 9,200 ft., 5,100 ft., 5,038 ft., and 4,956 ft. **Altitude:** 1,007 ft. **Personnel:** permanent party military, 780; DOD civilians, 108. **Housing:** single family, officer, 132, enlisted, 98; unaccompanied, UOQ, 210, UAQ/UEQ, 109; visiting, VOQ/VAQ/VEQ, 48, TLF, 10. **Clinic.**

Vandenberg AFB, Calif. 93437-5000; 8 mi. NNW of Lompoc. **Phone:** 805-606-1110; DSN 276-1110. **Majcom:** AFSPC. **Host:** 30th Space Wing. **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, 3,631; DOD civilians, 1,088. **Housing:** single family, officer, 447, enlisted, 1,367; unaccompanied, UAQ/UEQ, 217; visiting, VOQ/VEQ, 111, VAQ, 100, TFL, 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), 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:** 5,219 acres. **Runway:** 12,400 ft. **Altitude:** 871 ft. **Personnel:** permanent party military, 3,300; DOD civilians, 1,700. **Housing:** single family, officer, 94, enlisted, 1,035; unaccompanied, UAQ/UEQ, 669; visiting, VOQ, 61, VAQ/VEQ, 62, TFL, 31. **Clinic.**

Wright–Patterson AFB, Ohio 45433; 10 mi. ENE of Dayton. **Phone:** 937-257-1110; DSN 787-1110. **Majcom:** AFMC. **Host:** Aeronautical Systems Center. **Mission:** develops, acquires, modernizes, and sustains aerospace systems. **Major tenants:** Air Force Materiel Command; Air Force Research Laboratory (AFMC); Air Force Security Assistance Center (AFMC); 445th AW (AFRC), C-141; Air Force Institute of Technology (AETC); USAF Museum. **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 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, 5,878; DOD civilians, 10,383. **Housing:** single family, officer, 744, enlisted, 1,507; unaccompanied, UAQ/UEQ, 363; visiting, VOQ/VAQ/VEQ, 388, TLF, 40. **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-9, C-21, C-130, and UH-1N operations. Primary aerial port in Japan. **Major tenants:** US Forces, Japan; 5th Air Force (PACAF); 630th AMSS (AMC); Det. 1, Air Force Band of the Pacific; American Forces Network Tokyo. **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, 498. **Housing:** single family, officer, 861, enlisted, 1,746; unaccompanied, UOQ, 242, UAQ/UEQ, 860; visiting, VOQ, 152, VAQ/VEQ, 111, TLF, 187. **Hospital.**

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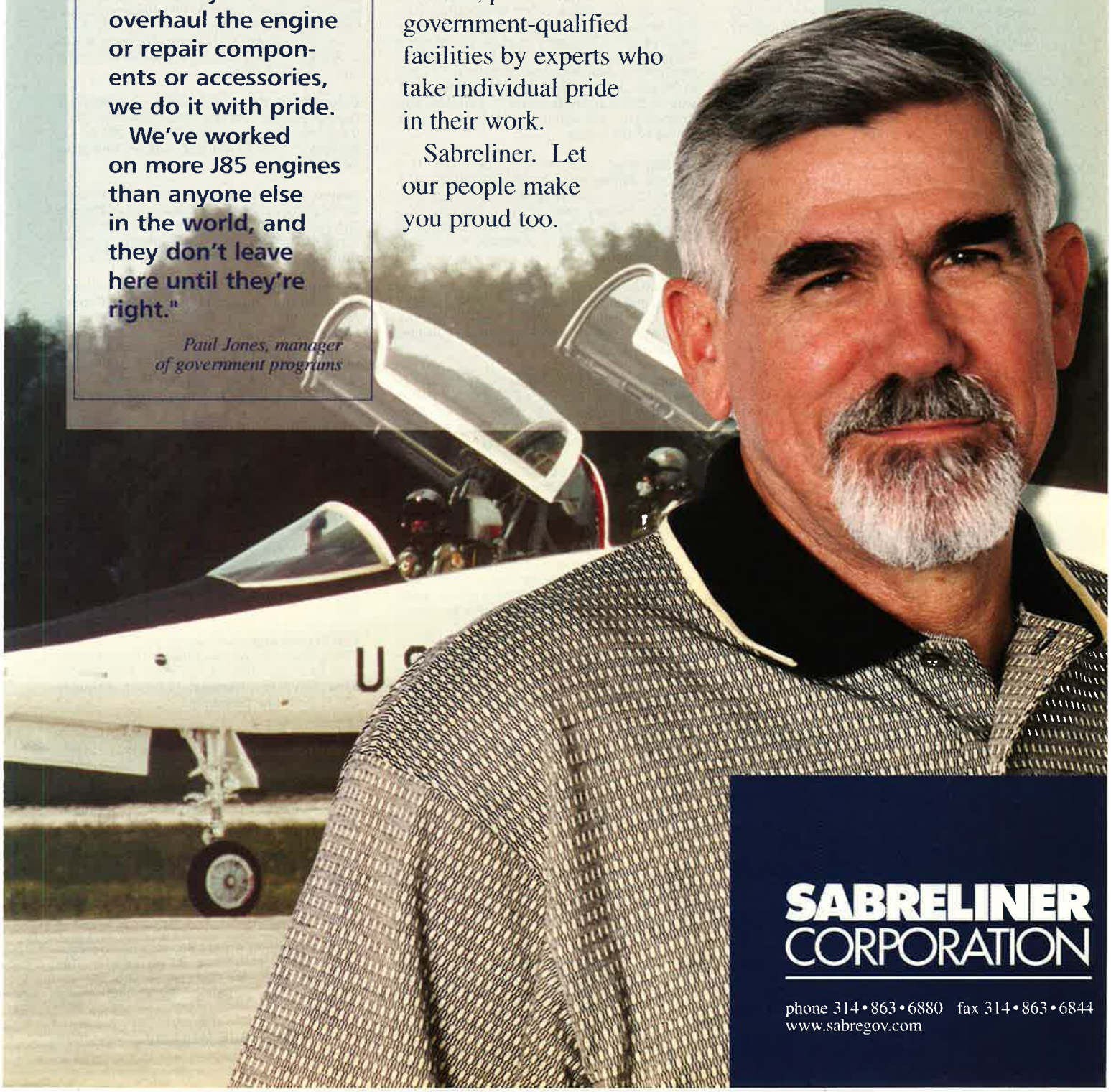

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ANG and AFRC Installations

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.

Alpena County Arpt., Mich. 49707; 5 mi W of Alpena. **Phone:** 989-354-6210; DSN 741-3210. **Unit:** Combat Readiness Training Center. **Area:** 610 acres. **Runways:** 9,000 ft. and 5,030 ft. **Altitude:** 682 ft. **Full-time personnel:** 86 (AGR).

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:** 284.

Bangor Arpt., Maine 04401-3051; 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:** 329. Commissary; exchange.

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

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:** 391.

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:** 276.

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:** 513. 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:** 274.

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:** 290.

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:** 293.

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:** 300.

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:** 78 (AGR).

Cheyenne Arpt., Cheyenne, Wyo. 82009. **Phone:** 307-772-6110; DSN 943-6110. **Unit:** 153rd Airlift Wing (ANG). **Area:** 77 acres. **Runway:** 9,400 ft. **Altitude:** 6,250 ft. **Full-time personnel:** 292.

Dannelly Field, 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:** named for Ens. Clarence Dannelly, Navy pilot killed during WWII. **Area:** 143 acres. **Runway:** 9,000 ft. **Altitude:** 221 ft. **Full-time personnel:** 299.

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:** 291.

Dobbins ARB, Ga. 30069-5010; 16 mi. NW of Atlanta. **Phone:** 770-919-5000; DSN 925-5000. **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:** 200 ARTs; 300 civilians.

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, 300.

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:** 314.

Eastern West Virginia Arpt. (Shepherd Field), W. Va. 25401-7702; 4 mi. S of Martinsburg. **Phone:** 304-262-5100; DSN 242-9210. **Unit:** 167th Airlift Wing (ANG). **Area:** 206 acres. **Runway:** 7,000 ft. **Altitude:** 557 ft. **Full-time personnel:** 279.

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:** 1,000 ft. **Full-time personnel:** 304.

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:** 297.

Fort Smith Arpt., Ark. 72903; within Fort Smith. **Phone:** 501-648-5210; DSN 962-8210. **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:** 219-478-3210; DSN 786-1210. **Unit:** 122nd Fighter Wing (ANG). **Area:** 166 acres. **Runway:** 12,000 ft. **Altitude:** 802 ft. **Full-time personnel:** 72.

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:** 173.

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:** 74.

General Mitchell Arpt./ARS, Wis. 53207-6299; SW corner of Milwaukee. **AFRC phone:** 414-482-5000; DSN 741-5000. **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, 436; ANG, 272.

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:** 288.

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:** 301.

Grissom ARB, Ind. 46971-5000; 15 mi. N of Kokomo. **Phone:** 765-688-5211; DSN 928-1110. **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:** ARTs, 300; civilians, 400. Small BX.

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:** 120.

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:** 217.

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:** 300.

Hector Arpt., Fargo, N.D. 58102. **Phone:** 701-241-7241; DSN 362-8110. **Unit:** 119th Fighter Wing (ANG). **Area:** 250 acres. **Runway:** 9,545 ft. **Altitude:** 896 ft. **Full-time personnel:** 314.

Homestead ARB, Fla. 33039-1299; 5 mi. NE of Homestead. **Phone:** 305-224-7000; DSN 791-7000. **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, 660; ANG, 17. Billeting available.

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:** 300.

Jackson Arpt., 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:** 300.

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:** 362.

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 5,070 ft. **Altitude:** 1,420 ft. **Full-time personnel:** 244.

Kelly Field, Tex. 78236-0112; 5 mi. SW of San Antonio. **Phone:** 210-977-1110; DSN 969-1110. **Units:** 149th Fighter Wing (ANG); 433rd Airlift Wing (AFRC). **History:** activated Nov. 21, 1916, and deactivated July 13, 2001. Named for Lt. George E.M. Kelly, first Army pilot to lose his life flying a military aircraft, killed May 10, 1911. **Area:** 4,660 acres. **Runway:** 11,550 ft. **Altitude:** 689 ft.

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:** 321.

Klamath Falls Arpt./Kingsley Field, Ore. 97603; 5 mi. S of Klamath Falls. **Phone:** 541-885-6350; DSN 830-6350. **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:** 396.

Lambert–St. Louis Arpt., Mo. 63044-2371; 20 mi. NW of downtown St. Louis. **Phone:** 314-263-6222; DSN 693-6222. **Unit:** 131st Fighter Wing (ANG). **Area:** 48 acres. **Runway:** 11,000 ft. **Altitude:** 604 ft. **Full-time personnel:** 397.

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:** 82.

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:** 323.

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:** 66.

Mansfield Lahm Arpt., Ohio 44903-5000; 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:** 56 (AGR).

March ARB, Calif. 92518-5000; 9 mi. SE of downtown Riverside. **Phone:** 909-655-1110; DSN 947-1110. **ANG Phone:** 909-655-2556; DSN 947-2556. **Units:** 4th Air Force (AFRC); 452nd Air Mobility Wing (AFRC); 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, 609; ANG, 254; DOD civilians, 580. **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:** 437.

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:** 88.

McGhee Tyson ANGB, 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:** 306.

Memphis Arpt., Tenn. 38118; within Memphis. **Phone:** 901-541-7120; DSN 726-7120. **Unit:** 164th Airlift Wing (ANG). **Area:** 103 acres. **Runway:** 11,120 ft. **Altitude:** 332 ft. **Full-time personnel:** 299. Fitness center and mini-exchange.

Minneapolis–St. Paul Arpt./ARS, Minn. 55420-2000; in Minneapolis, near confluence of the Mississippi and Minnesota Rivers. **AFRC phone:** 612-713-1110; DSN 783-1000. **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, 153; ANG, 293. Lodging, clubs, fitness center, and exchange.

Moffett Federal Airfield, 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:** 241.

NAS Fort Worth JRB, 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, 542; ANG, 267.

NAS New Orleans JRB, La. 70143-5012, 15 mi. S of New Orleans. **ANG Phone:** 504-391-8600; DSN 457-8600. **AFRC Phone:** 504-678-3292; DSN 678-3292. **Units:** 159th Fighter Wing (ANG); 926th Fighter Wing (AFRC). **Area:** 3,239 acres. **Runways:** 8,000 ft. and 6,000 ft. **Altitude:** 3 ft. **Full-time personnel:** ANG, 312; AFRC, 353.

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:** 318.

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. **AFRC Phone:** 716-236-2120; DSN 238-2120. **ANG Phone:** 716-236-2594, DSN 238-2594. **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, 352; ANG, 259. 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:** 74 (AGR only).

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:** 338.

Pittsburgh Arpt./ARS, Pa. 15108-4403; 12 mi. NW of Pittsburgh. **AFRC phone:** 412-474-8000; DSN 277-8000. **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, 325 ANG, 397. **Housing:** VOQ, 24, VEQ, 230. No on-base housing. Limited exchange.

Portland Arpt., Portland, Ore. 97218-2797. **Phone:** 503-335-4020; DSN 638-4020. **Units:** 142nd Fighter Wing (ANG); 244th Combat Communications Sq. (ANG); 272nd Combat Communications Sq. (ANG); Oregon Wing, CAP; 939th Rescue Wing (AFRC); Ore. ARNG. **Area:** 246 acres. **Runways:** 11,000 ft., 8,000 ft., and 7,000 ft. **Altitude:** 18 ft. **Full-time personnel:** 401.

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:** 234.

Reno/Tahoe Arpt. (May Field), Nev. 89502; 5 mi. SE of downtown Reno at 1776 ANG Way. **Phone:** 775-788-4500; DSN 830-4500. **Unit:** 152nd Airlift Wing (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:** 295.

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:** 321.

Rickenbacker Arpt., Ohio 43217-5887; 13 mi. SSE of Columbus. **Phone:** 614-492-4468; DSN 950-4468. **Units:** 121st Air Refueling Wing (ANG); Naval Air Reserve and Naval Construction; 164th Weather Flight (ANG); 52nd CST; Army Aviation Support Facility (ARNG). **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:** 399.

Rosecrans Memorial Arpt., Mo. 64503; 4 mi. W of St. Joseph. **Phone:** 816-236-3300; DSN 956-3300. **Unit:** 139th Airlift Wing (ANG). **Area:** 102 acres. **Runway:** 8,059 ft. **Altitude:** 813 ft. **Full-time personnel:** 301.

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 Electronic Security Sq. (ANG); 130th Engineering Installation Sq. (ANG); 109th Tactical Control Flt. (ANG). **Area:** 135 acres. **Runway:** 9,600 ft. **Altitude:** 4,226 ft. **Full-time personnel:** 407.

Savannah 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:** 246.

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; US 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, 744; AFRC, 237.

Sioux Gateway Arpt., Iowa 51111-1300; 7 mi. S of downtown Sioux City. **Phone:** 712-233-0210; DSN 585-0210. **Unit:** 185th Fighter Wing (ANG). **Area:** 288 acres. **Runway:** 9,000 ft. **Altitude:** 1,089 ft. **Full-time personnel:** 285.

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:** 291.

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:** 364.

Stewart Arpt., 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); USMCR unit (MAG 42, Det. B). **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:** 581 (ANG); 289 USMCR. Most military services available through West Point or subpost.

Ted Stevens Anchorage Arpt. (Kulis ANGB), Anchorage, Alaska 99502-1988. **Phone:** 907-249-1176; DSN 317-626-1176. **Units:** 176th Wing (ANG); 144th Airlift Sq. (ANG); 210th Air 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:** 439.

Toledo Express Arpt., Ohio 43558; 14 mi. W of Toledo. **Phone:** 419-868-4180; DSN 580-4180. **Unit:** 180th Fighter Wing (ANG). **Area:** 135 acres. **Runways:** 10,600 ft. and 5,600 ft. **Altitude:** 664 ft. **Full-time personnel:** 296.

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:** 284.

Tucson Arpt., Ariz. 85706-6099; 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:** 978.

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:** 306.

Volk Field ANGB, Wis. 54618-5001; 87 mi. NW of Madison. **Phone:** 608-427-1210; DSN 946-3210. **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:** 148.

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:** 276.

Westover ARB, Mass. 01022-5000; 10 mi. NE of Springfield. **Phone:** 413-557-1110; DSN 589-1110. **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:** ART, 472; DOD civilians, 441. **Housing:** VOQ, 41, VAQ, 142 beds.

Willow Grove ARS, Pa. 19090-5203; 14 mi. N of Philadelphia. **AFRC phone:** 215-443-1050; DSN 991-1050. **ANG phone:** 215-443-1500; DSN 991-1500. **Units:** 913th Airlift Wing (AFRC); 111th Fighter Wing (ANG). **History:** activated August 1958. **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, 304; ANG, 273.

Will Rogers World Arpt., Oklahoma City, 73179-1090; 9 mi. SW of downtown. **Phone:** 405-686-5210; DSN 940-5210. **Units:** 137th Airlift Wing (ANG); 205th Electronic Installation Sq. (ANG). **Area:** 133 acres. **Runways:** two, each 9,800 ft., and 7,800 ft. **Altitude:** 1,272 ft. **Full-time personnel:** 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:** 240.

Youngstown–Warren Arpt./ARS, Ohio 44473-5910; 14 mi. N of Youngstown. **Phone:** 330-609-1000; DSN 346-1000. **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:** 446. **Lodging:** 142 beds. Limited exchange.

USAF Almanac

Records and Trophies

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, Germany, the US, Great Britain, France, Spain, Italy, and Switzerland met in Paris to form the Fédération Aéronautique Internationale, the world body of national aeronautic sporting interests. The FAI today comprises the national aero clubs of 77 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: 115.65 mph (186.11 kph). Richard G. Rutan and Jeana L. Yeager in *Voyager* experimental aircraft at Edwards AFB, Calif., Dec. 14–23, 1986.

Great circle distance without landing: 24,986.727 miles (40,212.139 kilometers). Richard G. Rutan and Jeana L. Yeager in *Voyager* at Edwards AFB, Calif., Dec. 14–23, 1986.

Distance in a closed circuit without landing: 24,986.727 miles (40,212.139 kilometers). Richard G. Rutan and Jeana L. Yeager in *Voyager* at Edwards AFB, Calif., Dec. 14–23, 1986.

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 an aircraft launched from a carrier airplane: 314,750.00 feet (95,935.99 meters). USAF Maj. Robert M. White flying North American X-15 No. 3 at Edwards AFB, Calif., July 17, 1962.

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.

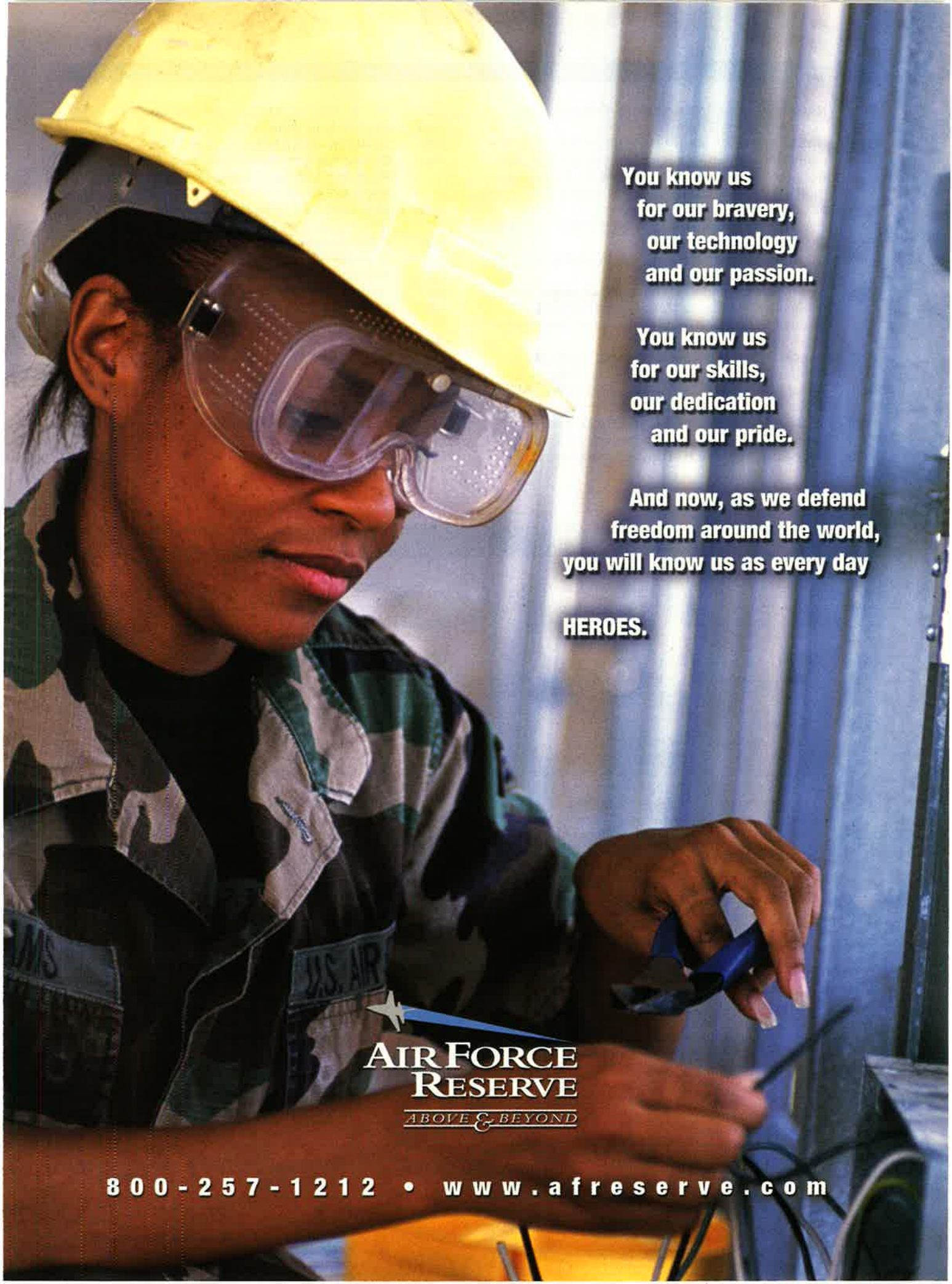
Speed over a closed circuit: 2,092.294 mph (3,367.221 kph). USAF Majs. Adolphus H. Bledsoe Jr. (pilot) and John T. Fuller (RSO) in Lockheed SR-71A Blackbird at Beale AFB, Calif., July 27, 1976.

Launched from a carrier airplane, X-15 test pilot Maj. Robert M. White flew to a world record–setting altitude of more than 59 miles in 1962.

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.
1917–20 **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 Co.** Diesel aircraft engine.
1932 **Glenn L. Martin.** Two-engined, high-speed, weight-carrying airplane.
1933 **Hamilton Standard Propeller Co., 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 Co., 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. **Clarence**
1958 **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 Co., 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 Corp.** Turbofan cruise missile engines.
1979 **Paul B. MacCready, AeroEnvironment, Inc., Bryan Allen.** *Gossamer Albatross.*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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 Corp., Gulfstream V industry team.** Gulfstream V.
1998 **Lockheed Martin Corp., 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.

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. Henry H. Arnold.
1913 2nd Lts. Joseph E. Carberry and Fred Seydel.
1914 Capt. Townsend F. Dodd and Lt. S.W. Fitzgerald
1915 Lt. B.Q. Jones.
1916–17 No award.
1918 Capt. Edward V. Rickenbacker.
1919 Lt. Col. Harold E. Hartney; Capts. John O. Donaldson, Lowell H. Smith, and F. Steinle; Lts. B.G. Bagby, D.B. Gish, E.M. Manzelman (posthumously), Belvin N. Maynard, R.S. Northington, and Alexander Pearson Jr.
1920 Capt. St. Clair Streett; 1st Lt. Clifford C. Nutt; 2nd Lts. C.H. Crumrine, Ross C. Kirkpatrick, and Eric H. Nelson; Sgts. Joe E. English, Edmond Henriques, and Albert T. Vierra.
1921 Lt. John A. Macready.
1922 Lts. John A. Macready and Oakley G. Kelly.
1923 Lts. John A. Macready and Oakley G. Kelly.
1924 Capt. Lowell H. Smith; 1st Lts. Leslie P. Arnold, Eric H. Nelson, and Leigh Wade; 2nd Lts. John Harding Jr. and Henry H. Ogden.
1925 Lts. Cyrus K. Bettis and Jimmy Doolittle.
1926 Pan American Goodwill Fliers: Maj. H.A. Dargue; Capts. Ira 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. Albert F. Hegenberger and Lester J. Maitland.
1928 1st Lt. Harry A. Sutton.
1929 Capt. A.W. Stevens.
1930 Maj. Ralph Royce.
1931 Brig. Gen. Benjamin D. Foulois.
1932 11th Bombardment Sq., March Field, Calif., 1st Lt. Charles H. Howard.
1933 Capt. Westside T. Larson.
1934 Brig. Gen. Henry H. Arnold.
1935 Capts. O.A. Anderson and A.W. Stevens.
1936 Capt. Richard E. Nugent; 1st Lts. Joseph A. Miller and Edwin G. Simenson; 2nd Lts. Burton W. Armstrong, Herbert Morgan Jr., and William P. Ragsdale Jr.; TSgt. Gilbert W. Olson; SSgt. Howard M. Miller; Cpl. Air Mechanic 2nd Class Frank B. Connor.
1937 Capts. Carl J. Crane and George V. Holloman.
1938 2nd Bombardment Group, Lt. Col. Robert Olds.
1939 Majs. Caleb V. Haynes and William D. Old; Capt. John A. Samford; 1st Lts. Richard S. Freeman and Torgils G. Wold; MSgt. Adolph Cattarius; TSgts. William J. Heldt, Henry L. Hines, and David L. Spicer; SSgts. Russell E. Junior and James E. Sands.
1940–46 No award.
1947 Capt. Charles E. Yeager.
1948 Lt. Col. Emil Beaudry.
1949 Capt. James G. Gallagher and crew of *Lucky Lady II.*
1950 27th Fighter Wing.
1951 Col. Fred J. Ascani.
1952 Majs. Louis H. Carrington Jr. and Frederick W. Shook; Capt. Wallace D. Yancey.
1953 40th Air Division, SAC.
1954 308th Bombardment Wing (M) and 38th Air Div., SAC.
1955 Col. Horace A. Hanes.
1956 Capt. Iven 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. William R. Payne and Majs. William L. Polthemus and Raymond R. Wagener, 43rd Bomb Wing, SAC.

1962 Maj. Robert G. Sowers and Capts. Robert MacDonald and John T. Walton.
1963 Capts. Donald R. Mack, John R. Ordemann, and Warren P. Tomsett; TSgt. Edsol P. Inlow; SSgts. Frank C. Barrett and Jack E. Morgan.
1964 464th Troop Carrier Wing, TAC.
1965 YF-12A Test Force (Col. Robert L. Stephens; Lt. Col. Daniel Andre; Majs. Walter F. Daniel and Noel T. Warner; Capt. James P. Cooney).
1966 Lt. Col. Albert R. Howarth.
1967 Maj. John H. Casteel; Capts. Dean L. Hoar and Richard L. Trail; MSgt. Nathan C. Campbell.
1968 Lt. Col. Daryl D. Cole.
1969 49th Tactical Fighter Wing, TAC.
1970 Capt. Alan D. Milacek and AC-119K crew (Capts. Roger E. Clancy, Ronald C. Jones, Brent C. O'Brien, and James A. Russell; TSgt. Albert A. Nash; SSgts. Adolfo Lopez Jr. and Ronald R. Wilson; Sgt. Kenneth E. Firestone; A1C Donnell H. Cofer).
1971 Lt. Col. Thomas B. Estes and Maj. Dewain C. Vick.
1972 Capts. Charles B. DeBellevue, Jeffrey S. Feinstein, and Richard S. "Steve" Ritchie.
1973 MAC aircrews.
1974 Majs. Willard R. MacFarlane, David W. Peterson, and Roger J. Smith.
1975 Maj. Robert W. Undorf.
1976 Capt. James A. Yule.
1977 C-5 aircrew (Capt. David M. Sprinkel and crew).
1978 C-5 aircrews (Lt. Col. Robert F. Schultz and crew and Capt. Todd H. Hohberger and crew, 436th Military Airlift Wing).
1979 Maj. James E. McArdle Jr.
1980 Crews S-21 and S-31, 644th Bombardment Sq.
1981 Capt. John J. Walters.
1982 B-52 Crew E-21, 19th Bombardment Wing.
1983 Capt. Robert J. Goodman and his crew, 42nd Bombardment Wing, SAC.
1984 Lt. Col. James L. Hobson Jr.
1985 Lt. Col. David 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. Jeffrey G.J. Hwang, 173rd FW, Oregon ANG, Klamath Falls Airport, Ore.
2000 Crew of Airevac 10E1/10E2, 86th AES and 75th AS, Ramstein AB, Germany.

Lts. John Macready (left) and Oakley Kelly pose in front of their record-setting Fokker T-2. The Army Air Service pilots received the Mackay Trophy for 1922 and 1923 in this transport, first for a world duration record of more than 35 hours and then for the first nonstop transcontinental flight—Long Island, N.Y., to San Diego. Macready had also received the 1921 trophy for world altitude record flights.

The Gen. Thomas D. White USAF Space Trophy

The Gen. Thomas D. White USAF Space Trophy 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.

The Hughes Achievement Award

The Hughes Achievement Award (formerly the Hughes Trophy) is presented annually to the top Air Force squadron with an air defense/air superiority mission. Raytheon now sponsors the award.

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

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Note: Inventory numbers are Total Active Inventory figures as of Sept. 30, 2001.

B-1B Lancer (TSgt. Cedric H. Rudisill)

Bombers

B-1 Lancer

Brief: A long-range, air refuelable multirole bomber capable of flying missions over intercontinental range, then penetrating enemy defenses with a heavy load of ordnance.

Function: Long-range conventional bomber.

Operator: ACC, ANG.

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: 93 (B-1B).

Unit Location: Active: Dyess AFB, Tex., Ellsworth AFB, S.D., Mountain Home AFB, Idaho. ANG: McConnell AFB, Kan., Robins AFB, Ga.

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 ejection seats.

Dimensions: span spread 137 ft, swept aft 78 ft, length 147 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 up to 84 Mk 82 (500-lb) bombs or Mk 62 naval mines and up to 30 CBU-87/89 cluster munitions and CBU-97 Sensor Fuzed Weapons (SFWs), to be fitted with the Wind-Corrected Munitions Dispenser (WCMD) kits in 2003, and up to 24 2,000-lb GBU-31 Joint Direct Attack Munitions (JDAMs), with AGM-54 Joint Standoff Weapon (JSOW) and AGM-158 Joint Air-to-Surface Standoff Missile (JASSM) from 2004.

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 Synthetic Aperture Radar (SAR), Ground Moving Target Indicator (GMTI), Ground Moving Target Track (GMTT), and Terrain-Following Radar, an extremely accurate Global Positioning System/Inertial Navigation System (GPS/INS), computer-driven avionics, and a strategic Doppler radar, enabling aircrews to navigate, update target coordinates in flight, and precision bomb.

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 is the improved variant initiated by the Reagan Administration in 1981. First production model flew October 1984 and USAF produced a total of 100. The B-1 was first used in combat in support of operations against Iraq during Desert Fox in December 1998. B-1B's speed, superior handling qualities, and large payload make it a key element of any joint/composite strike force, with the flexibility to deliver a wide range of weapons or to carry additional fuel, as required. Integration of the 2,000-lb GPS–guided GBU-31 JDAM is due for fleet completion in FY02.

An ongoing Conventional Mission Upgrade Program (CMUP) is significantly enhancing B-1B lethality and survivability through the integration of precision and standoff weapons and a robust ECM suite. CMUP includes GPS receivers, a MIL-STD-1760 weapon interface, secure interoperable radios, and improved computers to support precision weapons, initially the GBU-31 JDAM, with follow-on computer and software upgrades permitting simultaneous carriage of mixed unguided and guided weapons, including WCMDs (2003), AGM-154 JSOWs (2004), and the AGM-158 JASSMs (2004). The Defensive System Upgrade Program, incorporating the ALE-55 fiber-optic towed decoy, ALR-56M Radar Warning Receiver, and ALQ-214 receiver/processor, is aimed at improving aircrew situational awareness and survivability. Current plans envisage a reduction in the B-1 inventory to 60 aircraft, consolidated at Dyess AFB, Tex., and Ellsworth AFB, N.D., the cost savings to be used to improve readiness in the remaining fleet.

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–present.

IOC: April 1997, Whiteman AFB, Mo.

Production: 21.

Inventory: 21.

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 5,000 miles, with one aerial refueling more than 10,000 miles.

Armament: in a nuclear role: up to 16 nuclear weapons (B61, B61 Mod II, B83). In a conventional role: up to 16 GBU-31 (2,000-lb) JDAMs or a penetration version of a BLU-109, or 16 Mk 84 2,000-lb bombs; up to 16 2,000-lb GBU-36/B (GPS–Aided Munition); or up to eight 4,700-lb GBU-37 (GAM-113) near-precision guided weapons. Various other conventional weapons incl the Mk 82 500-lb bomb, M117 750-lb bomb, Mk 62 500-lb naval mine, and up to 32 CBU-87/89/97 cluster bombs. JASSM and JSOW are presently being added to B-2 Block 30 aircraft through FY03.

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 and, thereby, making way for less stealthy systems to operate.

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 a total weapons load of 40,000 lb.

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 the B61/7 and B61/11 nuclear gravity bombs, as well as two types of

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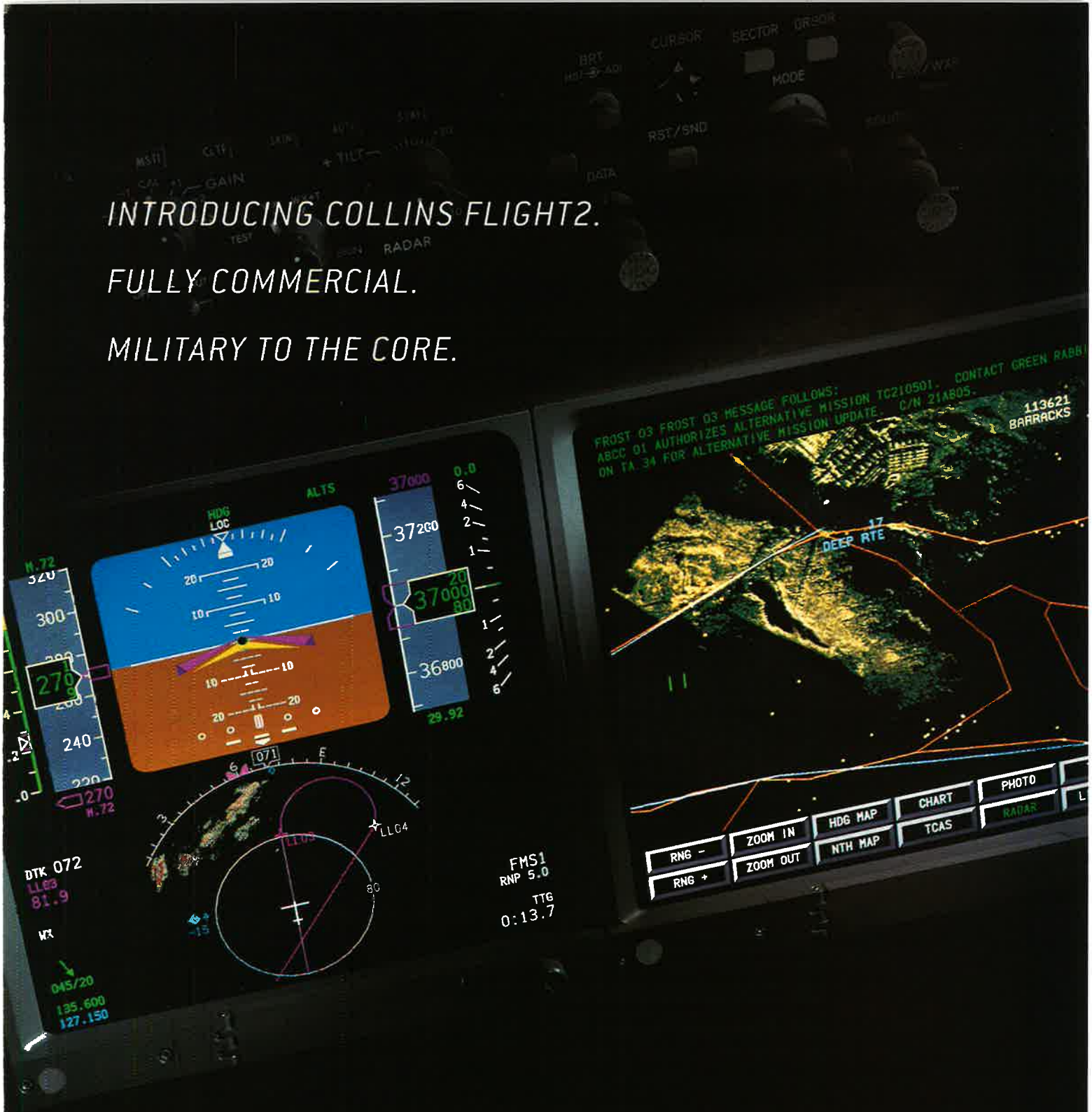

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Rockwell Collins

***B-2** Spirit* being refueled by a ***KC-10A** Extender* (Scott H. Spitzer)

GPS–Aided Munitions (GAMs), the GBU-37 and GBU-36B, on two rotary launcher assemblies, providing an interim, near-precision strike capability. All Block 10 and 20 aircraft have now been upgraded to Block 30.

Block 30 configuration retains weapons capability introduced in Block 10 and 20 and adds significant new capability. Using the rotary launcher assembly, all B-2s are capable of employing 16 Mk 84 JDAMs, 16 JSOWs, or eight GAM-113s (to be replaced by EGBU-28), with JASSM capability slated for 2004. All of these weapons are individually targeted, giving the B-2 multiple-kills-per-pass capability. 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, 36 750-lb M117s, 34 tactical munitions dispensers, or 80 Mk 62 sea mines. Modifications to the bomb racks will allow carriage of 80 independently targeted Mk 82 JDAMs in 2004. Future capability is expected to include the 500-lb Small Diameter Bomb (SDB). 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 (SAR).

The last original Block 20 B-2, used as a test aircraft at Edwards AFB, Calif., is being refurbished as an operational bomber and will enter operational service in September 2002.

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.

B-52 Stratofortress

Brief: A long-range, heavy multirole bomber that can carry nuclear or conventional ordnance or Air Launched Cruise Missiles, with worldwide precision navigation capability.

Function: Long-range heavy bomber.

Operator: ACC, 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), 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), bombs up to 2,000 lb, CBU 87/89/97 cluster munitions, WCMDs, GBU-31 JDAMs, JSOWs from 2002, JASSMs in 2003, and on some aircraft, three to four AGM-142A Have Nap missiles or eight AGM-84 Harpoons in under-wing clusters.

COMMENTARY

Fifty years since the first prototype flight, the B-52 retains its key role within USAF's manned strategic bomber force. The bomber's still-expanding weapons capability reflects its continuing ability to perform a wide range of missions including show of force, maritime operations, long-range precision strikes, offensive counterair, air interdiction, and defense suppression.

***B-52H** Stratofortress* (Ted Carlson)

The bomber is equipped with 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, thus improving combat ability and low-level flight capability. Pilots have Night Vision Goggles (NVGs) to further enhance night operation. The B-52's ECM suite uses a combination of electronic detection, jamming, and infrared countermeasures to protect against hostile air defense systems. The aircraft can also detect and counter missile attack from the rear.

Several versions of the Stratofortress were produced, 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. 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. Withdrawn 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.

Deployment of the B-1 and B-2 led to a change in the primary role of the B-52 to cruise missile carrier with, typically, multiple cruise missile launches at high altitude, often followed by B-52 low-level descent to attack additional targets using gravity weapons.

Ongoing modernization of its conventional capabilities is extending the B-52's service life well into this century, with the ability to provide massive firepower in low-threat environments supplemented by a standoff attack capability. Upgrades include the installation of GPS, ARC-210 radios, Have Quick II anti-jam radio, KY-100 secure radio, and MIL-STD-1760 interfaces; improved weapons capability includes naval mines, precision guided weapons, and advanced weapons, such as JDAM, JSOW, JASSM, and WCMD. Modification of heavy stores adapter beams will standardize aircraft to carry all B-52–certified munitions. Avionics improvements include the Avionics Midlife Improvement program, which replaces the current system processors and data transfer cartridges. Electronic attack improvements include the Situational Awareness Defensive Improvement panoramic threat receiver and the electronic combat modernization improvement upgrade to the ALQ-172 Electronic Countermeasures set. Recently installed Link 16 data link provides updated targeting information.

Current plans encompass a force of around 76 aircraft.

Fighter and Attack Aircraft

A-10 Thunderbolt II

Brief: A simple, effective, and survivable twin-engine aircraft specifically designed for Close Air Support of ground forces and which can be used against all ground targets, including tanks and other armored vehicles.

Function: Attack aircraft.

Operator: ACC, PACAF, USAFE, ANG, AFRC.

First Flight: Feb. 15, 1975 (preproduction).

Delivered: November 1975–March 1984.

IOC: October 1977.

Production: 713.

Inventory: 366.

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., NAS New Orleans JRB, La., Whiteman AFB, Mo.

Contractor: Fairchild Republic.

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 GAU-8/A gun; eight underwing hardpoints and three under fuselage for up to 16,000 lb of ordnance, incl various types of free-fall or guided bombs, Combined Effects Munition (CEM) dispensers, gun pods, up to six AGM-65 Maverick missiles, up to four AIM-9 Sidewinder missiles, and jammer pods. Chaff and flares carried internally to counter radar-directed or infrared-directed threats. The centerline pylon and the two flanking fuselage pylons cannot be occupied simultaneously.

COMMENTARY

Supporting the demands of the Close Air Support (CAS) mission, the A-10 combines large military load, long loiter, and wide combat radius with the ability to operate under 1,000-ft ceilings, with 1.5-mile visibility, and in darkness with NVGs. In a typical anti-armor mission, the A-10, nicknamed "Warthog," can fly 150 miles and remain on station for an hour. The 30 mm GAU-8/A gun provides a cost-effective weapon with which to defeat the whole array of ground targets, including tanks. The large bubble canopy provides all-around vision for the pilot, and the cockpit is protected with titanium armor, capable of withstanding projectiles up to 23 mm. An A-10 structural enhancement is strengthening the wing center section and outer panels. Used extensively during the Persian Gulf War, the A-10 is projected to serve well into the 2020s.

A-10A equipment includes EGI, an Enhanced GPS/Inertial Navigation System (INS), Head-Up Display (HUD), NVGs, the Low-Altitude Safety and Targeting Enhancement (LASTE) system for ground collision avoidance, Pave Penny laser target identification pod, ECM, target penetration aids, self-protection systems, and AGM-65 Maverick and AIM-9 Sidewinder missiles. A precision engagement upgrade will provide the A-10 with new cockpit displays, a digital stores management system, a situational awareness data link and integration of the JDAM and WCMD. A targeting pod, not yet selected, is also planned. Low-Rate Initial Production (LRIP) of upgrade kits is scheduled to begin in 2004. Additionally, an upgraded automated chaff and flare system is planned for all aircraft by 2005.

OA-10A. Redesignated A-10s, used for forward air control of fighter aircraft, combat escort, search and rescue, and visual reconnaissance. The 30 mm GAU-8/A gun is retained, but under-wing stores are normally restricted to canisters of white phosphorous rockets for target marking. The first OA-10 unit reached Initial Operational Capability (IOC) in October 1987.

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: 1968–95.

IOC: 1972 (AC-130H); 1995 (AC-130U).

Production: 39.

Inventory: 8 (AC-130H); 13 (AC-130U).

Unit Location: Hurlburt Field, Fla.

Contractor: Lockheed Martin (airframe); Boeing (AC-130H); Rockwell (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.

***A-10A** Thunderbolt II* (SSgt. Johnny Saldivar)

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 Howitzer with 100 rd.

COMMENTARY

The AC-130 is a C-130 modified with gun systems, electronic and Electro-Optical (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 (C^2) agencies, and deliver surgical firepower in support of both conventional and special operations missions. During operations in Afghanistan the AC-130 Spectre has worked in conjunction with the RQ-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 16th 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.

AC-130U Spookys are the most recent gunship conversions, converted by Rockwell, of which 13 were delivered to the 16th SOW's 4th SOS in 1994–95. These aircraft have greater altitude capability and combine increased firepower, reliability, and superior accuracy with the latest methods of target location. The two 20 mm cannon of the H model are replaced with one trainable 25 mm Gatling gun. 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.

Although the AC-130H Spectre and AC-130U Spooky gunships use dissimilar avionics and other systems, fire support to ground parties 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 and maintain air superiority in aerial combat.

Function: Air superiority fighter.

Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG.

First Flight: July 27, 1972.

Delivered: November 1974–85.

IOC: September 1975.

Production: 874.

Inventory: 520.

Unit Location: Active: Edwards AFB, Calif., Eglin AFB, Fla., Elmendorf AFB, Alaska, Kadena AB, Japan, Langley AFB, Va., Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath, UK, Tyndall AFB, Fla. ANG: Hickam AFB, Hawaii, Jacksonville Arpt., Fla., Klamath Falls Arpt., Ore., Lambert–St. Louis Arpt., Mo., NAS New Orleans JRB, La., Otis ANGB, Mass., Portland Arpt., Ore.

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 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. Future weapons incl AIM-9X.

COMMENTARY

Superior maneuverability and acceleration, range, weapons, and avionics enable the F-15 to penetrate hostile defenses and establish air superiority over enemy systems. F-15 fighters deployed to the Persian Gulf for Desert Storm accounted for 29 of the 37 USAF air-to-air victories.

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. A/Bs now serve with ANG.

F-15C (single-seat) and **F-15D** (two-seat) models followed in June 1979. Improvements include 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. Since 1983 tactical capabilities have been enhanced extensively through the Multi-Staged Improvement Program (MSIP), an ongoing program of installation or modification of new or existing avionics equipment, allowing for the carriage of more advanced weapons, and increased self-protection. The last 43 aircraft included improved APG-70 radar, and additional F-15C/Ds are receiving an APG-63 upgrade, the APG-63(V)1. One squadron has received the later APG-63(V)2, featuring an advanced active electronically

***AC-130U** Spooky*

***F-15A** Eagle* (Guy Aceto)

scanned array radar antenna. F-15C/D aircraft will also be modified with the Joint Helmet Mounted Cueing System (JHMCS), a "look and shoot" head-mounted system that significantly enhances lethality in close-range aerial combat. Other modifications include improved engines and GPS equipment. All types are being equipped with Link 16 data link.

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: 227.

Inventory: 217.

Unit Location: Edwards AFB, Calif., Eglin AFB, Fla., Elmendorf AFB, Alaska, Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath, UK, 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 87/89/97 cluster munitions; unguided munitions; and nuclear weapons. JSOW, JDAM, and WCMD capability from FY03.

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 (WFOV) 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 SAR 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 Embedded Global Positioning System Inertial Navigation System (EGI) and Link16 data link. Strike capability will be enhanced with the addition of the JHMCS. Smart weapon (JSOW, JDAM, and WCMD) capability will be added from 2003. CFTs, adapted to carry ordnance tangentially, can be fitted to reduce drag while increasing combat range.

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. They also operated successfully with Joint STARS aircraft.

Congress authorized 10 additional aircraft with deliveries beginning in FY02 through FY04. These new F-15Es will include upgraded Programmable Armament Control (PAC) and software for compatibility with JDAM, JSOW, and WCMD, as well as an enhanced night vision capability.

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 1978–2007 (planned).

IOC: October 1980, Hill AFB, Utah.

Production: 2,206.

Inventory: 1,381.

Unit Location: 14 active wings, 28 ANG, and five AFRC units (one Associate).

Contractor: Lockheed Martin; Northrop Grumman.

***Block 50 F-16CJ** Fighting Falcon* (SSgt. Greg L. Davis)

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).

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. 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, and were again used extensively during Allied Force. F-16s are deployed to patrol the no-fly zones in northern and southern Iraq.

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. USAF and NATO operators have cooperated in an operational capabilities upgrade. Under this midlife update program, the radar, fire-control computer, stores-management computer, and avionics software are improved, 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.

The Multinational Staged Improvement Program (MSIP), 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. 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 40/42 F-16s 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, a LANTIRN nav/attack system, and IPEs. System improvements also introduced at Block 40/42 include core avionics hardware, installation of a LANTIRN nav/attack system, GPS, enhanced-envelope gunsight, digital flight controls, automatic terrain following, increased takeoff weight and maneuvering limits, an 8,000-hour airframe, and expanded envelope nine–G capability.

Block 50/52 F-16C/Ds have MSIP Stage III improvements, which also show up in selected retrofits of earlier F-16 blocks. These aircraft incorporate the latest cockpit control and display technology, including a wide-angle HUD. Weapons improvements include multishot AMRAAM compatibility, AGM-154 JSOW, and WCMD. ANG and AFRC Block 25/30 F-16s are being upgraded under the Combat Upgrade Plan Integration Details (CUPID) program to near Block 50 standard. Improvements include embedded GPS/INS, Situation Awareness Data Link (SADL), and a countermeasures management system.

In another program, Block 50/52 USAF F-16C/Ds, followed by Block 40/42 from 2005, are being retrofitted with a new modular mission computer being developed under an F-16 Common Configuration Implementation Program (CCIP), aimed at extending operational flexibility. This effort includes the participating European governments of the F-16 Multinational Fighter Program. Other improvements to be incorporated include color displays, Sniper XR targeting pod, JHMCS, AIM-9X, Link 16 data link, and im-

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proved weapons capabilities. First delivery made January 2002.

Block 60 F-16C/Ds include most Block 40 and 50 configurations and other improvements, such as a new internal sensor suite, which is similar to LANTIRN but with only the sensor heads outside the aircraft. Block 60 will also include a new Integrated Electronic Warfare System and the Agile Beam Radar from Northrop Grumman. The General Electric F110-132 engine will be the power plant of choice. Currently Lockheed Martin will deliver 80 Block 60 fighters from 2004–07 to the United Arab Emirates.

F-16CG designated aircraft are equipped with LANTIRN for precision day or night attack.

F-16CJ/DJ designated Block 50 aircraft are equipped with the High-speed Anti-Radiation Missile (HARM) Targeting System (HTS) for Suppression of Enemy Air Defenses (SEAD).

F-22 Raptor (Judson Brohmer)

F-22 Raptor

Brief: High-technology follow-on for the F-15C. An all-weather fighter that combines an extremely maneuverable airframe at both sub- and supersonic speeds with stealth technologies and highly integrated avionics to help it penetrate enemy airspace and achieve air superiority in aerial combat.

Function: Fighter.

Operator: AFMC, ACC.

First Flight: Sept. 7, 1997.

Delivery: 2001 (first production representative aircraft)–2013 (planned).

IOC: December 2005.

Production: Up to 339 planned.

Inventory: seven test aircraft (as of January 2002).

Unit Location: Langley AFB, Va. (first operational location).

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: 50,000 ft.

Performance (design target): max level speed at S/L 900+ mph, range more than 2,000 miles.

Armament: (projected) 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 1,000-lb JDAMs replace four AMRAAMs internally.

COMMENTARY

This ultrasophisticated multimission air superiority fighter aircraft is designed to penetrate high-threat enemy airspace and achieve air superiority with a first-look, first-kill capability against multiple targets. It will cruise at supersonic speed without using its afterburners (supercruise). Its fully integrated avionics and weapon systems will permit simultaneous engagement of multiple targets. Advanced maneuverability is achieved through the combination of the avionics system, structural strength, and thrust vectoring nozzles. A Raytheon Common Integrated Processor ties together various avionics functions.

Two prototypes were built for competitive evaluation with Northrop/McDonnell Douglas YF-23 prototypes. First flight was Sept. 29, 1990. **YF-22** selected as winner in April 1991.

F-22A. Production-configured version entered Engineering and Manufacturing Development (EMD) phase in August 1991. USAF is receiving nine single-seat F-22As, three without avionics to explore flight characteristics, flutter, loads, propulsion, and envelope expansion and six as avionics test beds. It is also testing one static test and one fatigue test airframe.

F-22 EMD flight test continues as the F-22 expands the flight envelope and tests the evolutionary integrated avionics. On Sept. 21, 2001, the F-22 accomplished a successful guided launch of an AIM-120 AMRAAM. Development flight testing will continue in preparation for entry into Dedicated Initial Operational Test and Evaluation (DIOT&E) in 2003. The F-22 was approved for LRIP on Aug. 14, 2001, with 10 aircraft subsequently ordered. Eight Production Representative Test Vehicles (PRTVs) are currently in production. A second LRIP decision has contracted for 13 aircraft.

***X-35A** Lockheed Martin Joint Strike Fighter concept demonstrator* (Tom Reynolds)

F-35 Joint Strike Fighter

Brief: An affordable, highly common family of next-generation strike aircraft.

Function: Multirole fighter.

Operator: ACC for USAF.

First Flight: Oct. 24 2000 (concept demonstrator).

Delivery: 2008 (anticipated first production aircraft).

IOC: 2010 (USAF).

Production: planned: 1,763 (USAF), 480 (USN), 609 (USMC), 150 (UK).

Inventory: TBD.

Unit Location: TBD.

Contractor: Lockheed Martin, with Northrop Grumman and BAE Systems; Pratt & Whitney is primary propulsion contractor; General Electric is alternate engine contractor.

Power Plant: one Pratt & Whitney F135 or General Electric F136 turbofan (production), in 35,000-lb thrust class.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: TBD.

Weight: TBD.

Ceiling: TBD.

Performance (design targets): max level speed at S/L 630 knots calibrated airspeed for Navy and Short Takeoff and Vertical Landing (STOVL) variants, Mach 1 for USAF variant, combat radius more than 678.5 miles for USAF variant, 690 miles for Navy variant, and 517.5 miles for STOVL variant.

Armament: (main weapons bay): USAF variant: one internal gun, two AMRAAMs, and two 2,000-lb JDAMs. USN variant: two AMRAAMs and two 2,000-lb JDAMs. STOVL variant: two AMRAAMs and two 1,000-lb JDAMs. External carriage will also be available. (Note: Numerous other weapons capabilities will be added as system development continues.)

COMMENTARY: The Joint Strike Fighter (JSF) is a multinational cooperative development program that will develop and field an affordable, highly common family of next-generation strike fighters. USAF is developing the JSF to 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 LO design, the JSF incorporates stealth, 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.

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. The JSF is powered by a derivative of the Pratt & Whitney F119 engine, called the F135. General Electric is to develop an alternative power plant, the F136, for production.

F-117 Nighthawk

Brief: World's first operational aircraft designed to exploit Low Observable (LO) stealth technology to expand the range of heavily defended strategic 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: 55.

Unit Location: Eglin AFB, Fla., Holloman AFB, N.M., Edwards AFB, Calif.

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.

COMMENTARY

F-117 is the Air Force's primary strategic attack aircraft for penetrating high-threat target areas with precision weapons and is the only stealthy, true precision capability currently in the Global Strike Task Force. Its small radar signature and LO technologies allow the aircraft to penetrate dense threat environments and to deliver precision weapons against highly defended, high-value targets with pinpoint accuracy. Primary missions include strategic 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. During the Persian Gulf War in 1991, a fleet of more than 40 F-117As undertook 1,270 missions. No aircraft were lost or damaged by hostile fire. Twenty-four F-117s participated extensively in combat operations during Allied Force. One F-117 was lost March 27, 1999, during that conflict.

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 Tactical Fighter Wing in 1989) at Tonopah Test Range Airfield, Nev., up until 1992 where operations were restricted mainly to night flying to maintain secrecy.

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 infrared 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 modification aims at providing a single, optimal LO configuration, adverse weather capability via additional advanced weapons, and maintaining the fleet through its service life.

X-45 UCAV

Brief: A concept demonstrator for a stealthy Unmanned Combat Air Vehicle (UCAV) that will be capable of carrying a large weapons payload for the SEAD mission. The system will be stored in crates until required, then reassembled and made mission-ready within a very short period.

Function: Concept demonstrator UCAV for the SEAD mission.

First Flight: 2002 (planned).

Contractor: Boeing.

Power Plant: Honeywell F-124 turbofan.

Dimensions: span around 34 ft, length 27 ft.

COMMENTARY

A USAF/Defense Advanced Research Projects Agency (DARPA) program to develop UCAV technology for the SEAD mission. The Boeing **X-45** concept demonstrator is a Y-shaped airplane, designed for stealth and able to carry two tons of ordnance, including GPS-guided munitions. Equipment will include an Electronic Warfare (EW) suite and SAR. The vehicle will be capable of being stored for lengthy periods in controlled conditions until required operationally. Work on a more-developed X-45 version is under way.

YAL-1A Attack Airborne Laser

Brief: The prototype YAL-1A, using a modified 747-400F platform, will be the world's first operational airborne high-energy laser weapon system. It will be used to kill Theater Ballistic Missiles (TBMs) in their boost, or very earliest, phase of flight, when the TBMs display bright plumes and are under tremendous dynamic stresses, making them vulnerable to laser weapons. The Airborne Laser can target TBMs hundreds of miles away and thus can fly over friendly territory to kill TBMs as they are launched.

Function: Airborne laser.

Operator: ACC.

First Flight: TBD.

Delivered: to be completed by FY06–09 (planned).

IOC: FY08–10 (planned).

Production: seven (planned).

Inventory: TBD.

Unit Location: TBD.

Contractor: Boeing (ABL platform; Battle Management system), TRW (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 kms, unrefueled endurance at 40,000 ft with operational laser weapon load approx 6 hr.

COMMENTARY

The Airborne Laser will become the first directed energy weapon in the US arsenal. Management of the program was transferred to Ballistic Missile Defense Organization (now Missile Defense Agency, MDA) in summer 2001.

Air Combat Command plans to base the Attack Laser in CONUS, but it has the ability to deploy with minimal airlift support to any region of the world. It will arrive in theater with its crew, laser fuel, and initial spares ready to fight. Typical deployment would include five aircraft to establish two near continuous combat air patrols as directed by the joint force commander. The aircraft will fly above the clouds and typically operate at an altitude of approx 40,000 ft, initially located some 50 miles from the enemy but able to be moved forward as US forces gain air superiority. Information on the hostile launch location can also be determined by the ABL and passed on to attack airplanes.

The Attack Laser's main armament is a lightweight, megawatt-class Chemical Oxygen–Iodine Laser (COIL). The laser weapon contains 14 COIL modules and sufficient chemical fuel for 20–40 TBM kills. An optical system transports the laser beam up to the aircraft nose, where a 4.5-ft-diameter mirror in a ball turret points the beam at the target. The optical system contains low-power lasers, sensors, steering mirrors, and adaptive optics (deformable mirrors) to precisely track targets and correct atmospheric distortions, thereby increasing the high-energy laser beam's intensity on target and the system's lethal range.

The test aircraft will offer limited operational capability; this aircraft will eventually be converted to a fully operational model.

Reconnaissance and Surveillance Aircraft

E-3 Sentry

Brief: Modified Boeing 707, fitted with a rotating radar dome 30 ft wide and 6 ft thick, which provides all-weather air surveillance and C^3 for tactical and air defense forces. Capable of surveillance from Earth's surface up to the stratosphere, over land or water, at more than 200 miles.

Function: Airborne early warning, Battle Management (BM), C^3 aircraft.

Operator: ACC, PACAF, AFRC (Associate).

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.

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 AWACS mission specialists.

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

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 production models and two 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 is near completion. Mission system upgrades include new passive detection systems, known as Electronic Support Measures, that complement the active beaming radar, enabling the aircraft to detect signals emitted by both hostile and friendly targets. Additional enhancements include upgrade of the Joint Tactical Information Distribution System (JTIDS), jam-resistant communications, increased computer capacity, and GPS capability. Radar system improvements under way permit AWACS aircraft operating in the pulse–Doppler mode to detect smaller, stealthier targets. Future improvement and management support are being handled within a single, long-term contract awarded May 2001.

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, BM, C^2 aircraft.

Operator: ACC.

First Flight: December 1988.

Delivered: May 1996–February 2003 (planned).

IOC: Dec. 18, 1997.

Production: 16 by 2003.

Inventory: 11.

Unit Location: Robins AFB, Ga.

Contractor: Northrop Grumman; Motorola; Cubic; Raytheon.

Power Plant: four Pratt & Whitney TF33-102C turbojets, each 19,200 lb thrust.

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 is a Battle Management platform capable of providing theater commanders with C^2 of air-to-ground forces and simultaneous near-real-time wide area surveillance as well as downlink of targeting information to air and ground commanders. Joint STARS battle managers, in combination with a robust communications suite, conduct C^2 of air operations to engage enemy forces in day, night, and adverse weather con-

***E-3C** Sentry* (Ted Carlson)

***E-8C** Joint STARS* (Ted Carlson)

ditions. Joint STARS also conducts near-real-time surveillance and reporting for use by air and ground forces. The radar subsystem features a multimode, side-looking, phased-array radar that provides interleaved Moving Target Indicator (MTI), SAR, and Fixed Target Indicator (FTI) imagery. Joint STARS downlinks via a secure, jam-resistant digital data link. 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).

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 has been placed in long-term storage.

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. The first E-8C flew in March 1994 and served as the preproduction test bed. The last six production aircraft will feature more advanced computer systems, which will be retrofitted on the 10 earlier aircraft. Planned and projected improvements include Link 16 upgrade under the Radar Technology Insertion Program (RTIP), a preplanned product improvement effort aimed at developing and integrating advanced radar systems for the E-8C, enhanced SAR, and engine upgrade.

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: June 1993.
Delivered: October 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 38.
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 reconnaissance with an IR linescanner, SAR, and forward- and vertical-looking video cameras, to monitor the 1992 Open Skies Treaty.

OC-135B modifications center around four cameras installed in the rear of the aircraft. Cameras installed include one vertical and two oblique KS-87 framing cameras, used for low-altitude photography approximately 3,000 ft. above the ground, and one KA-91 pan camera, which pans from side to side to provide a wide sweep for each picture, used for high-altitude photography at approximately 35,000 ft. Data is processed and recorded by the Miletus camera 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 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: 21.
Unit Location: Offutt AFB, Neb.
Contractor: Boeing (airframe); Raytheon; Textron.
Power Plant: four Pratt & Whitney TF33-P-5/9 turbofans, each 18,000 lb thrust. (Replaced with CFM International CFM-56s in one W version.)
Accommodation: flight crew of four; 25–35 mission crew.
Dimensions: (Cobra Ball) span 131 ft, length 140 ft, height 42 ft; (Cobra Sent) span 135 ft, length 136 ft; (Rivet Joint) height 38 ft.
Weight: max gross 299,000 lb.
Ceiling: 35,000 ft.
Performance: speed 500 mph plus, range, with air refueling, unlimited.

COMMENTARY

The 55th Wing at Offutt AFB, Neb., operates a highly specialized fleet for worldwide reconnaissance missions. All are due to be re-engined and are subject to ongoing modernization, with upgrade of avionics and primary mission equipment to expand capability and maintain effectiveness.

RC-135S Cobra Ball. Three aircraft are used for ballistic missile tracking. Equipment includes wide-area IR sensors, long-range optical telescopes, and an advanced communications suite that can locate a missile more than 250 miles away and calculate its trajectory and impact point.

RC-135U Combat Sent. Two aircraft with larger tailcone and fin fairing, used for measuring and analyzing foreign electronic and IR equipment. IOC: 1967.

RC-135 V/W Rivet Joint. Used for electronic surveillance. RC-135 Rivet Joints loiter near battlefields and provide near-real-time data updates on enemy defensive and offensive activities to warfighters via the Tactical Information Broadcast System and JTIDS to crews of F-16CJ HTS aircraft. The aircraft's recon systems are continuously upgraded to keep pace with new threats.

TC-135S/W. Used for training purposes.

RQ-1 Predator

Brief: A medium-altitude, long-endurance Unmanned Aerial Vehicle (UAV), flown remotely. Joint force commander asset with multiple imagery sensors.

Function: Unmanned reconnaissance aircraft.
Operator: ACC.
First Flight: July 1994.
Delivered: July 1994 (USAF from July 1996)–present.
IOC: TBD.
Production: 12 systems planned (system typically consists of four air vehicles, one ground control station, and one Trojan Spirit II satellite communications suite). Sixty vehicles total ordered.
Inventory: Eight systems.
Unit Location: Indian Springs AFAF, Nev.
Contractor: General Atomics Aeronautical Systems; Northrop Grumman; Electro Space 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, continuous coverage on station with multiple air vehicles and relief on station, 460 miles from base at altitude of 25,000 ft, endurance 24+ hours at operational radius of 575 miles.

COMMENTARY

USAF has three Predator squadrons, the 11th, 15th, and 17th RS. The 11th conducts mission qualification training, as well as operational deployments. The designations RQ-1A and RQ-1B (upgraded, larger version) refer to the system; the air vehicles are designated RQ-1K and RQ-1L, respectively. Predator demonstrated its operational capability, while still in the development stage, during surveillance missions over Bosnia and Iraq. It has since deployed to Enduring Freedom, operating in conjunction with AC-130 Spectres. Navigation is by GPS/INS. EO/IR and SAR sensors with C–band line of sight and Ku-band satellite data link allow near-real-time transmissions of video images to the ground control station. System upgrades aimed at expanding capability include laser designators in addition to the sensors. Experiments with Predators armed with Hellfire missiles have been used to assess the UAV potential for the attack mission. USAF is also contemplating an air-to-air role.

RQ-4 Global Hawk

Brief: A high-altitude, long-range, long-endurance Unmanned Aerial Vehicle.

Function: Unmanned reconnaissance aircraft.
Operator: ACC.
First Flight: Feb. 28, 1998.
Delivered: five.
IOC: TBD.
Production: MSII/LRIP decision expected in FY01.
Inventory: TBD.
Unit Location: Beale AFB, Calif.
Contractor: Northrop Grumman; Raytheon.
Power Plant: one Rolls Royce–Allison AE 3007H turbofan, 7,600 lb thrust.
Accommodation: unmanned system.
Dimensions: length 44.4 ft, height 15.2 ft, span 116.2 ft.
Weight: empty 9,200 lb, gross 25,600 lb.
Ceiling: 67,300 ft.

***RQ-1A** Predator* (TSgt. Scott Reed)

Performance: design goals incl endurance of up to 40 hr at a cruise speed of 400 mph and at an altitude of 65,000 ft. This would allow loiter on station 1,380 miles from base for 24 hr.

COMMENTARY

A high-altitude endurance UAV carrying a 2,000-lb payload, incorporating EO/IR and SAR sensors that permit switching among radar, IR, and visible wavelengths as required. Objective system will add Signals intelligence (Sigint) and improved Ground Moving Target Indicator (GMTI) capability. 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 No. 2 crashed March 29, 1999. Vehicle No. 3 was damaged Dec. 6, 1999, after a test flight. Vehicle No. 1 resumed test flights March 11, 2000, after a precautionary standdown.

Global Hawk began as an advanced concept technology demonstrator, completed a military utility assessment, and in March 2001 entered into EMD. It has completed over 100 flights, flown in excess of 66,000 ft altitude and 31 hours endurance, and accumulated more than 1,300 hours total flight time. Global Hawk participated in several joint/NATO exercises, to include flying over water to Alaska and completing the first transoceanic crossing to Portugal and back. In spring 2001, Global Hawk flew to Australia for six weeks of demonstrations, including support to Exercise Tandem Thrust. Although still a development system, Global Hawk first deployed operationally in support of Enduring Freedom in November 2001.

The Air Force is currently evaluating options to field operational Global Hawks, with upgraded sensor capabilities, power, and payloads. Projected procurement is 51 air vehicles. Two LRIP UAVs are scheduled for delivery in September and December 2003, with a third vehicle proposed in the recent budget.

Projected Primary Aircraft Inventory (PAI) is 18 Imagery intelligence (Imint) and 12 Sigint aircraft. Total buy TBD.

***RQ-4** Global Hawk* (TSgt. Jack Braden)

***U-2** Dragon Lady* (SSgt. Sean M. Worrell)

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: August 1955 (U-2); 1967 (U-2R); October 1994 (U-2S).

Delivered: 1955–October 1989.

IOC: circa 1956.

Production: 35 (U-2S/ST).

Inventory: 31.

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 system, capable of carrying Imint and Elint sensors simultaneously.

First delivery of the new ASARS-2A SAR was made August 2001. An upgrade of the U-2's high-resolution reconnaissance system, ASARS-2A has an all-weather, day/night, and GMTI capability. A new mission planning system is also scheduled.

U-2R (single-seat) and **U-2RT** (two-seat) aircraft, derived from the original version that had a key role in the Cuban missile crisis of 1962, were significantly larger and more capable than the earlier aircraft. The last U-2R aircraft were delivered to USAF in October 1989. In 1992, all existing U-2s and tactical TR-1s were consolidated under the designation U-2R.

U-2S (single-seat) and **U-2ST** (two-seat) are the current designations of all 35 aircraft (31 U-2S mission aircraft, four U-2ST trainers) in the inventory, having completed conversion to S model configuration with the new GE F118 engine, incorporating significant improvements in reliability and performance over the U-2R. The Air Force accepted the first U-2S in October 1994.

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: C-130J: October 1999–present.

IOC: 1959 (B model), 1962 (E), 1964 (H).

Production: (no new-build WC-130H); eight WC-130J (on contract).

Inventory: 10 (WC-130H); four (WC-130J).

Unit Location: Keesler AFB, Miss.

Contractor: Lockheed Martin.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: six.

Dimensions: span 132.5 ft, length 99.3 ft, height 38.5 ft.

Weight: gross 155,000 lb.

Ceiling: 33,000 ft at 100,000 lb gross T-O weight.

Performance: speed 374 mph at 20,000 ft, range 4,000 miles.

COMMENTARY

The WC-130 is flown by AFRC organizations known as the Hurricane Hunters. The hurricane reconnaissance area includes the Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and central Pacific Ocean areas.

WC-130B/E. Earlier version C-130 modifications used for weather reconnaissance. Now retired.

WC-130H. Improved version, currently operated by the 53rd WRS for weather reconnaissance duties, including penetration of tropical storms, to obtain data for forecasting storm movements.

It is equipped with two external 1,400-gallon fuel tanks, an internal 1,800-gallon fuel tank, and uprated engines. 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, Fla.

WC-130J. Weather-capable versions of the latest C-130 model, powered by four Allison AE2100D3 turboprops. First of 10 aircraft that will replace the WC-130H was delivered Oct. 12, 1999.

Special Duty Aircraft

E-4B National Airborne Operations Center

Brief: A four-engine, swept-wing, long-range, high-altitude airplane providing a modern, highly survivable C^3 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

E-4 aircraft are used to execute the National Airborne Operations Center (NAOC), previously the National Emergency Airborne Command Post (NEACP), mission. The E-4B fleet provides a survivable C^3 platform throughout the full threat spectrum, including sustained operations in a nuclear environment.

A militarized version of the Boeing 747-200, the first B model was delivered to the Air Force in January 1980. Four have been produced, of which three are converted E-4As. The first operational mission was flown in March 1980. They 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 Demand Multiple Access (FDMA) communica-

tions 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 EMD 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 programmed changes to the aircraft's interior configuration, internal noise reduction modifications, Battle Management improvements, and Global Air Transport Management (GATM) avionics modifications, will ensure the E-4B aircraft can effectively execute its NAOC and FEMA missions for the foreseeable future.

EC-18

Brief: A heavily modified Boeing 707 used as a flexible airborne telemetry and other data recording and relay station in tests of aircraft, spacecraft, and missiles.

Function: Electronic surveillance.

Operator: AFMC.

First Flight: February 1985.

Delivered: January 1986.

IOC: January 1986.

Production: six.

Inventory: two.

Unit Location: Edwards AFB, Calif.

Contractor: Boeing.

Power Plant: four Pratt & Whitney TF33 turbofans, each 18,000 lb thrust.

Accommodation: 16–24 in EC-18B.

Dimensions: span 145.8 ft, length 152.9 ft, height 42.4 ft.

Weight: gross 326,000 lb.

Ceiling: 42,000 ft.

Performance: max cruise speed 470 mph, range 7,610 miles.

COMMENTARY

EC-18B Advanced Range Instrumentation Aircraft (ARIA). Retired 2001 and aircraft transferred to the E-8C Joint STARS program.

EC-18D Cruise Missile Mission Control Aircraft (CMMCA) are Boeing 707s, modified by Chrysler, to include an AN/APG-63 surveillance radar, telemetry receiver, and weather radar. Operated by the 452nd FTS, the two aircraft support USAF and USN missile testing and are also capable of monitoring and controlling UAVs.

EC-130E/J

Brief: A heavily modified C-130 which, in its several variants, is used to carry out battlefield command, EW, and electronic combat.

Function: C^2; psychological warfare.

Operator: ACC, ANG.

First Flight: January 1990.

Delivered: March 1990.

IOC: December 1990.

Production: (no USAF new-build EC-130Es); four EC-130J ordered.

Inventory: 15.

Unit Location: Active: Davis–Monthan AFB, Ariz. ANG: Harrisburg Arpt., Pa.

Contractor: Lockheed Martin; Raytheon; General Dynamics.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp; (EC-130E) T-56-A-1S turboprops, each 4,200 shp; (EC-130J) four Rolls Royce–Allison AE2100D turboprops, each 4,591 shp.

***EC-130E** ABCCC* (TSgt. Lance Cheung)

Accommodation: four flight crew, 15 mission personnel.

Dimensions: span 132.6 ft, length 99 ft, height 38 ft.

Weight: gross 155,000 lb; (C-130J) 175,000 lb.

Ceiling: 20,000 ft; (C-130J) 30,560 ft.

Performance: speed 299 mph, range in excess of 2,100 miles; (C-130J) 393 mph, range 4,140 miles.

COMMENTARY

EC-130E ABCCC is an Airborne Battlefield Command and Control Center. Seven aircraft were updated by Unisys to ABCCC III standard. The advanced JTIDS receives data transmitted by AWACS aircraft and other systems, enabling the crew to see a real-time picture of air operations over a combat area. EC-130s have been deployed in support of NATO operations.

EC-130E Commando Solo. ANG uses this version as a broadcasting station for psychological warfare operations. Specialized modifications include enhanced navigation systems, self-protection equipment, and worldwide color television configuration. Commando Solo aircraft have been used in numerous military operations. They also have a role in civil emergencies. Secondary mission is electronic attack in the military frequency spectrum. Five flight crew, six mission.

EC-130J Commando Solo. Four specialist versions of the latest C-130 aircraft, ordered to replace E models. First was expected to enter operational service mid–2001 with the 193rd Special Operations Wing (ANG), Harrisburg.

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: 15.

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.

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. Modifications include ECM system and air-refueling capability. Further upgrades, including an updated receiver subsystem, will improve reliability and expand the EC-130H's Offensive Counter Information (OCI) capability against modern C^2 systems. Completion expected FY07.

EC-135

Brief: Modified KC-135 tanker aircraft extensively equipped with sophisticated communications equipment was used to provide continuous airborne alert in support of national C^2; other aircraft used for telemetry and voice relay.

Function: Specialized test aircraft.

Operator: AFMC.

First Flight: not available.

Delivered: not available.

IOC: Feb. 3, 1961.

Production: (converted).

Inventory: two.

Unit Location: Edwards AFB, Calif.

Contractor: Boeing.

Power Plant: (EC-135C) four Pratt & Whitney TF33-P-9 turbofans, each 18,000 lb thrust.

Accommodation: flight crew of four, plus various specialists.

Dimensions: span 130.8 ft, length 136.3 ft, height 38.3 ft.

Weight: (ARIA) gross 300,500 lb.

Ceiling: (ARIA) 33,000 ft.

Performance: (ARIA) max cruise speed 490 mph, operational radius 2,675 miles.

COMMENTARY

Several KC-135A tankers were modified for use as airborne command posts during the 1960s.

EC-135A/G/L were operated by SAC; **EC-135H** by USAFE; **EC-135J/P** by PACAF; and **EC-135K** by TAC. **EC-135Ns** had specialized nose radar and tracking equipment to support the Apollo program. Other EC-135 aircraft included **J** and **Y** versions. Virtually all retired.

EC-135C aircraft retired by September 1998.

EC-135E ARIA. Retired November 2000.

Tanker Aircraft

HC-130N/P King

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, ANG, AFRC.

First Flight: Dec. 8, 1964 (as HC-130H).

Delivered: from 1965.

IOC: 1986.

Production: (converted).

Inventory: 31.

Unit Location: Active: Moody AFB, Ga.; ANG: Francis S. Gabreski Arpt., N.Y., Ted Stevens Anchorage Arpt., Alaska; AFRC: Patrick AFB, Fla., Portland Arpt., Ore.

Contractor: Lockheed (now 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.

***HC-130P** King*

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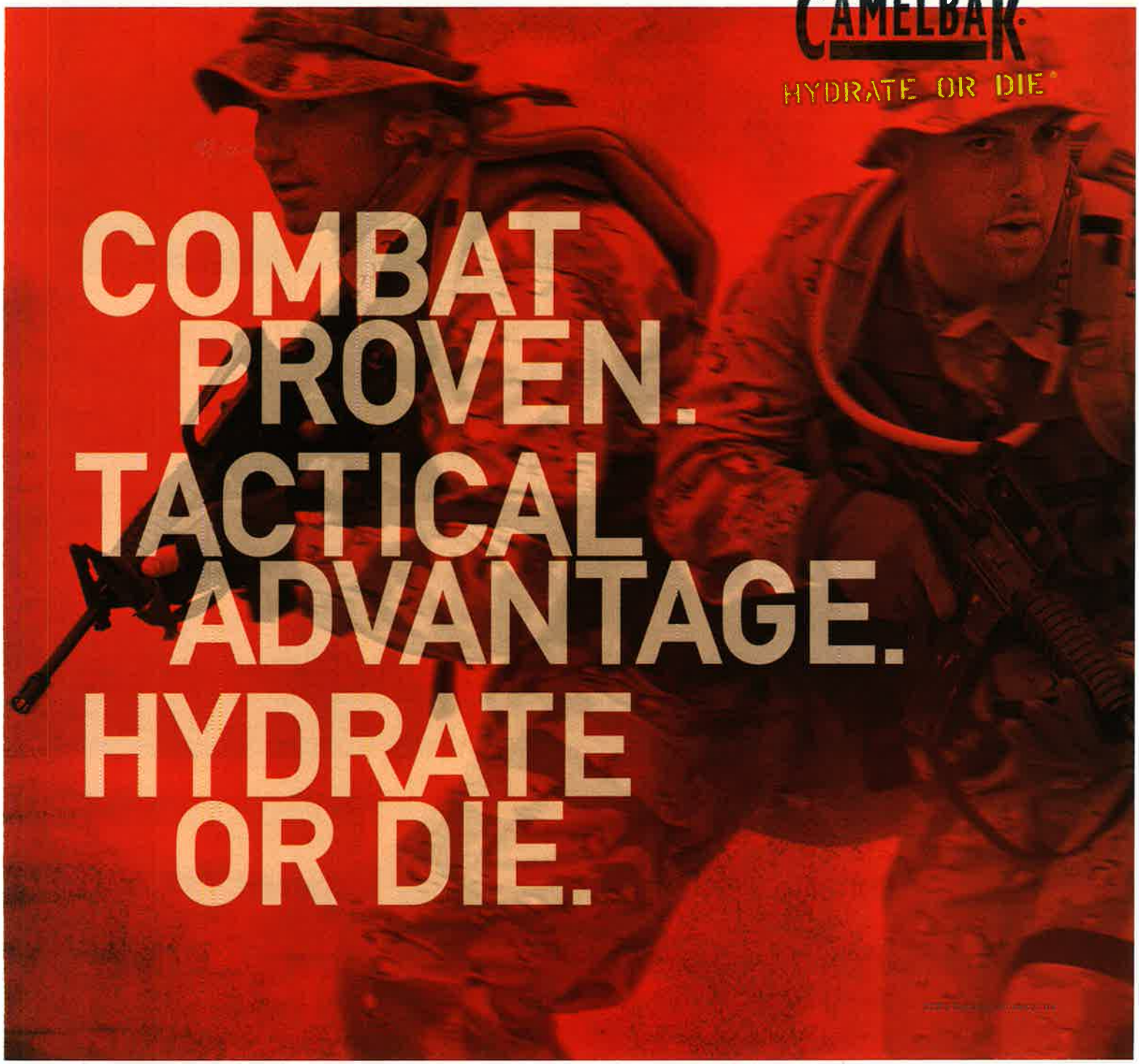


***KC-10** Extender* (SSgt. Michael Gaddis)

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 an integrated GPS/INS navigation package, radar/missile warning receivers, and chaff/flare countermeasures dispensers. Some aircraft have FLIR systems and Personnel Locating Systems compatible with aircrew survival radios. Ongoing 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 provides for complete update of the HC-130 avionics.

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 (Associate).

First Flight: April 1980.

Delivered: March 1981–April 1990.

IOC: August 1982.

Production: 60.

Inventory: 59.

Unit Location: 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 air refueling pods have been added subsequently to increase capability. Ongoing modifications include the addition of communications, navigation, and surveillance equipment to meet future 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.

***KC-135R** Stratotanker* refueling F-15Cs (MSgt. Marvin Krause)

Operator: ACC, AETC, AFMC, AMC, PACAF, USAFE, ANG, AFRC.

First Flight: August 1956.

Delivered: January 1957–66.

IOC: June 1957, Castle AFB, Calif.

Production: 732.

Inventory: 546.

Unit Location: Altus AFB, Okla., Fairchild AFB, Wash., Grand Forks AFB, N.D., Kadena AB, Japan, MacDill AFB, Fla., McConnell AFB, Kan., Mountain Home AFB, Idaho, RAF Mildenhall, UK, Robins AFB, Ga. ANG: 19 units. AFRC: seven 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. The JT3D re-engining program upgraded 163 AFRC and ANG KC-135As to KC-135E standard with JT3D turbofans removed from surplus commercial 707s; fuel carrying capacity is increased by 20 percent.

KC-135R/T. Designation of re-engined KC-135As with CFM56 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 requirements. The first KC-135R flight was in October 1982, and redeliveries began in July 1984. KC-135T aircraft (formerly KC-135Q) were capable of refueling the now-retired SR-71s. The program continues.

Ongoing modifications are extending the capability and operational utility of the KC-135 well into this century. Renewal of the lower wing skin added 27,000 flying hours to the aircraft. The Pacer CRAG avionics modernization program permits operation by a three-person flight crew, with avionics upgrades under way that will significantly improve systems reliability and maintainability. The entire fleet will be fitted with improved cockpit and navigation suites, including color weather radar, and integrated INS/GPS. Reduced vertical separation minima and GATM upgrades are also planned for the entire fleet. A number of KC-135Rs have been fitted with wing-mounted hose-and-drogue refueling pods to enhance interoperability and support to the USN, USMC, NATO, and other allied receiver 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 airdrop 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: 28.

Unit Location: Active: Eglin AFB, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK. ANG: Moffett Federal Airfield, 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: 30,000 ft.

Performance: speed 289 mph, range more than 4,000 miles.

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 Special Operations Forces 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, as well as new 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.

Strategic Transports

C-5 Galaxy

Brief: A heavy-lift, air refuelable cargo transport for

C-5 Galaxy (MSgt. Richard Loomis)

massive strategic airlift over long ranges, including outsize cargo. Supports special operations missions.

Function: Cargo and troop transport.
Operator: AETC, AMC, ANG, AFRC.
First Flight: June 30, 1968.
Delivered: October 1969–April 1989.
IOC: September 1970.
Production: 131.
Inventory: 126.
Unit Location: Active: Altus AFB, Okla., Dover AFB, Del., Travis AFB, Calif. ANG: Stewart Arpt., N.Y. AFRC: Dover AFB, Del., Kelly Field, Tex., Travis AFB, Calif., Westover ARB, Mass.
Contractor: Lockheed.
Power Plant: four General Electric TF39-GE-1C turbofans, each 41,000 lb thrust.
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, 35,750 ft, 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), unlimited range with in-flight air refueling.

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. One ANG and two AFRC squadrons are C-5A–equipped. The reliability and maintainability of the C-5A version have been the focus of numerous AMC studies.

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.

All USAF Galaxys are on contract to undergo a complete avionics modernization program that will install a state-of-the-art cockpit and ensure global access navigation safety compliance by the end of 2006. To baseline this modification, all C-5s have had their flight-management systems modernized and GPS receivers installed. A number of C-5s have been equipped with a prototype missile defense system. Additionally, the Air Force has contracted a System Development and Demonstration (SDD) for a reliability enhancement and re-engining program for C-5A/B aircraft to take advantage of an estimated service life through 2040. Prototypes to be completed in 2006.

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, AFRC.
First Flight: Sept. 15, 1991.
Delivered: June 1993–March 2006 (planned).
IOC: Jan. 17, 1995.
Production: 134 (projected).
Inventory: 76.
Unit Location: Altus AFB, Okla., Charleston AFB, S.C., McChord AFB, Wash., McGuire AFB, N.J. (planned). AFRC: Charleston AFB, S.C., McChord AFB, Wash., Thompson Field, Miss. (planned).
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). Provisions for full range of military airlift missions, incl capacity for up to 102 passengers/paratroops or 36 litters; range of military cargo incl tanks and up to three AH-64A helicopters; three Bradley vehicles; one M1 main battle tank with other equipment; airdrop capability for single platforms weighing up to 60,000 lb.
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.
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 restricted to C-130s and provides the first capability to air-land or airdrop outsize cargo in the tactical environment.

C-17A 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. Lot 12 aircraft, delivered from 2001, have the ERFCS upgrade, also to be retrofitted on earlier aircraft. Other C-17 improvements include a Terrain Awareness Warning System (TAWS) and Video Integrated Processor (VIP). A laser-jamming system to counter the IR–homing missile threat is planned from FY03, supplanting the current self-defense system. In October 2002, the C-17 will assume the Special Operations Low Level (SOLL) mission currently being supported by the C-141. Enhancements include SOLL II communications suites and carry-on radio suites. C-17s have flown numerous operational and humanitarian missions since entering operational service, including peacekeeping operations in Bosnia, where the C-17 was the only aircraft capable of delivering outsize cargo.

C-135 Stratolifter

Brief: A version of the KC-135 tanker, without refueling equipment, produced for nontanker duties.
Function: Passenger and cargo airlifter.
Operator: AFMC, PACAF.
First Flight: May 1961.
Delivered: 1961–62.
IOC: circa 1961.
Production: 48, plus five WC/TC-135s.
Inventory: three.
Unit Location: Edwards AFB, Calif., Hickam AFB, Hawaii.
Contractor: Boeing.
Power Plant: (C-135B) four Pratt & Whitney TF33-P-5 turbofans, each 18,000 lb thrust.
Accommodation (C-135B): 60 passengers.
Dimensions: span 130.8 ft, length 134.5 ft, height 38.3 ft.
Weights (C-135B): operating weight empty 102,300 lb, gross 275,500 lb.
Ceiling: 50,000 ft.
Performance (C-135B): max speed 600 mph, range with 54,000 lb payload 4,625 miles.

COMMENTARY

A few C-135 transports and variants, without the KC-135's refueling equipment, remain operational within USAF. They were ordered originally to serve as interim jet passenger or cargo transports, pending delivery of C-141s. Three converted KC-135s were followed by 45 production Stratolifters in two versions.

C-135A. The first 15 aircraft were equipped with J57-P-59W turbojets.

C-135B. The next version included upgraded Pratt & Whitney turbofans. USAF retrofitted 11 Bs with revised interior for VIP transportation.

C-135E. C-135As re-engined with Pratt & Whitney engines.

C-141 Starlifter

Brief: Workhorse of the US airlift force, the Starlifter can project combat forces over long distances, inject those forces and their equipment either by air-land or airdrop, resupply these employed forces, and extract the sick and wounded from the hostile area to advanced medical facilities. Primary strategic special operations and airdrop platform.
Function: Long-range, air refuelable troop and cargo airlift.
Operator: AETC, AMC, ANG, AFRC.
First Flight: Dec. 17, 1963.
Delivered: October 1964–June 1982.
IOC: May 1965.
Production: 285.
Inventory: 102.
Unit Location: Active: Altus AFB, Okla., Charleston

C-17 Globemaster III (TSgt. Cary Humphries)

AFB, S.C., Edwards AFB, Calif., McChord AFB, Wash., McGuire AFB, N.J. ANG: Jackson Arpt., Miss., Memphis Arpt., Tenn. AFRC: Andrews AFB, Md., Charleston AFB, S.C. (Associate), March ARB, Calif., McChord AFB, Wash., McGuire AFB, N.J., Wright–Patterson AFB, Ohio.

Contractor: Lockheed Martin.

Power Plant: four Pratt & Whitney TF33-P-7 turbofans, each 21,000 lb thrust.

Accommodation: crew of five; cargo on 13 standard 463L pallets. Alternative freight or vehicle payloads, 200 fully equipped troops, 155 paratroops, or 103 litter patients plus attendants.

Dimensions: span 159.9 ft, length 168.3 ft, height 39.2 ft.

Weight: operating payload 38,000 lb; max payload 68,725 lb normal, 89,000 lb emergency war planning; gross 325,000 lb normal, 344,000 lb emergency war planning.

Ceiling: 45,000 ft.

Performance: max cruising speed 466 mph, range 5,290 miles without air refueling.

COMMENTARY

Longtime mainstay of USAF's airlift fleet, the C-141 was the first jet aircraft designed to meet military standards as a troop and cargo carrier. Current plans call for retirement of all C-141s in active units by 2006.

C-141A entered service with MAC in April 1965; 285 were built, some of which were structurally modified to accommodate the Minuteman ICBM.

C-141B is a stretched C-141A with in-flight refueling capability. All C-141As (except four AFMC aircraft used for test purposes) were lengthened by 23 ft 4 in to expand lift capacity. First C-141B flew March 1977 and redeliveries took place between December 1979 and June 1982. The modification gave USAF the equivalent of 90 additional C-141A aircraft. Subsequent improvements include structural upgrades, a state-of-the-art autopilot and all-weather landing system, and improved airdrop systems. Modification of 13 C-141Bs is aimed at increasing their SOLL capability and survivability.

C-141C is a C-141B modified with computerized glass-cockpit instrumentation and digital flight-management system, with integrated GPS data for navigation and modern navigation safety equipment. The first version, which rolled out at Warner Robins ALC, Ga., Oct. 1, 1997, was assigned to AFRC's 452nd Air Mobility Wing, March ARB, Calif. Sixty-three ANG and AFRC C-141Bs are to be modified to C standard.

Theater and Special Use Transports

C-9 Nightingale

Brief: A twin-engine, medium-range, swept-wing jet aircraft used primarily for the aeromedical evacuation mission. A modified version of the DC-9, it is the only USAF aircraft specifically designed for the movement of litter and ambulatory patients.

Function: Aeromedical evacuation.

Operator: AMC, PACAF, USAFE, AFRC.

First Flight: August 1968.

Delivered: August 1968–February 1975.

IOC: circa 1968.

Production: 24.

Inventory: 23.

Unit Location: Andrews AFB, Md., Chievres, Belgium, Ramstein AB, Germany, Scott AFB, Ill., Yokota AB, Japan.

Contractor: Boeing (McDonnell Douglas).

Power Plant: two Pratt & Whitney JT8D-9A turbofans, each 14,500 lb thrust.

Accommodation: crew of three; 40 litter patients or 40 ambulatory patients, or a combination of both, plus five medical staff.

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 transport is a derivative of the DC-9 Series 30 commercial airliner, modified to include a special-care compartment with separate atmospheric and ventilation controls. One C-9A also provides Distinguished Visitor (DV) airlift in Europe. Because of the critical nature of its mission, the aircraft carries a flight mechanic and a small supply of spares.

C-9C. Three specially configured C-9s were delivered to Andrews AFB, Md., in 1975 for Presidential and other US governmental duties.

Upgrades to improve flight planning and situational awareness include 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: AETC, AFMC, PACAF.

First Flight: Oct. 27, 1972 (Super King Air 200).

Delivered: 1974–late 1980s.

IOC: circa 1974.

Production: 88.

Inventory: 27.

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 1983–1989.

IOC: circa 1983.

Production: not available.

Inventory: 13.

Unit Location: Andrews AFB, Md., Ramstein AB, Germany.

C-20 Gulfstream (Ted Carlson)

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 provide USAFE's operational support airlift fleet with intercontinental range and ability to operate from short runways.

C-20B. Seven C-20B versions, with advanced mission communications equipment and revised interior, were acquired in the late 1980s. Two C-20B aircraft have been retired.

C-20C. Three special missions aircraft, with hardened strategic communications equipment.

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 special air mission requirements.

Upgrade for C-20A/B/H aircraft includes GPS, vertical separation equipment, GATM, and Traffic alert and Collision Avoidance System (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: 78.

Unit Location: Andrews AFB, Md., Keesler AFB, Miss., Langley AFB, Va., Maxwell AFB, Ala., Offutt AFB, Neb., Peterson AFB, Colo., Ramstein AB, Germany, Randolph AFB, Tex., Scott AFB, Ill., Stuttgart, Germany, Wright–Patterson AFB, Ohio, 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 to include GATM and TCAS.

C-22

Brief: A Boeing 727-100 used by ANG as its primary medium-range aircraft for airlift of personnel.

Function: Passenger transportation.

Operator: ANG.

First Flight: February 1963 (commercial).

Delivered: 1984.

IOC: circa 1984.

Production: four.

Inventory: three.

Unit Location: Andrews AFB, Md.

Contractor: Boeing.

Power Plant: three JTD8D-7 turbofans, each 14,000 lb thrust.

Accommodation: flight crew of four, plus three or four cabin crew; up to 89 passengers.

Dimensions: span 108 ft, length 133.1 ft, height 34 ft.

Weight: gross 170,000 lb.

Ceiling: 37,400 ft.

Performance: max speed 630 mph, range 2,000 miles, 5.5 hr endurance.

COMMENTARY

C-22B. Boeing 727-100 commercial transports purchased and modified as C-22Bs for use by ANG on operational support airlift missions. Two were further modified to accommodate an additional 1,100 gallons of fuel and landing gear rated for 170,000 lb gross landing weight.

C-32

Brief: A modified Boeing 757-200 used to provide

C-32A (Boeing)

transportation 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: four.
Inventory: four.
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

The C-32A is a military version of the commercial Boeing 757-200. Four new 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, including Internet, become available.

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.
First Flight: USAF October 1998.
Delivery: October 1998–present.
IOC: Dec. 9, 1998.
Production: 10 planned.
Inventory: six.
Unit Location: Andrews AFB, Md.
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 CINC support airlift based in the European Theater. Two more were purchased for crisis response support. Five additional C-37As are being leased from Gulfstream Aerospace as CINC support 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 C^3 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. Two aircraft are operated by ANG's 201st AS replacing Learjet C-21As. Equipment includes the most up-to-date navigation, communication, vertical separation, and safety equipment as well as state-of-the-art avionics. The contract includes an option for two additional aircraft.

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, AFMC, 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; (C-130J/J-30) 168 planned.
Inventory: 519: 221 (E), 286 (H), 12 (J/J-30).
Unit Location: Active: Dyess AFB, Tex., Edwards AFB, Calif., Elmendorf AFB, Alaska, Little Rock AFB, Ark., Pope AFB, N.C., Ramstein AB, Germany, Yokota AB, Japan. ANG: 22 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 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.
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 flown 47 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, fire-fighting duties 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-130B**s 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 has 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. ANG C-130Es are used in fire-fighting missions.

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 and AFRC C-130Hs are used in fire-fighting missions. Specifically modified aircraft are used by AFRC's 757th AS, Youngstown–Warren Arpt., Ohio, for aerial spraying, typically to suppress mosquito-spread epidemics. The ANG's 109th AW, Schenectady County Arpt., N.Y., operates 10 **LC-130H/R**s, modified with wheel-ski gear in support of Arctic and Antarctic operations. Two **DC-130H**s were modified for UAV control duties.

Boeing is undertaking a major avionics upgrade for the C-130E/H. Improvements include digital displays, flight-management systems, multifunction radar, new communication systems, and a single air data computer. Work is expected to begin in 2004.

C-130J. This newest model features 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. USAF plans to procure C-130Js to replace its oldest 1960s–vintage C-130Es. First deployment was in February 1999. ANG and AFRC units have already begun receiving J models.

C-130J-30. With an additional 15 ft to the fuselage, the stretch version can carry up to 128 ground troops or 92 paratroops. Three delivered to ANG in 2001.

C-137 Stratoliner

Brief: A modified Boeing 707 providing transportation for the vice president, Cabinet and Congressional members, and other high-ranking US and foreign officials. It also serves as a backup for Air Force One, the Presidential aircraft.

Function: VIP air transport.
Operator: AMC.
First Flight: April 1959.
Delivered: 1959–1972.
IOC: 1962.
Production: seven.
Inventory: one.
Unit Location: Andrews AFB, Md.
Contractor: Boeing.
Power Plant: four Pratt & Whitney JT3D-3B turbofans, each 18,000 lb thrust.
Accommodation: varies with mission.
Dimensions: span 145.8 ft, length 152.9 ft, height 42.4 ft (C-137C).
Weight: gross 322,000 lb (C-137C).
Ceiling: 42,000 ft.
Performance: max speed 530 mph, range 6,900 miles (C-137C).

COMMENTARY

One specially modified Boeing 707 transport is operated by AMC's 89th Airlift Wing for VIP duties. Other aircraft have been replaced by new Boeing 757-200s, designated C-32A, and two Gulfstream-5s, designated C-37A.

VC-137A. Three specially configured 707-120 aircraft, acquired by USAF for VIP duties. All modified to B standard.

C-137B. VC-137A aircraft modified with turbofan engines. All retired.

C-137C. Four VIP–configured 707-320Bs, two of which have been Air Force One aircraft. Aircraft tail #26000, the first C-137C in service (Oct. 12, 1962) and

the first specifically purchased for use as Air Force One, retired in May 1998. It is perhaps most well-known as the aircraft that was used to return President John F. Kennedy's body to Washington, D.C., and to host the swearing in of President Lyndon B. Johnson in 1963. The sole operational C-137 Air Force One, tail #27000, entered service Aug. 4, 1972.

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: AFSOC.

First Flight: March 19, 1989 (V-22).

Delivery: 2007 (planned).

IOC: 2008 (planned).

Production: 50 (planned).

Inventory: 50 (planned).

Unit Location: Hurlburt Field, Fla., Kirtland AFB, N.M. (planned).

Contractor: Bell Boeing; Raytheon.

Power Plant: two Rolls Royce–Allison AE1107C turboshafts, each 6,200 shp.

Accommodation: four (two pilots, two flight engineers), 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, currently undergoing combined testing at Edwards AFB, Calif. It is a tilt-rotor, Vertical/Short Takeoff and Landing (V/STOL) aircraft capable of operations in austere environments from remote bases or air capable ships. 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. Capable of air-to-air refueling, its range is limited only by crew endurance.

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. The CV-22 also incorporates an extensive defensive countermeasures suite. Components of this system include a Radar Warning Receiver (RWR), missile warning system, laser detection system, radar missile jammer, IR missile jammer, and a countermeasures dispensing system. The communications suite will include secure UHF, VHF (AM and FM), and Satellite Communications (SATCOM) radios.

The first CV-22 is planned to begin initial operational test and evaluation in spring 2006. Initial training capability is scheduled for late 2003 at Kirtland AFB, N.M., and IOC for early 2008 at Hurlburt Field, Fla.

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: 24 (new-build Hs).

Inventory: 14 (E); 24 (H).

Unit Location: Active (Associate) and AFRC MC-130Es at Duke Field, Fla. Active MC-130/H at Hurlburt Field, Fla.; MC-130H at Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK.

Contractor: Lockheed Martin (airframe); Boeing Integrated Weapons System Support (IWSS).

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 132.6 ft, height 38.5 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, unlimited with refueling.

COMMENTARY

MC-130 Combat Talon aircraft are equipped with in-flight refueling equipment, TF/TA radar, INS/GPS, ECM, and a high-speed aerial delivery system, enabling them to conduct infiltration, exfiltration, resupply, psychological operations, and aerial reconnaissance into hostile or denied territory. Combat Talons are able to deliver or air-drop personnel or equipment on austere, marked and unmarked landing zones/drop zones. They can conduct overt, clandestine, and low-visibility operations.

MC-130E (Combat Talon I). Fourteen modified C-130E aircraft are equipped to air refuel helicopters. During Desert Storm, MC-130Es played a vital role performing psychological operations, with a secondary mission in CSAR.

MC-130H (Combat Talon II). Twenty-four new-build MC-130Hs were acquired to supplement the Talon I. They include an integrated glass cockpit compatible with NVGs and improved IR and electronic defensive countermeasures. The 1st, 7th, and 15th SOSs employ the Combat Talon II, supporting unconventional warfare units from their bases in Japan, Europe, and CONUS, respectively. The 58th SOW 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-25A Presidential transports replaced the former primary and backup Air Force One C-137Cs. Equipment aboard the aircraft makes them practically self-sufficient, and despite their long range they are air refuelable.

***VC-25** Air Force One* (Boeing)

Trainer Aircraft

T-1 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, tanker, and bomber aircraft.

Function: Advanced pilot training.

Operator: AETC, AFRC (Associate).

First Flight: Sept. 22, 1989 (Beechcraft 400A).

Delivered: Jan. 17, 1992–July 1997.

IOC: January 1993.

Production: 180.

Inventory: 180.

Unit Location: Columbus AFB, Miss., Laughlin and Randolph AFBs, Tex., Vance AFB, Okla.

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.

COMMENTARY

The T-1A Jayhawk is used to train pilots who will go on to fly transports such as the C-5 and C-17 or to tankers such as the KC-10 and KC-135.

T-1A. The swept-wing T-1A is a military version of the Beech 400A used for Joint Specialized Undergraduate Pilot Training (JSUPT). Special mission equipment includes an Electronic Flight Instrument System (EFIS) avionics system, a single-point refueling system with increased capacity, and increased bird strike protection in the windshield and leading edges for sustained low-level operation. A GPS retrofit program has been completed.

T-6A Texan II

Brief: A single-engine turboprop aircraft to be used for training student pilots, navigators, and naval flight officers in fundamentals of aircraft handling and instrument, formation, and night flying.

Function: Primary trainer.

Operator: AETC, AFRC (Assoc.), USN.

First Flight: July 15, 1998.

Delivery: May 2000–present (operational aircraft).

IOC: November 2001.

Production: USAF 454, USN 328 (planned).

Inventory: 34.

Unit Location: planned: USAF: Columbus AFB, Miss., Laughlin, Randolph, and Sheppard AFBs, Tex., Moody AFB, Ga., Vance AFB, Okla. Navy: NAS Corpus Christi, Tex., NASs Pensacola and Whiting, Fla.

Contractor: 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 will replace USAF's T-37Bs and USN's T-34Cs in primary pilot training, as well as support undergraduate naval flight officer and USAF navigator training. Pilot training began at Moody AFB, Ga., in November 2001.

T-37 Tweet

Brief: A twin-engine jet used for training undergraduate pilots and undergraduate navigator and tactical navigator 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 1956–1968.

IOC: 1957.

Production: 985.

Inventory: 415.

***T-6** Texan II* (USAF photo)

Unit Location: Columbus AFB, Miss., Laughlin, Randolph, and Sheppard AFBs, Tex., Vance AFB, Okla.
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.
COMMENTARY
USAF's first purpose-built jet trainer, the T-37 is currently AETC's standard two-seat primary trainer. A 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. All A models were later converted to B standard. Kits were subsequently produced to extend the capability of the T-37 by modifying or replacing critical structural components. AETC began replacing the T-37B with the new T-6A Texan II in 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: 490.
Unit Location: Beale and Edwards AFBs, Calif., Columbus AFB, Miss., Holloman AFB, N.M., Laughlin, Randolph, and Sheppard AFBs, Tex., Moody AFB, Ga., Vance AFB, Okla., Whiteman AFB, Mo.
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. Also used to train test pilots and flight engineers at Edwards AFB, Calif., by AFMC to test experimental equipment, and by ACC to maintain pilot proficiency.
AT-38B. A slightly different version, with a gunsight and practice bomb dispenser, 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.

***T-38** Talon* (Guy Aceto)

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: 10.
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, VOR and Tacan radio systems, INS, radar altimeter, all required communications equipment, and celestial navigation capability.
Several T-43s are configured for passengers and provide operational support to assigned commands.

C-150
Brief: Commercial Cessna 150 used by the US Air Force Academy flying team as a primary competition aircraft.
Function: Competition aircraft.
Operator: USAFA.
First Flight: September 1957.
IOC: deployed 1971.
Inventory: three.
Unit Location: USAFA, Colo.
Contractor: Cessna.
Power Plant: one Textron Lycoming 0-320-E2D engine, 150 hp.
Accommodation: two, side by side.
Dimensions: span 33.3 ft, length 23.9 ft, height 8.5 ft.
Weight: gross 1,760 lb.
Ceiling: 14,000 ft.
Performance: max speed 162 mph, range 795 miles.
COMMENTARY
Three Cessna C-150s are used by USAFA flying team cadets for accuracy landings, message drop, and advanced navigation in competition events. All three aircraft have improved avionics and upgraded engines.

T-41 Mescalero
Brief: Short-range, high-wing trainer used primarily for aerodynamic and navigation courses.
Function: Training, support.
Operator: USAFA.
Delivered: 1969.
Inventory: six.
Unit Location: USAFA, Colo.
Contractor: Cessna.
Power Plant: one Continental IO-360-DB piston engine, 210 hp thrust.
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.

TG-3A
Brief: Single-seat, medium-performance sailplane used for cross-country and spin training.
Function: Cross-country and spin trainer.
Operator: USAFA.
Delivered: circa 1960.
IOC: circa 1960.
Production: not available.
Inventory: three.
Unit Location: USAFA, Colo.
Contractor: Schweizer Aircraft.
Accommodation: one pilot.
Dimensions: span 40 ft, length 21.6 ft, height 7.2 ft.
Weight: 700 lb.
Ceiling: Flight Level (FL) 250 ft.
Performance: speed 114 mph, glide ratio 23:1, range dependent on soaring conditions.
COMMENTARY
The **TG-3A** is a medium-performance sailplane that allows students to master basic flight maneuvers while solo before progressing to a more advanced sailplane. With the exception of the fabric covered horizontal stabilizer and control surfaces, the aircraft is all-metal construction. It is primarily used for cross-country training and high-altitude wave flight with up to six-hour flight duration.

TG-4A
Brief: Conventional two-place tandem basic training sailplane used to introduce all USAFA cadets to flight.
Function: Flight introduction.
Operator: USAFA.
Delivered: October 1984.

IOC: not available.
Production: not available.
Inventory: 14.
Unit Location: USAFA, Colo.
Contractor: Schweizer Aircraft.
Accommodation: two (student pilot and instructor).
Dimensions: span 51 ft, length 25.8 ft, height 9.3 ft.
Weight: gross 1,040 lb.
Ceiling: 14,000 ft.
Performance: speed 98 mph, glide ratio 23:1.
COMMENTARY
The **TG-4A** has an all-metal airframe with aluminum covering on wings and vertical tail and a one-piece canopy for increased visibility. USAFA introduces all cadets to flight through the Soar-for-All program using the TG-4A. It can perform aerotow, stall recovery, slow flight, steep turn, and rectangular traffic pattern maneuvers.

TG-7A
Brief: A conventional two-place, side-by-side, fixed-gear, low-wing motorized glider that is equipped with spoilers and used to simulate the flight characteristics of the TG-4A and reduce the number of sorties needed to solo.
Function: Trainer.
Operator: USAFA.
Delivered: 1984.
IOC: not available.
Production: not available.
Inventory: nine.
Unit Location: USAFA, Colo.
Contractor: Schweizer Aircraft.
Power Plant: one Lycoming 0-235-L2C 4-cylinder engine, 112 hp.
Accommodation: two (student pilot and instructor).
Dimensions: span 59.5 ft, length 27.5 ft, height 7.7 ft.
Weight: gross 1,850 lb.
Ceiling: 14,000 ft.
Performance: speed 136 mph, range 230 miles.
COMMENTARY
The **TG-7A** motor glider is a single-engine, fixed-gear, conventional configuration, low-wing monoplane of all-metal construction with side-by-side seating. 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-9A
Brief: Medium-performance sailplane with tandem seating used for spins, aerobatics, and cross-country soaring.
Function: Trainer.
Operator: USAFA.
Delivered: October 1984.
IOC: not available.
Production: not available.
Inventory: four.
Unit Location: USAFA, Colo.
Contractor: Schleicher GmbH, Germany.
Accommodation: two, tandem.
Dimensions: span 55.8 ft, length 27.4 ft, height 5 ft.
Weight: gross 1,320 lb.
Ceiling: FL 250 ft.
Performance: speed 150 mph, glide ratio 34:1, range dependent on soaring conditions.
COMMENTARY
The **TG-9A** (ASK-21) sailplane has a midwing configuration with a T-tail and air brakes on the upper wing surface. It is used primarily for spin training and aerobatic demonstrations. It is used at the regional and national level for cross-country and aerobatic competition.

TG-10B
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: USAFA.
Delivered: spring 2002.
IOC: December 2002 (planned).
Production: 12 (planned).
Inventory: one.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: two.
Dimensions: span 53.1 ft, length 27.9 ft, height 6.2 ft.
Weight: 1,124 lb.
Performance: speed 142.6 mph, glide ratio 28:1.
COMMENTARY
The **TG-10B** is an L-23 Super Blanik sailplane produced in Czech Republic.

TG-10C
Brief: Two-seat medium-performance sailplane used for instructor spin upgrade, aerobatic demonstrations, and aerobatic competition.
Function: Trainer.
Operator: USAFA.
Delivered: spring 2002.
IOC: December 2002 (planned).
Production: four (planned).
Inventory: TBD.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: two.
Dimensions: span 46.3 ft, length 27.6 ft, height 6.8 ft.
Weight: 1,103 lb.
Performance: speed 146.1 mph, glide ratio 26:1.
COMMENTARY
The **TG-10C** is an L-13AC Blanik sailplane produced in the Czech Republic.

TG-10D
Brief: Single-seat medium-performance sailplane used for cross-country soaring training and competition.
Function: Trainer.
Operator: USAFA.
Delivered: spring 2002.
IOC: December 2002 (planned).
Production: three (planned).
Inventory: TBD.
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.

TG-11A
Brief: Conventional two-place, side-by-side, self-launched high-performance sailplane used for cross-country training.
Function: Trainer.
Operator: USAFA.
Delivered: summer 1995.
IOC: not available.
Production: not available.
Inventory: two.
Unit Location: USAFA, Colo.
Contractor: Stemme GmbH, Germany.
Power Plant: one Limbach L-2400 EB1.AD four-cylinder engine, T-O 93 hp at 3,400 rpm, cruise 80 hp at 3,000 rpm (S/L).
Accommodation: two, side by side.
Dimensions: span 75.5 ft, length 27.6 ft, height 5.7 ft.
Weight: gross 1,874 lb.
Ceiling: 17,450 ft powered cruise, FL 250 ft.
Performance: speed 168 mph, 138 mph powered cruise, glide ratio 50:1, range 860 miles powered.
COMMENTARY
The **TG-11A** self-launched high-performance sailplane has a folding propeller that is stored behind a retractable propeller dome on the aircraft nose during soaring flight. It is used primarily for dual cross-country training, field selection, and advanced sailplane training.

TG-14
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: USAFA.
Delivered: from June 2002 (planned).
IOC: December 2002 (planned).
Production: 14 (planned).
Inventory: five expected by summer 2002.
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
A military version of the AMT-200S Sport Grupo Aeromot selected for use in USAFA's 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 modified for military use.

UV-18 Twin Otter
Brief: Modified utility transport used for parachute jump training.
Function: Paradrop.
Operator: USAFA.
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.

TG-10C

Helicopters

HH-60G Pave Hawk
Brief: Specially modified helicopters used for SAR and support missions.
Function: SOF heavy-lift helicopter.
Operator: ACC, AETC, AFMC, PACAF, ANG, AFRC.
First Flight: October 1974.
Delivered: 1982–present.
IOC: circa 1982.
Production: 105.
Inventory: 105.
Unit Location: Eglin AFB, Fla., Kadena AB, Japan, Kirtland AFB, N.M., Moody AFB, Ga., NAS Keflavik, Iceland, Nellis AFB, Nev. ANG: Francis S. Gabreski Arpt., N.Y., Ted Stevens Anchorage Arpt., Alaska, Moffett Federal Airfield, Calif. AFRC: Davis–Monthan AFB, Ariz., Patrick AFB, Fla., Portland Arpt., Ore.
Contractor: Sikorsky.
Power Plant: two General Electric T700-GE-700/701C turboshafts, each 1,620 (continuous) shp.
Accommodation: crew of three or four; 11–14 troops, up to six litters, or internal or external cargo.
Dimensions: rotor diameter 53.6 ft, length of fuselage 64.7 ft, height 16.7 ft.
Weight: empty 12,330 lb, 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

One hundred four Black Hawk helicopters were modified to **HH-60G** Pave Hawk configuration for use by active duty, ANG, and AFRC air rescue units for SAR and various mission-support 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, SATCOM, secure/anti-jam communications, and a Personnel Locating System (PLS) that provides range/bearing data to compatible survivor radios.

Further 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 machine guns.

***MH-53J** Pave Low III* (TSgt. Scott Reed)

***UH-1N** Iroquois* (Guy Aceto)

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: 38.

Unit Location: AETC: Kirtland AFB, N.M. AFSOC: Hurlburt Field, Fla., Osan AB, South Korea, 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 C^2 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.

TH-53A. Six TH-53As (modified USMC CH-53As) are used by the 58th SOW, Kirtland AFB, N.M., as basic qualification trainers. Modifications include the installation of General Electric T64-GE-100 engines, air refueling probe, and standard USAF avionics and communications equipment.

UH-1 Iroquois

Brief: Modified Bell helicopter used to support Air Force ICBM facilities and for administrative airlift.

Function: Utility helicopter.

Operator: AETC, AFMC, AFSOC, AFSPC, AMC, PACAF.

First Flight: circa 1956.

Delivered: from September 1970.

IOC: circa 1970.

Production: 79.

Inventory: 62.

Unit Location: Andrews AFB, Md., F.E. Warren AFB, Wyo., Hurlburt Field, Fla., Kirtland AFB, N.M., Malmstrom AFB, Mont., Minot AFB, N.D., Vandenberg AFB, Calif., Yokota AB, Japan.

Contractor: Bell.

Power Plant: 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: rotor diameter (with tracking tips) 48.1 ft, fuselage length 42.3 ft, height 14.3 ft.

Weight: gross and mission weight 11,200 lb.

Ceiling: 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-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 administrative/DV airlift. The UH-1N is also used by AETC's 58th 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.

Strategic Missiles

AGM-86 Air Launched Cruise Missile

Brief: A small, subsonic, winged air vehicle, currently 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 (FSD).

Delivered: from 1981.

IOC: December 1982, Griffiss AFB, N.Y.

Production: 1,700+.

Inventory: 1,600.

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).

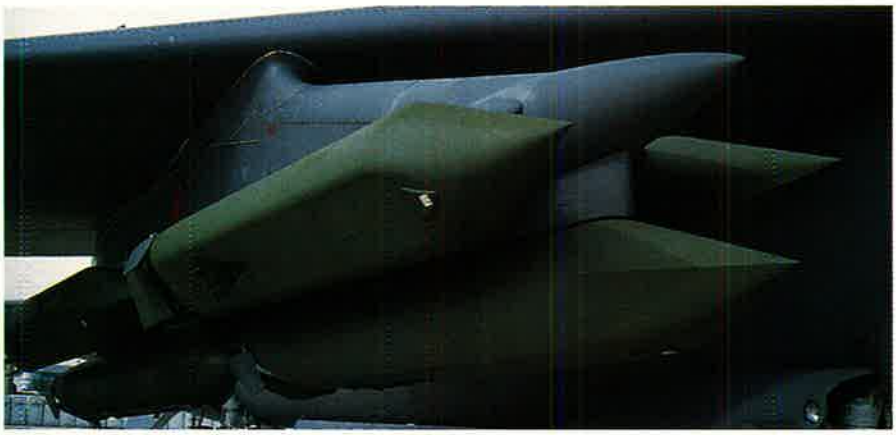
COMMENTARY

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. Undergoing SLEP to extend life to FY30.

AGM-86C. A conventional warhead version, developed from June 1986, the Conventional Air Launched Cruise Missile (CALCM) was first used operationally during the Persian Gulf War and has since been widely used 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 is equally effective for stand-alone, clandestine/punitive strikes and fully integrated theater warfare. Since 1986, Boeing has converted 622 Bs to the conventional configuration, the first of which was delivered in December 1987. Of the 322 most recent conversions, 132 feature new Block 1A enhancements with improved accuracy and increased immunity to electronic jamming.

AGM-86D. CALCM penetrator version with a Lockheed Martin AUP-3(M) warhead. The last 50 of the 322 CALCM conversions are to AGM-86D configuration. The CALCM penetrator provides the warfighter with a cost-effective, standoff outside theater defenses capability against a wide range of hardened,



***AGM-129** Advanced Cruise Missile* (Guy Aceto)

deeply buried targets. Final delivery was scheduled for late November 2001.

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.

Inventory: currently 410.

Unit Location: Barksdale AFB, La., Minot AFB, N.D.

Contractor: General Dynamics; Boeing (McDonnell Douglas).

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 has improved range, accuracy, survivability and targeting flexibility, compared with the AGM-86B. Developed by General Dynamics, McDonnell Douglas was certified as second source for this advanced system, which is deployed on B-52H aircraft.

LG-118 Peacekeeper

Brief: A solid-fuel intercontinental-range ballistic missile capable of delivering a thermonuclear payload of 10 warheads with high accuracy over great distances.

Function: Strategic surface-to-surface ballistic missile.

Operator: AFSPC.

First Flight: June 17, 1983.

Delivered: June 1986–December 1988.

IOC: December 1986, F.E. Warren AFB, Wyo.

Production: 50.

Inventory: 50.

Unit Location: F.E. Warren AFB, Wyo.

Contractor: Lockheed Martin.

Power Plant: first three stages: solid propellant; fourth stage: storable liquid; by Thiokol, Aerojet, Hercules, and Rocketdyne, respectively.

Guidance: inertial guidance system.

Warheads: 10 Avco Mk 21 MIRVs.

Dimensions: length 71 ft, diameter 7.7 ft.

Weight: approx 195,000 lb.

COMMENTARY

LG-118A. Developed initially in response to an increased Soviet strategic threat, deployment was capped at only 50 in the FY90 budget in response to the change in the international political climate. Development of a rail-garrison mode of deployment was also terminated.

Housed in converted Minuteman III silos, Peacekeeper is a four-stage ICBM that carries up to 10 independently targetable re-entry vehicles. It is more accurate and has a greater payload and range than the Minuteman III. Its greater resistance to nuclear effects and its more capable guidance system provide a greatly improved ability to destroy very hard targets. These attributes, combined with its prompt response, provide a decisive deterrent. Peacekeeper is scheduled for retirement under planned nuclear force structure reductions.

LGM-30 Minuteman

Brief: A solid-fuel intercontinental-range ballistic missile 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.

Production: 1,800.

Inventory: 500.

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 Multiple Independently Targetable Re-entry Vehicles (MIRVs) on three targets with a high degree of accuracy. USAF initially deployed 550 in 11 squadrons.

A single re-entry vehicle configuration 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's continuing viability. 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 C^2 sustainment program.

Tactical Missiles and Weapons

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.

Inventory: classified.

Contractor: Raytheon (Hughes); General Dynamics.

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 more than 40 years. 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 to produce a monopulse version of Sparrow aimed at reducing cost and improving 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, 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-

***LGM-30G** Minuteman III in its silo* (Guy Aceto)

air missile carried by fighter aircraft, having a high-explosive warhead.

Function: Air-to-air missile.

First Flight: September 1953.

Delivered: 1983–present (AIM-9M current operational variant).

IOC: circa 1983 (AIM-9M).

Production: sustainment phase (AIM-9M); LRIP from November 2000 (AIM-9X).

Inventory: classified.

Contractor: Raytheon; Loral.

Power Plant: Thiokol Mk 36 Mod 11 solid-propellant rocket motor.

Guidance: solid-state IR homing guidance.

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 above 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. Carriage options include: A-10, F-14, F-15, F-16, F-16 ADF, and F-18. 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 recently completed modification to improve IRCCM capability of early missiles.

AIM-9X is the result of a Navy–Air Force program, derived from a jointly funded demonstration and validation contract. Raytheon is the EMD contractor. The AIM-9X entered LRIP from November 2000. The flight-test program has completed 17 live guided-missile firings with 10 kills of QF-4 target drones. 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, 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 high off-boresight capability. It will be employed on F-15, F-16, F/A-18, F-22, and potentially JSF aircraft.

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 2009 (planned).

IOC: September 1991.

Production: 12,000+ planned for USAF/USN.

Inventory: classified.

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 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-18, and F-22 fighters. (The F-22 will only carry the C model.) 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 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-22.

***AIM-120** AMRAAM* (top), ***AIM-9** Sidewinder, **AGM-88** HARM* (bottom) (SrA. Stan Parker)

AGM-65 Maverick

Brief: A tactical, TV– or Imaging-Infrared–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.

Inventory: 7,300 AGM-65A/B/H/K (EO guidance); 15,000 AGM-65D/G (IR guidance).

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 were first employed by USAF in Vietnam and were used extensively during the Persian Gulf War. 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 on A-10s in February 1986.

AGM-65G. Uses the IIR seeker with an alternate 298-lb blast fragmentation warhead for use against hardened targets. Software has been 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-84 Harpoon

Brief: An adverse weather capable, sea-skimming, active radar–guided, anti-ship cruise missile system capable of being fired from B-52H aircraft, ships, and submarines.

Function: Air-to-surface anti-ship missile.

First Flight: March 1974 (for USN).

Delivered: from 1977 (USN).

IOC: circa 1985 (USAF).

Production: sustainment phase.

Inventory: 68.

Contractor: Boeing (McDonnell Douglas).

Power Plant: Teledyne CAE J402-CA-400 turbojet, 660 lb thrust.

Guidance: sea-skimming cruise monitored by radar altimeter, active radar terminal homing.

Warhead: penetration high-explosive blast type, weighing 500 lb.

Dimensions: length 12.6 ft, body diameter 1.1 ft, wingspan 3 ft.

Weight: 1,172 lb.

Performance: speed high subsonic, range more than 57 miles.

COMMENTARY

Harpoon and its launch control equipment provide USAF the capability to interdict ships at ranges well beyond those of other aircraft. Originally acquired to equip two squadrons of now-retired B-52G aircraft for maritime anti-surface operations, the Harpoon all-weather anti-ship missile currently arms conventional-mission B-52Hs.

AGM-84D is a variant of the USN Harpoon that has been adapted for use on B-52 bombers, which can carry eight missiles.

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 anti-radiation missile.

First Flight: April 1979.

Delivered: 1982–98.

IOC: circa 1984.

Production: sustainment phase.

Inventory: currently 7,500.

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 greatly improved capability over first-generation Shrikes and Standards. The AGM-88 proved highly effective against enemy ground radar during the Persian Gulf War and continues in use in current 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.

AGM-88B. Older versions of the AGM-88B are being upgraded with the new, enhanced capability guidance seeker currently equipping the C version.

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.

Erasable electronically programmable read-only memory has been retrofitted on ACC, PACAF, and USAFE HARMs, permitting changes to missile memory in the field. Current 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; home-on jamming capability will be added to the C. Further upgrades under development will introduce GPS precision navigation capability.

AGM-130

Brief: A powered TV– or IIR–guided air-to-surface missile, carried by the F-15E and designed for high- and low-altitude strikes at standoff ranges against heavily defended targets.

Function: Air-to-surface guided and powered bomb.
First Flight: 1984.
Delivered: November 1992–FY00.
IOC: 1994.
Production: sustainment phase.
Inventory: 490 (as of Sept. 30, 2000).
Contractor: Boeing.
Guidance: TV or IIR seeker, or DME transponder.
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: launch weight 2,917 lb.
Performance: cruising speed subsonic, ceiling in excess of 30,000 ft, range greater than 34.5 miles, Circular Error Probable (CEP) about 10 ft.

COMMENTARY

AGM-130 is a product improvement to the GBU-15 glide bomb, with a guidance system designed to give pinpoint accuracy from low or medium altitudes. The AGM-130 adds a rocket motor, radar altimeter, and digital control system, providing it with double the standoff range of the GBU-15.

Upgrades include a new solid-state TV seeker, an improved IR seeker, and INS/GPS guidance that permit operation in adverse weather and improve target acquisition.

AGM-130s have been used extensively in recent operations.

AGM-130A, with the Mk 84 warhead.
AGM-130C, with the BLU-109/B penetrating warhead.

AGM-142 Have Nap

Brief: A medium-range standoff attack missile that is carried by USAF B-52Hs to provide this long-range aircraft with a conventional precision strike capability.

Function: Air-to-surface guided missile.
First Flight: 1990.
Delivered: 1992.
IOC: June 1992.
Production: 240.
Inventory: 117.
Contractor: Rafael; Lockheed Martin.
Power Plant: solid-propellant rocket motor.
Guidance: inertial, with data link, TV, or IIR homing.
Warhead: high-explosive, 750-lb blast/fragmentation or 800-lb penetrator.
Dimensions: length 15.9 ft, body diameter 1.8 ft, wingspan 5.8 ft.
Weight: 3,000 lb.
Performance: range greater than 57.5 miles.

COMMENTARY

The AGM-142 missile system provides a conventional, precision, standoff hard target penetrator weapon for the B-52H. The system consists of a standoff, air-to-ground precision guided missile, weapon data link pod, and associated support and training equipment. Initial operational test and evaluation launches were completed in May 1990. There are six variants of the AGM-142.

AGM-142A. TV seeker with 750-lb blast/frag warhead.

AGM-142B. IIR seeker with 750-lb blast/frag warhead.

AGM-142B-1. IIR-Z seeker with 750-lb blast/frag warhead.

AGM-142C. TV seeker with 800-lb penetrator warhead.

AGM-142D. IIR seeker with 800-lb penetrator warhead.

AGM-142D-1. IIR-Z improved seeker with 800-lb penetrator warhead.

AGM-154 Joint Standoff Weapon

Brief: First in a joint USAF and Navy family of low-cost, highly lethal glide weapons with a standoff capability, usable against heavily defended targets.

Function: Air-to-surface guided missile.
First Flight: December 1994.
Delivered: 2000–FY13 (planned).
IOC: 2000 (USAF).
Production: 6,000 (planned).
Inventory: 60 (as of Sept. 30, 2000).
Contractor: Raytheon.

F-15E releasing an ***AGM-130*** (SrA. Jeff Fitch)

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, as compared to current interdiction weapon systems, by providing the capability for launch aircraft to stand off outside the range of enemy point defenses. JSOW accuracy and launch-and-leave capability will allow several target kills per aircraft sortie. Integration of JSOW is currently on F-16 Block 50 and B-2 aircraft, with follow-on capability on B-1B, B-52, F-15E, and F-16 Block 30/40.

AGM-154A. The baseline BLU-97 variant for use against area targets; in full-rate production.

AGM-154B. The BLU-108 variant providing anti-armor capability; began production in FY99.

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 FY11 (planned).
IOC: FY03 (planned).
Production: 4,000 (USAF planned); 700 (Navy).
Inventory: TBD.
Contractor: Lockheed Martin; Raytheon; Honeywell.
Power Plant: Teledyne Continental Motors.
Dimensions: length 14 ft.
Weight: 2,250 lb.
Performance: 1,000-lb class warhead; range greater than 230 miles.

COMMENTARY

JASSM is a next-generation missile that will enable Air Force and Navy fighters and bombers to destroy the enemy's war-sustaining capabilities from outside the ranges of enemy air defenses. JASSM has INS/GPS guidance with an IIR terminal seeker. It has an LO airframe and a rocket motor for survivability and standoff beyond area defenses. The warhead is a 1,000-lb penetrator/blast fragmentation. This autonomous precision strike weapon will attack both fixed and relocatable targets, ranging from nonhardened above ground to moderately hardened buried targets. The system will also offer low operational support costs. LRIP starts 2002. DOD plans to use JASSM on threshold aircraft B-52H and F-16. Objective aircraft include B-1B, B-2, F/A-18E/F, F-15E, F-117, and P-3C. An extended-range version (JASSM-ER) is under consideration for USAF's Extended-Range Cruise Missile requirement.

CBU-87/103 Combined Effects Munition

Brief: The CBU-87 CEM is an area cluster munition effective against light armor, materiel, and personnel and used by USAF and Navy fighters and bombers for interdiction.

Function: Area cluster 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 anti-personnel/anti-materiel 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 its inventory of CEMs with the WCMD tail kit. The WCMD will improve the munitions delivery accuracy when released from medium to high altitude. Tail kit purchases are based on available funding.

CBU-89/104 Gator

Brief: The CBU-89 Gator is an anti-armor/anti-personnel mine dispenser used by USAF and Navy fighters and bombers for interdiction.

Function: Scatterable mines.
Production: sustainment phase.
Inventory: 9,236 (CBU-89); classified (CBU-104).
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 anti-personnel mines.

COMMENTARY

The CBU-89 Gator dispenser holds 94 mines, of which 72 are anti-tank and 22 are anti-personnel. The mines are dispersed over the target in a rectangular pattern. The anti-tank mines, which can be fuzed for up to a 72-hour delay, have a magnetic influence fuze to sense armor.

CBU-104. USAF is retrofitting its inventory of Gators with the WCMD tail kit, which will improve the munitions delivery accuracy when released from medium to high altitude. Tail kit purchases are based on available funding.

CBU-97/105 Sensor Fuzed Weapon

Brief: The CBU-97 SFW is an anti-armor cluster munition used by fighters and bombers for multiple kills per pass against moving and stationary land combat vehicles.

Function: Wide-area cluster munition.
First Flight: circa 1990.
Delivered: 1994–2007 (planned).
IOC: 1997.
Production: 5,000 (planned).
Inventory: classified.
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 comprises an SUU-66/B tactical munitions dispenser with an FZU-39 fuze and a payload of 10 BLU-108/B submunitions. Each tactical munitions dispenser contains 10 BLU-108/B 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 IR sensors can detect a vehicle's infrared 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 propelled targets. It also provides direct attack capability and interdiction against C^2 centers.

The SFW is currently delivered as an unguided gravity weapon from the A-10, B-1, B-2, B-52H, F-15E, and F-16. The Air Force has started full-rate production of a preplanned product improvement SFW variant. It incorporates improvements such as an active laser sensor, multimission warhead, and increased footprint.

CBU-105. Designation of a CBU-97 equipped with a WCMD tail kit. The CBU-105 can be accurately delivered from high altitude and in adverse weather from the B-1, B-2, B-52H, F-15E, and F-16.

GBU-15

Brief: An unpowered glide weapon 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.

GBU-27 (SrA. Jeff Fitch)

GBU-31 *Joint Direct Attack Munition* (SSgt. Shane Cuomo)

Inventory: 1,650 (as of Sept. 30, 2000).

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-24

Brief: A precise air-to-ground penetrating glide bomb equipped with an advanced guidance kit.

Function: Air-to-surface guided bomb.

First Flight: GBU-24A/B (USAF) in service May 1985; GBU-24B/B (Navy) June 1992.

Delivered: from 1986.

IOC: 1986.

Production: USAF 14,000; Navy 12,000.

Inventory: classified.

Contractor: Raytheon.

Guidance: semiactive laser.

Dimensions: length 14.2 ft.

Weight: 2,350 lb.

COMMENTARY

GBU-24A/B. This is an air-to-ground weapon equipped with a third-generation laser-guided bomb guidance kit called Paveway III 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 adapts to conditions of release, flies an appropriate midcourse, and provides trajectory shaping for enhanced warhead effectiveness. The weapon is deployed on the F-15E and F-16. The GBU-24A/B was highly successful in the Persian Gulf War.

GBU-27

Brief: A precise air-to-ground penetrating glide bomb equipped with an advanced guidance kit.

Function: Air-to-surface guided bomb.

First Flight: not available.

Delivered: from 1988.

IOC: 1988 (unconfirmed).

Production: approx 3,000.

Inventory: classified.

Contractor: Lockheed Martin.

Guidance: semiactive laser.

Dimensions: span 5.5 ft, length 13.9 ft.

Weight: 2,170 lb.

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 the Persian Gulf War.

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.

GBU-28

Brief: A large 5,000-lb class air-to-ground penetrating glide bomb equipped with an advanced laser guidance kit, used for striking and destroying hard underground targets.

Function: Air-to-surface guided bomb.

First Flight: February 1991.

Delivered: circa 1991.

IOC: 1991.

Production: approx 500.

Inventory: classified.

Contractor: Raytheon.

Dimensions: length 19.2 ft, diameter 1.2 ft.

Weight: 4,676 lb.

Performance: classified.

COMMENTARY

Under USAF's rapid-response program, the GBU-28 laser-guided bunker-busting weapon was developed for Desert Storm for use against deeply buried, hardened C^2 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.

EGBU-28. 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-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–FY08 (planned).

IOC: 1998.

Production: USAF 62,000; USN 25,496 (planned).

Inventory: 3,870.

Contractor: Boeing; Textron; Honeywell.

Dimensions: Mk 84 with JDAM 12.8 ft; BLU-109 with JDAM 12.4 ft; Mk 83 with JDAM 10 ft.

Weight: Mk 84 2,036/2,056 (USAF/USN); BLU-109 2,115/2,135; Mk 83 1,013/1,028.

Performance: range up to 17 miles, CEP with GPS 42.9 ft; CEP with INS only 99 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 intended for use on a variety of aircraft, including the AV-8B, B-1B, B-2, B-52, F-14, F-15E, F-16, F-22, F-117A, F/A-18C/D/E/F, and JSF.

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 penetrator.

GBU-38. Variant that adds an INS/GPS guidance kit to the 500-lb general-purpose Mk 82 bomb. Under development.

Small Diameter Bomb

Brief: An air-to-surface miniaturized munition with

accurate and precision standoff characteristics for both current and future fighter and bomber aircraft.

Function: Miniaturized bomb.
First Flight: TBD.
Delivered: TBD.
IOC: TBD.
Production: TBD.
Inventory: TBD.
Contractor: TBD.
Dimensions: TBD.
Weight: TBD.
Performance: TBD.
COMMENTARY

The miniaturized nature of the Small Diameter Bomb (SDB) allows an aircraft to carry a large number, thus maximizing the number of kills per sortie. The SDB will contain accurate and precision guidance targeting to minimize colateral damage and is designed to be combat effective in adverse weather against both fixed and mobile targets, covered, concealed, hardened, or relocatable. The SDB weapons system will include a common carriage system to enhance aircraft integration across a wide spectrum.

SDB is a two-phased spiral development program that supports requirements for Phase 1 (fixed/stationary) and 2 (mobile/relocatable) targets. Threshold aircraft for the Phase 1 SDB is the F-15E and for Phase 2 SDB the F-16 and B-1. Objective aircraft for both phases include the A-10, B-2, B-52, F-22, F-35, F-117, and UCAV. The SDB weapons system will be interoperable with the information exchange requirements of the air operations theater C^2 and Intelligence, Surveillance, and Reconnaissance (ISR) architecture.

Two year competitive design and development contracts were awarded both to Boeing and Lockheed Martin.

Wind-Corrected Munitions Dispenser

Brief: A tail kit to be fitted to CBU 87/89/97 dispenser weapons. When dropped from high altitude, its inertial guidance system corrects for launch transients and wind effects to enhance accuracy.

Function: Guidance tail kit.
First Flight: February 1996.
Delivered: FY00.
IOC: FY00.
Production: 40,000 (planned).
Inventory: 280 (as of Sept. 30, 2000).
Contractor: Lockheed Martin.
Dimensions: length 1.4 ft, diameter 1.3 ft.
Weight: 100 lb.
Performance: range about eight miles.
COMMENTARY

USAF is to modify 40,000 standard tactical munition dispensers with guidance kits to compensate for wind drift on downward flight from high altitudes. WCMD kits each have an INS guidance unit, movable tail fins that pop out in flight, and a signal processor. A WCMD tail kit is fitted on inventory cluster weapons: CEM (CBU-103), Gator (CBU-104), and SFW (CBU-105). Successful flight testing began in February 1996; WCMDs are now operational on F-16 and B-52 aircraft. Objective aircraft are B-1, F-15E, F-22, and F-117.

Satellite Systems

Defense Meteorological Satellite Program

Brief: Satellites that collect air, land, sea, and space environmental data to support worldwide strategic and tactical military operations.

Function: Environmental monitoring satellite.
Operator: National Polar-orbiting Operational Environmental Satellite System (NPOESS) program office.
First Launch: circa 1960s (classified until 1973).
IOC: classified but in use during Vietnam War.
Constellation/on-orbit: two.
Design Life: 48 months (Block 5D-2); 54 months (Block 5D-3).
Launch Vehicle: Titan II.
Unit Location: Suitland, Md.
Orbit Altitude: approx 500 miles.
Contractor: Lockheed Martin; Aerojet General; Northrop Grumman.
Power Plant: solar arrays generating 500–600 watts.
Dimensions: length 20.2 ft (with array deployed), width 4 ft.
Weight: 1,750 lb.
Performance: DMSP satellites orbit Earth at about 500 miles altitude and scan an area 1,800 miles wide. Each system covers the Earth in about 12 hr.
COMMENTARY

For the last 40 years, the DMSP constellation has provided high-quality, timely weather information to strategic and tactical warfighters worldwide. In addition, DMSP satellites provide critical land, sea, and space environment data required by US forces across the globe. The DMSP constellation will be replaced by the tri-agency NPOESS late in this decade.

Block 5D-2. Two operational DMSP Block 5D-2 satellites survey the entire Earth four times a day. The last of the Block 5D-2 satellites was launched in December 1999. The Block 5D-2 spacecraft "sees" visible and IR cloud-cover imagery to analyze cloud patterns with the Operational Linescan System. Secondary instruments include microwave imagers and sounders and a suite of space environment sensors.

Block 5D-3. DMSP F-16, the first Block 5D-3 satellite, is now scheduled for launch in October 2002. (DMSP F-15, with a 5D-3 satellite bus but 5D-2 internal components, 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 missions. Successful flyout of the DMSP Block 5D-3 satellites will help ensure a seamless transition to the NPOESS program for DOD.

Defense Satellite Communications System

Brief: A spacecraft traveling in geosynchronous orbit used to transmit SHF high-priority C^2 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 ft x 6 ft x 7 ft; 38-ft span with solar arrays deployed.
Weight: 2,580 lb; 2,716 lb (SLEP).
COMMENTARY

DSCS III. The Defense Satellite Communications System provides worldwide, high-bandwidth satellite communications supporting strategic and tactical C^3I requirements. Users include national/defense leaders, Defense Information System Network (DISN), Diplomatic Telecommunications Service (DTS), White House Communications Agency, and ground mobile forces of all services. The constellation consists of five primary and five residual geosynchronous DSCS III satellites and supports communications services at SHF (X-band). DSCS satellites provide full Earth, narrow regional, and shaped coverage, are nuclear hardened, have an anti-jam capability, and host the AFSATCOM package (Single Channel Transponder) for dissemination of protected emergency action messages. The modernization of satellite communications will continue with the deployment of the Wideband Gap-filler Satellites (WGS) and the Advanced Wideband System (AWS).

DSCS III/SLEP. The last four DSCS satellites are designated Service Life Extension Program (SLEP). These provide approximately twice the bandwidth of the original DSCS III satellites. The first two SLEP satellites were launched in FY00 and FY01.

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: SPACECOM.
First Launch: November 1970.
IOC: circa 1972.
Constellation: classified.
Design Life: three yr.
Launch Vehicle: Titan IV IUS.
Unit Location: Peterson AFB, Colo.
Orbit Altitude: 22,000+ miles in geosynchronous orbit.
Contractor: TRW; 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

This incredibly flexible satellite system was used extensively in the Persian Gulf 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. Using existing sensors and data collection sources, global data related to Theater Missile Defense (TMD) is transmitted to the Attack and Launch Early Reporting to Theater (ALERT) and Shield systems centrally located at the National Test Facility (NTF). ALERT is a high-confidence operational system that provides assured theater missile warning to warfighters worldwide. Shield is a research and development effort that evaluates and demonstrates the potential benefits of using multiple data sources and novel techniques in support of TMD.

Defense Support Program **(DSP)** satellites are a key part of North America's early warning system, capable of detecting missile launches and nuclear detonations. Warning data are fed to NORAD and US Space 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. To date, 21 DSP satellites have been launched by USAF. America's early warning capability will be modernized with the introduction of the new Space Based Infrared System to be phased in as DSP assets reach the end of their useful life.

Global Positioning System

Brief: A constellation of orbiting space vehicles that provides highly precise and reliable navigation data, 24 hours a day, to military and civilian users around the world. Signals permit calculation of location within 300 feet.

Function: Worldwide navigation satellite.
Operator: AFSPC.
First Launch: Feb. 22, 1978.
IOC: Dec. 9, 1993.
Constellation: 24.
Design Life: six yr (II/IIA); 7.5 yr (IIR).
Launch Vehicle: Delta II.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 12,636 miles (IIA); 12,532 miles (IIR).
Contractor: Boeing; Lockheed Martin.
Power Plant: solar arrays generating 700 watts (II/IIA); 1,136 watts (IIR).
Dimensions: II/IIA: body 8 ft x 8 ft x 12 ft, incl solar arrays 11 ft x 19 ft ; IIR: body 8 ft x 6 ft x 10 ft, span incl solar arrays 37 ft.
Weight: 2,174 lb (IIA); 2,370 lb (IIR) on orbit.
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 hour, and location to within a few feet. 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 navigation 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. Future GPS satellites will have two jam-resistant channels for military-only use plus two new civilian channels.

Milstar Satellite Communications System

Brief: A satellite communications system that provides secure, jam-resistant worldwide C^2 communications for tactical and strategic forces in all levels of conflict, linking command authorities to ground forces, ships, submarines, and aircraft.

Function: Communications satellite.
Operator: AFSPC.
First Launch: Feb. 7, 1994.
IOC: July 1997 (Milstar I).
Constellation: three (three spares).
Design Life: 10 yr.
Launch Vehicle: Titan IV/Centaur.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 22,300 miles.
Contractor: Lockheed Martin; Hughes; TRW.
Power Plant: solar arrays generating almost 5,000 watts.
Dimensions: length 51 ft, width 116 ft (with full solar array extension).
Weight: 10,000 lb.
Performance: The constellation consists of three satellites in low-inclined geosynchronous orbit, providing worldwide coverage between 65° north and 65° south latitude.
COMMENTARY

The backbone of strategic–tactical communications, Milstar is a joint-service communications system that provides secure, jam-resistant EHF communications. 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

will be fully deployed by the end of 2002, and modernization of satellite communications will continue with the Advanced EHF constellation deployments.

Polar MILSATCOM
Brief: Satellite that provides secure, survivable communications, supporting peacetime, contingency, and wartime operations in the North Pole region.
Function: Communications satellite.
Operator: AFSPC.
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. Like Milstar, the system enables worldwide operations by linking strategic and tactical forces with secure, jam-resistant EHF communication links.

Space Based Infrared System
Brief: Advanced surveillance system for missile warning, missile defense, battlespace characterization, and technical intelligence. System includes two main components: High with satellites in Geosynchronous Earth Orbit (GEO) and highly elliptical orbit; and Low with satellites in Low Earth Orbit (LEO).
Function: Infrared space surveillance.
Operator: AFSPC.
First Launch: (planned) High GEO: FY04; Low: FY06.
IOC: TBD.
Constellation: High: four GEO sats, two highly elliptical orbit sensors; Low: 27 LEO sats (incl three spares).
Design Life: not available.
Launch Vehicle: TBD.
Unit Location: Buckley AFB, Colo.
Orbit Altitude: High at approx 22,300 miles; Low at 60–300 miles.
Contractor: Lockheed Martin (High); TRW and Spectrum Astro for preliminary system designs (Low).
Power Plant: not available.
Dimensions: not available.
Weight: not available.
COMMENTARY
The follow-on to the DSP is the Space Based Infrared System **(SBIRS).** SBIRS is an integrated "system of systems" including a High component (satellites in GEO and sensors hosted on two satellites in highly elliptical orbit) and a Low component (satellites in LEO), as well as ground assets.
SBIRS is being fielded in four increments. Increment 1 consolidates all DSP ground processing in one CONUS master control station at Buckley AFB, Colo. IOC was declared Dec. 18, 2001. Increment 2 fields the High component, i.e. space and ground assets, and Increment 3 fields the Low component. Increment 4 will optimize the entire system and define requirements for further deployment. The High component is in the EMD phase of development led by a Lockheed Martin team. In FY02, SBIRS Low management was assumed by BMDO (now the MDA). SBIRS Low is currently in the program definition and risk reduction phase, involving competition between TRW– and Spectrum Astro–led teams.

Wideband Gap-filler Satellite (WGS)
Brief: WGS will provide the wideband communications needed for information superiority to deployed tactical forces to include Aerospace Expeditionary Forces, Army Digital Corps, and Navy battle groups.
Function: Worldwide satellite communications.
Operator: AFSPC.
First Launch: January 2004 (planned).
IOC: October 2004 (planned).
Constellation: three satellites.
Design Life: 14 years.
Launch Vehicle: Evolved Expendable Launch Vehicle.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: GEO.
Contractor: Boeing.
Dimensions: TBD.
Weight: 13,000 lb.
Performance: approx 12 times the capability of a DSCS satellite.
COMMENTARY
The WGS program is designed to fill the gap between current DSCS and Global Broadcast System (GBS) systems and an advanced wideband system. It will provide two-way services for national leaders, DTS, DISN, and all service ground 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. The satellites will have X-band (DSCS III–like), Ka-band broadcast (GBS Phase 2–like), and two-way Ka-band services.

QF-4E (USAF photo)

Aerial Targets

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).
Inventory: 44 (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 C^2 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.

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.
IOC: circa 1951.
Production: 1,800+.
Inventory: 49.
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 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, offers 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.

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 63 ft, height 16.5 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 125 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. ■

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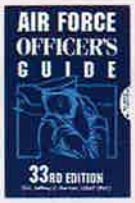
Books

Compiled by Chequita Wood, Editorial Associate

Air Force Officer's Guide. 33rd ed. Col. Jeffrey C. Benton, USAF (Ret.). Stackpole Books, Mechanicsburg, PA (800-732-3669). 357 pages. $19.95.



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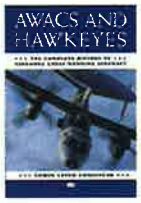

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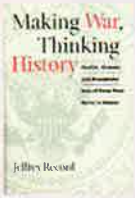

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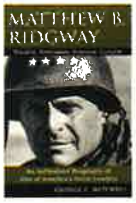

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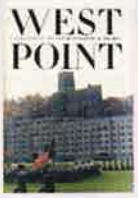

Hurricanes Over Malta: June 1940–April 1942. Brian Cull and Frederick Galea. Seven Hills Book Distributors, Cincinnati (800-545-2005). 320 pages. $34.95.

The Silent War: The Cold War Battle Beneath the Sea. John Piña Craven. Touchstone Books, New York (800-223-2348). 304 pages. $14.00.

What Went Wrong?: Western Impact and Middle Eastern Response. Bernard Lewis. Oxford University Press, New York (800-451-7556). 180 pages. $23.00.

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2002 Outstanding Squadron Dinner

USAF Academy

AFA Lance P. Sijan Chapter

The Air Force Association's 43rd Annual Outstanding Squadron Dinner will be held at the Sheraton Hotel, 2886 S. Circle Drive, Colorado Springs, Colo., on Tuesday, May 21, to honor cadets of the United States Air Force Academy for the 2001–02 school year. Established in 1959, the Outstanding Squadron Trophy is one of the academy's most revered and coveted awards. It recognizes all elements of cadet life, including drill, intramural athletics, military leadership, and academic standing. The price for the dinner is $90 per person and $900 per table.

Featured speaker: Gen. William J. Begert, commander, Pacific Air Forces and air component commander for US Pacific Command.

If you have questions regarding the USAFA Outstanding Squadron Dinner, please contact Barbara Coffey, (800) 727-3337 ext. 5805, e-mail: bcoffey@afa.org, or Jeri Andrews, (719) 622-5107, e-mail: Jerry.Andrews@northropgrumman.com.

Golf Tournament

The 3rd Annual Colorado Aerospace Education Foundation Charity Golf Tournament will take place on the US Air Force Academy Eisenhower Course on May 21. Interested participants contact: Tom Cavalli at (719) 574-0064, e-mail: tcavalli@aerothermo.com, or Sherry Gardner at (719) 637-2213, e-mail: sgardner@oao.com.

Symposium

The Lance P. Sijan Chapter of the Air Force Association, in partnership with Air Force Space Command, is proud to announce *Space Ops 2002*. The recent conflict in Afghanistan, as part of the war on terrorism, highlights the contribution of space to the "new American way of war"—focusing on the "strategic paralysis" of the enemy. This year's central theme will be "Space-Enabled Warfare"—looking at both current and future capabilities and needs.

Tuesday, May 21—7 p.m.

This one day symposium on May 22 will cover the personal perspectives of those most directly involved in the conflict, as well as those who direct and support the warfighters. Speakers include: Gen. Ralph E. Eberhart, commander in chief, US Space Command; Gen. Lester L. Lyles, commander, Air Force Materiel Command; Gen. Lance W. Lord, commander, Air Force Space Command, and symposium co-host; as well as other senior DOD leadership.

The cost is $350 for AFA Industrial Associate Members and other civilian professionals. Government prices available. The symposium registration fee includes a continental breakfast, coffee breaks, lunch, and the Wednesday evening reception. Additional tickets to the lunch and evening reception can also be purchased for $50. Contact Judy Arnold, (719) 622-2528, fax: (719) 262-2477, e-mail: judy.arnold@lmco.com.

For reservations at the Sheraton Hotel, call (719) 576-5900 and identify yourself as an attendee of the Air Force Association symposium and/or dinner.

"The Department of Defense finds this event meets the minimum regulatory standards for attendance by DOD employees. This finding does not constitute a blanket approval or endorsement for attendance. Individual DOD component commands or organizations are responsible for approving attendance of their DOD employees based on mission requirements and DOD regulations."

AFA / AEF National Report

afa-aef@afa.org

By Frances McKenney, Assistant Managing Editor

AFA Hosts Air Attaches

Military representatives of more than 50 countries attended *Air Force* Magazine's 22nd annual reception for foreign air attaches, and RAF Air Commodore Geoffrey D. Simpson was welcomed as the new dean of the corps.

Simpson, an RAF bomber pilot, spent some time with US Strategic Air Command at Offutt AFB, Neb. He had a key role in RAF tanker operations during Operation Desert Storm.

In his remarks to the reception guests, Simpson noted "the tremendous amount of good work that the Air Force Association, the Aerospace Education Foundation, and *Air Force* Magazine [do] on behalf of all of us."

AFA National Chairman of the Board Thomas J. McKee encouraged the air attaches to attend AFA and AEF symposiums and the National Convention.

Among the more than 120 guests at the reception were Willard H. Mitchell, deputy undersecretary for international affairs; USAF Chief of Staff Gen. John P. Jumper; and Lt. Gen. John L. Woodward Jr., deputy chief of staff, communications and information.

AEF officials on hand included Chairman of the Board Jack C. Price and AEF President Richard B. Goetze Jr.

Staff photo by Guy Aceto

AFA National Chairman of the Board Thomas McKee (left) and the new dean of the foreign air attache corps, RAF Air Commodore Geoff Simpson, listen to remarks at* Air Force *Magazine's annual reception in Arlington, Va., for foreign air attaches.

AEF Spouse Scholarships Awarded

AEF announced the 30 recipients of its Spouse Scholarships in January, and at least one was so happy at being selected that she told AEF President Goetze that she danced around her house for two days singing, "I won!"

Alana E. Schrader, a graduate student in liberal arts at the University of North Carolina at Asheville, said the $1,000 scholarship would help with the many expenses of her education and pointed out that the cost of babysitting alone rivaled her tuition.

This year, 141 applicants competed for the scholarships. AEF Spouse Scholarships are open to an Air Force active duty, Guard, or Reserve member's spouse who is pursuing an undergraduate or graduate degree.

A complete list of scholarship recipients is on AEF's Web site at www.aef.org. The next deadline for scholarship applications is Nov. 1.

Pancakes

Pancakes were on the griddle when the **Gainesville (Fla.) Chapter** took over a local restaurant one morning in March and hosted a fund-raising breakfast.

More than 80 people turned out for the event, many of them walk-ins and tourists looking for breakfast. Chapter President John M. Holley and Vice President Michael F. Brown greeted them at the door and distributed copies of *Air Force* Magazine. Applications for AFA lay on every table.

Back in the kitchen, AFROTC cadets from the University of Florida at Gainesville, Det. 150, cooked pancakes. They also waited on tables, cleaned up afterward, and even donated their tips to the chapter. So did Capt. Brant C. Bushnell, the chapter treasurer, who also waited tables.

The breakfast was just one in a series of steps the chapter has taken recently toward revitalization.

Holley began the process by working in the community to build interest. Among the first stops: Det. 150, commanded by chapter member Col. Kenton H. Holmes. That's when the detachment's executive officer, Bushnell, stepped forward to volunteer as chapter treasurer.

Chapter officers have contacted the local Air Force JROTC unit—which Holley calls "fertile ground"—veterans groups, and Civil Air Patrol, turned out a newsletter, and built rapport with the media.

A local radio station, in fact, helped publicize a chapter event also held in March, when Lt. Col. Max Hanessian made a presentation to the chapter about the war on terrorism. Hanessian is from the strategic planning directorate in the USAF Office of the Deputy Chief of Staff for Plans and Programs in the Pentagon.

His briefing is one in a series offered by an Air Force National Security Briefing Team. Members of this

team began traveling by invitation in 1999 to speak to the general public about aerospace power's contribution to national security.

Despite this burst of chapter activities, Holley says the revitalization effort has, literally, a long way to go: His next task is to incorporate more fully into the chapter the Ocala County area, located 40 miles away from Gainesville.

Formal in Fort Worth

The **Fort Worth (Tex.) Chapter** hosted "An Evening in Fort Worth," its annual formal, in February.

USAF Chief of Staff Gen. John P. Jumper was the guest of honor, along with Republican Rep. Sam Johnson and Democratic Rep. Martin Frost. Johnson served in the Air Force for 29 years, flying combat missions in the Korean and Vietnam Wars. He was a prisoner of war in Hanoi for nearly seven years. He is an AFA national director. Frost, a 12-term Congressman, served for six years in the Army Reserve. His wife, Army Maj. Gen. Kathryn G. Frost, is The Adjutant General of the US Army.

Other special guests included Gen. Donald G. Cook, who became commander of Air Education and Training Command at Randolph AFB, Tex., in December, and Maj. Gen. Steven R. Polk, who was then commander of 19th Air Force. (Now a lieutenant general, he is vice commander of Pacific Air Forces, Hickam AFB, Hawaii.)

Among the other guests were representatives of defense companies, which David A. Dietsch, chapter communications vice president, acknowledged as having provided most of the funding for the formal banquet and ball. ROTC cadets from Texas Christian University and Baylor University also attended the event, which raises funds for the chapter's aerospace education activities.

VIPs at Regional Meeting

At the Virginia state quarterly meeting held in March in Virginia Beach, Rep. J. Randy Forbes headed the list of VIPs that included Lt. Gen. Bruce A. Wright, vice commander of Air Combat Command at Langley AFB, Va.

Forbes, a Republican who was elected in June 2001 to the seat held by the late Democratic Rep. Norman Sisisky, is on the House Armed Services Committee.

From the host **Tidewater (Va.) Chapter**—headed by William M. Cuthriell—and the state's nine other AFA chapters, more than 100 representatives attended the meeting.

USAF Chief of Staff Gen. John Jumper presents an AEF Jimmy Doolittle Educational Fellow plaque to SSgt. Dennis Alexander, one of the Air Force's 12 Outstanding Airmen honored at the gala. Alexander is an armament systems journeyman with the 36th Fighter Squadron, Misawa AB, Japan. Also on stage for the presentation are (l–r): Tommy Harrison, gala chairman; CMSAF Frederick Finch; and John Timothy Brock, Central Florida Chapter president.

Gala in Orlando

It's a highlight, a culmination, a celebration—it's the AFA Gala in Orlando, Fla.

This year, it honored the Air Force's Outstanding Airmen, the dozen "best of the best" who usually claim a spotlight at the AFA National Convention. The terrorist attacks precluded such recognition last September, but the Outstanding Airmen became stars of the 18th annual AFA Gala.

Sponsored by the Central Florida Chapter and held in conjunction with AFA's annual Air Warfare Symposium, the black-tie banquet comes on the last full day of nearly a week of activities, ranging from a golf tournament, to AFA and AEF board and council meetings, to exhibits by aerospace industry companies.

When the evening began, Tommy G. Harrison, gala chairman, announced that its focus would be on USAF's enlisted force. "We salute all those dedicated enlisted men and women of the United States Air Force who serve so valiantly around the world to protect our freedom," he said.

John Timothy Brock, the Central Florida Chapter president, asked all current and former enlisted USAF members to stand to receive applause as recognition for their contributions.

USAF Chief of Staff Gen. John P. Jumper and CMSAF Frederick J. Finch then joined Brock and Harrison on stage to name the Outstanding Airmen as AEF Jimmy Doolittle Educational Fellows. The honorees were SSgt. Dennis L. Alexander, MSgt. Maria D. Cornelia, TSgt. Myrna L.S. Cornelson, SSgt. James J. Delo Jr., SSgt. Gregory W. Fry, TSgt. Ronald A. Gisel, TSgt. Monica M. Hill, SSgt. Tien N. Ho, MSgt. D. Dexter Lesieur, TSgt. John A. Maldonado II, SSgt. Brandon R. Pearce, and SSgt. Jason R. Raether. (See "The Outstanding Airmen," November 2001, p. 64.)

During the evening, Harrison and Brock also presented a $10,000 check for the Air Force Memorial to Ross Perot Jr., the memorial foundation's chairman of the board.

AEF leaders Jack C. Price and Richard B. Goetze Jr. received a $45,000 check to support aerospace education efforts. Brock noted that the chapter has now raised more than $415,000 for AEF.

The Swamp Fox (S.C.) Chapter helped honor 9th Air Force's Outstanding Airmen of the Year at a banquet in March at Shaw AFB, S.C. Here, Rodgers K. Greenawalt (far right), AFA Southeast Region president, presents an AFA membership and achievement certificate to Col. David M. Edgington, commander of 4th Fighter Wing at Seymour Johnson AFB, N.C. Edgington accepted the award on behalf of MSgt. Paul F. Clark Jr., who was on temporary duty at the time. Other recipients are (l–r) SrA. Matthew D. Hose, 33rd FW, Eglin AFB, Fla.; SSgt. Charlie R. Helms, 20th Fighter Wing at Shaw; and SMSgt. Marvin A. Million from Central Command Air Forces. Chapter President David T. Hanson also attended the banquet.

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At dinner that evening, Wright addressed the group, describing Air Force operations since September. He also showed a video on F-16s in action in Afghanistan.

The USAF Heritage of America Band, based at Langley, provided a program of patriotic music. Among the honored guests at the banquet were Thomas G. Shepherd, Central East Region president; William L. Anderson, state president; and John E. Craig II, an AFA national director.

60th Anniversary

The **Inland Empire (Wash.) Chapter** helped Fairchild AFB, Wash., and its 92nd Air Refueling Wing celebrate their 60th anniversaries in March.

William Moore, chapter president, tipped off the wing that retired Gen. John A. Shaud, AFA executive director, would be in the state that month. Since Shaud had commanded the organization in 1978 (when it was the 92nd Bomb Wing), the wing snapped him up as a tailor-made keynote speaker and guest of honor for the anniversary.

In addition to providing the keynoter, the chapter compiled about 1,600 names from various sources for the wing to use as a mailing list for invitations. Nearly 800 guests, including wing veterans from its World War II days, attended the anniversary ball. From the chapter, there were about 50 members and its officers: Moore; Stan Williams, vice president; Charles E. Latimer, secretary; and Matthew E. Goslin, treasurer.

The night before the ball, the chapter hosted a small, informal dinner on base for Shaud. The guests included Tom Hansen, state president.

Fairchild Air Force Base began as an Army air depot in March 1942. One of the wing's original groups, the 92nd Bomb Group, also activated that month at Barksdale Field, La. It moved to Spokane in 1947.

History Lesson

The **John W. DeMilly Jr. (Fla.) Chapter** highlighted Black History Month through a chapter dinner meeting in Homestead, Fla., featuring retired Lt. Col. Leo R. Gray, a Tuskegee Airman.

During World War II, Gray was stationed in Italy as a fighter pilot and flew more than 15 combat missions in a P-51. According to John H. Breslin, chapter vice president for communications, Gray spoke about the discrimination African–American military members endured during the

war and described changes that have taken place since then.

Along with chapter members, guests who turned out to learn about the Tuskegee Airmen included cadets from Homestead High School's Air Force JROTC unit.

Gray is a member of AFA's **Gold Coast (Fla.) Chapter.**

More AFA/AEF News

■ In presentations hosted by the **Gold Coast Chapter** at Pompano Beach Air Park, Fla., in October, retired Brig. Gen. Paul W. Tibbets Jr., pilot of the B-29 *Enola Gay,* spoke about dropping the atomic bomb on Hiroshima, bringing World War II to an end. He showed a video about training for the mission, answered questions, and signed autographs for the crowd. Ransom Meriam, chapter president, commented that Tibbets "strongly feels the need to talk to as many audiences as possible [to bring] them the actual story by the man who commanded this historic mission." The *Enola Gay* is being fully assembled for the first time in many years and is to be displayed at the National Air and Space Museum's annex, scheduled to open next year at Dulles Airport outside Washington, D.C.

■ More than 100 USAF personnel, defense industry representatives, and members of the **Donald W. Steele Sr. Memorial (Va.) Chapter** turned out for an evening reception to salute USAF's Office of the Deputy Chief of Staff, Communications and Information. Lt. Gen. John L. Woodward Jr., the DCS, communications and information, joined James T. Hannam, chapter president, in presenting awards to six recipients: Maj. Anthony W. Buenger Jr., of the **Gen. Charles A. Gabriel (Va.) Chapter,** Maj. Lee-Ann Perkins, Capt. Vincent S. Hibdon, Janet Eitnier, Casey Goeckerman, and Joseph E. Sulick, who is a member of the **Baltimore Chapter.**

■ The **Frank Luke (Ariz.) Chapter** held its third annual golf tournament in March at Luke AFB, Ariz., to raise funds for its many initiatives in support of the airmen at Luke. Seventeen four-member teams took part in the tournament. Local businesses bought signs for display at the holes on the golf course, with holes one and 18 going for $500 each. Harry H. Bailey, chapter president, gave credit for the tournament's success to the chapter's vice president for community relations, John L. Dearness.

■ In March, AFA National President John J. Politi attended the farewell dinner for Lt. Gen. Ronald C. Marcotte, who retired March 8 as vice commander of Air Mobility Command at Scott AFB, Ill. The dinner guests represented many phases in Marcotte's career, going back to his Air Force Academy days in the late 1960s.

AFA Conventions

May 3–4	Tennessee State Convention, Chattanooga, Tenn.
May 3–5	New Jersey State Convention, Cape May, N.J.
May 10–11	South Carolina State Convention, Sumter, S.C.
May 17–19	Mississippi State Convention, Columbus, Miss.
June 8	North Carolina State Convention, Wilmington, N.C.
June 14–16	New York State Convention, Owego, N.Y.
June 14–16	Ohio State Convention, Youngstown, Ohio
June 25–26	Alaska State Convention, Fairbanks, Alaska
June 28–29	Oklahoma State Convention, Altus, Okla.
July 19–21	Florida State Convention, Cape Canaveral, Fla.
July 19–21	Pennsylvania State Convention, Allentown, Pa.
July 20	Kansas State Convention, McConnell AFB, Kan.
July 26–27	Texas State Convention, San Antonio
Aug. 2–3	California State Convention, Vandenberg AFB, Calif.
Aug. 2–3	Illinois State Convention, Galesburg, Ill.
Aug. 16–17	Utah State Convention, Ogden, Utah
Aug. 17	Georgia State Convention, Savannah, Ga.
Aug. 18	Massachusetts State Convention, Worcester, Mass.
Aug. 23–24	Colorado State Convention, Denver
Sept. 7	Delaware State Convention, Dover, Del.
Sept. 15–18	AFA National Convention, Washington, D.C.
Sept. 21	New Hampshire State Convention, Manchester, N.H.

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Unit Reunions

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1st and 7th Emergency Rescue Sq. Sept. 5–8 in Pecria, IL. **Contact:** Chuck Dill, 404 E. Polk St., Morton, IL 61550 (309-263-8288) (dill@dpc.net).

1st FG/Wg, including 27th, 71st, and 94th FSs (WWII or later). Sept. 11–15 at Langley AFB, VA. **Contact:** Herschel Baird, 702 Valley Dr., Scottsbluff, NE 69361-1452 (308-632-3946) (firstfighter@yahoo.com).

4th Tactical Depot Sq, RAF Alconbury, UK (1953–60). July 5–7 in Denver. **Contact:** Jim Dutton, 1001 S. Havana St., Apt. 414, Aurora, CO 80012-2907 (303-364-3910) (jamesdutton@earthlink.net).

5th AAF Flying Tng Det., Ryan School of Aeronautics. June 14–16 at Ryan Field in Hemet, CA. **Contact:** Maure Solt, 5001 W. Florida Ave., #176, Hemet, CA 92545-3823 (909-658-2716).

6th BG Assn, Tinian Island (WWII). Oct. 4–7 at the Nashville Marriott in Nashville, TN. **Contact:** John Creek, 10425 Pinedale Dr., Knoxville, TN 37922 (865-691-9415) (JRC6thBG2002@aol.com).

15th Troop Carrier Sq (through September 1945). Sept. 30–Oct. 3 in Branson, MO. **Contact:** Joseph Yuhasz, 6926 S. 725 E., Unit B, Midvale, UT 84047-1488 (801-566-5752) (rjyuhasz45@aol.com).

39th BG, Guam (1945). Aug. 22–25 in Dayton, OH. **Contacts:** James Wyckoff, 2714 E. Hayts Corners Rd., Ovid, NY 14521-9768 (607-869-2574) or Robert Weiler, 2045 Hyde Park St., Apt. 3, Sarasota, FL 34239-3941 (941-365-8287) (bobweiler@39th.org).

50th FBW/TFW (WWII to present). Sept. 12–15 in Bozeman, MT. **Contact:** Jack Marshall, 15057 Kelly Canyon Rd., Bozeman, MT 59715 (phone/fax: 888-252-8048).

50th TCS (WWII and Korea) **and 50th Tactical Airlift Sq,** Vietnam. June 14–16 in Little Rock, AR. **Contact:** Jim Dryjanski (501-605-0690) (james.dryjanski@littlerock.af.mil).

51st FIW Assn, Korea (1950–53). Oct. 3–6 at the Landmark Resort Hotel in Myrtle Beach, SC. **Contact:** Ernest Stroud, 8518 Flat Creek Rd., Kershaw, SC 29067-9089 (phone/fax: 803-475-2654) (ErnieS@comporium.net).

100th AREFS (SAC). Sept. 13–15 in Colorado Springs, CO. **Contact:** Stan Klepper, 202 Snead Ln., Westminster, SC 29693 (864-972-2520) (stanleyo@worldnet.att.net).

308th FS, 31st FG, including post–WWII veterans. Sept. 26–28 at the Holiday Inn in Moline, IL. **Contact:** Roger Robinson, 2327 High St., Davenport, IA 52804 (563-324-6546).

315th BW Assn, Northwest Field, Guam. Sept. 18–21 in Indianapolis. **Contact:** Bev Green (217-893-3197).

315th Troop Carrier Gp, Ninth AF, all squadrons and support units. Sept. 18–22 in San Diego. **Contact:** Robert Cloer, 1417 Valley View Dr., Yuba City, CA 95993 (530-674-3681) (rlcloer@syix.com).

359th FG and support units, East Wretham, UK (WWII). Aug. 22–25 in Louisville, KY. **Contact:** C.W. Staley (608-362-5513).

384th ARS. Sept. 18–22 at the Holiday Inn Bordeaux Convention Center in Fayetteville, NC. **Contacts:** John Streit Jr., 497 Palestine Rd., Linden, NC 28356 (910-488-4588) (jpstreit@aol.com) or Kenneth Godstrey, 12018 Maycheck Ln., Bowie, MD 20715 (kengodstrey@comcast.net).

390th BG Veterans Assn (WWII), Eighth AF, Framlingham, UK. Sept. 24–29 in Harrisburg, PA. **Contact:** Ken Rowland, PO Box 28363, Spokane, WA 99228-8363 (phone/fax: 509-467-2565) (rowlandr@mindspring.com).

394th BS and **4th Recon Sq,** Fifth BG, Thirteenth AF, Pacific Theater (WWII). June 6–10 at the Lincoln Plaza Hotel in Reading, PA. **Contact:** Dag Larsen, 19191 Harvard Ave., Apt. 131F, Irvine, CA 92612 (949-725-6460) (daglynn@aol.com).

414th, 415th, 416th, and 417th Night Fighter Sqs, Twelfth AF, Italy (WWII). Aug. 29–31 in Dayton, Ohio. **Contact:** Harold Augspurger, 5515 Brandt Pike, Dayton, OH 45424 (937-233-1330).

416th and 531st TFSs, Misawa AB, Japan (1958–64). Sept. 17–20 at the Sheraton Old Town Hotel in Albuquerque, NM. **Contact:** Dave Mosby (435-674-4768) (dgmosby@aol.com).

435th BS, 19th BG, Australia. Aug. 11–14 in Tacoma, WA. **Contact:** Glen Spieth, 5928 Steilacoom Blvd., Lakewood, WA 98499 (253-584-3930) (b17relic@aol.com).

460th BG Society. Oct. 3–6 at the Grosvenor Resort Disney World in Orlando, FL. **Contacts:** Duane and Betty Bohnstedt, 24303 Contra Costa Ln., Punta Gorda, FL 33955-4020 (941-637-8590) or Rupert and Marty Taylor, 2408 Avenue A N.W., Winter Haven, FL 33880-3306 (863-293-7055) (b24ruppertt@cs.com).

483rd BG Assn (WWII). Sept. 17–22 in Omaha, NE. **Contact:** Harry Whye, 1508 Gregg Rd., Belleville, NE 68005-4905 (402-293-1508) (hwhye@cox.net).

487th BG, Eighth AF (WWII). Aug. 5–13 in Omaha, NE. **Contact:** Don Denbeck, 119 N. 4th, O'Neill, NE 68763 (402-366-3124).

526th FS, including Meridian, MS, and Landstuhl/Ramstein AB, Germany. Sept. 19–21 in Minneapolis. **Contact:** Wayne Rebischke (763-682-2685) (wkreb@worldnet.att.net).

580th, 581st, and 582nd ARC Assn. Sept. 12–15 in Bellevue, WA. **Contact:** Korman Olsen, 5071 S.W. Waite St., Seattle, WA 98116 (206-937-0658).

603rd Aircraft Control & Warning Sq, Giebelstadt, Germany. Sept. 17–21 at the Landmark Resort Hotel in Myrtle Beach, SC. **Contact:** Ken Knipper (843-236-3236).

623rd AC&W Sq, including 624th and 851st Sqs, 529th AC&W Gp, and 2152nd Communications Sq (Okinawa air defense). Sept. 12–15 at the Doubletreee Hotel in Cocoa Beach, FL. **Contact:** Bob Hughes, 2565 Addington Cir., Viera, FL 32955 (321-635-8491) (RC24Hughes@cfl.rr.com).

801st/492nd BG Assn. Oct. 6–10 at the Crockett Hotel in San Antonio. **Contacts:** William Becker (619-466-5004) (beebs71@aol.com) or Sebastian Corriere (414-464-8264) (corriere@voyager.net).

6927th RSM, Onna Point, Okinawa. Oct. 6–10 in Colorado Springs, CO. **Contact:** Ray Thibodaux, PO Box 24683, New Orleans, LA 70184-4683 (504-488-8214) (raytib@aol.com).

7330th Flying Tng Wg (MAP), Germany (1953–60). Sept. 19–22 at the Downtown Ramada Inn & Conference Center in Nashville, TN. **Contact:** Bob Thomas, 5035 Atoka Ln., Crossville, TN 38572 (931-788-1040) (rthomas1@citlink.net).

AF Security Police Assn. Aug. 22–24 at the Hanalei Hotel in San Diego. **Contact:** Jerry Bullock (888-250-9876).

AWACS. June 27–30 at Tinker AFB, OK, and Oklahoma City. **Contact:** Maj. Pam Randall (405-734-4451) (www.awacs25.com).

Air War College, class of 1977. Sept. 12–15 in Lake Tahoe, NV. **Contact:** Tom Lawell, PO Box 11020, Zephyr Cove, NV 89448 (JTLawell@aol.com).

Aviation Cadet reunion. Oct. 1–3 at the Aviation Cadet Museum at Silver Wings Field in Eureka Springs, AR. **Contact:** Errol Severe (479-253-5008 or 9471) (av1cadet@arkansas.net).

P-40 Warhawk Pilots Assn. Oct. 2–6 at the Best Western Landmark Hotel in New Orleans. **Contact:** Albert Gunther, 720 Tete L'ours Dr., Mandeville, LA 70471 (985-845-0155) (bertgunther@aol.com).

Pilot Class 45-A, La Junta, CO. Sept. 13–15 in La Junta, CO. **Contact:** Ray Bell, 2070 Black Fox Dr. N.E., Atlanta, GA 30345 (404-634-4531).

Pilot Class 45-B, Luke AFB and Marfa Field, TX. May 24–27 at The Menger Hotel in San Antonio. **Contacts:** Ollie Crawford (830-833-2024) (flytiger@moment.com) or Chuck Cavin (210-493-9488) (chuckcavin@aol.com).

Pilot Tng Class 52-F. Sept. 11–15 in Winter Haven, FL. **Contact:** Herb Ferlmann, 8601 Waterford Rd., Alexandria, VA 22308 (703-780-9177) (ferlperson@aol.com).

Pleiku AB Assn. Sept. 18–22 at the Waterfront Plaza Hotel in Indianapolis. **Contact:** Larry Anduss (916-636-1817) (akamaient@aol.com).

RF-4 Recce, all squadrons. Sept. 20–22 at the Doubletree Hotel Tyson's Corner in Vienna, VA. **Contacts:** Tom Kelly (Tom.Kelly@erols.com) or Dave Britt (RedStagInc@aol.com).

SAC Communications Assn. Sept. 6–7 in Colorado Springs, CO. **Contact:** Mick Bloom, 13404 Tregaron Cir., Bellevue, NE 68123 (402-682-5898) (Mickusaf@cs.com).

SHAEF/ETOUSA Veterans Assn, European Theater (WWII). Oct. 11–14 at the Holiday Inn Inner Harbor in Baltimore. **Contacts:** Don Thriffiley, 7340 Dundee St., New Orleans, LA 70126 (phone/fax: 504-241-3065) (donshaef@netzero.net) or Alan Reeves, 2301 Broadway, San Francisco, CA 94115 (phone/fax: 415-921-8322) (afreeves@webtv.net).

USAF Pilot Tng Classes 58-C and 58-D. Sept. 2–6 in Las Vegas. **Contact:** Conrad McEachern, 4436 Mill Run Rd., Dallas, TX 75244 (phone: 214-239-6448 or fax: 214-404-9944) (chmceach@airmail.net). ■

Mail unit reunion notices four months ahead of the event to "Unit Reunions," *Air Force* Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information. We reserve the right to condense notices.

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Pieces of History

Photography by Paul Kennedy

Two-War Texans

Courtesy the US Air Force Museum, Wright-Patterson AFB, Ohio

In World War II and the Korean War, the North American T-6 Texan played important—and vastly different—roles. First flown in 1935, the T-6 was an advanced trainer for Army Air Forces pilots, as well as those in the US Navy and the air forces of many Allies. T-6s similar to this one (undergoing restoration at the US Air Force Museum) became forward air control aircraft in Korea. Pilots from the 6147th Tactical Air Control Group, nicknamed "Mosquitoes," worked with ground observers, directing strike aircraft to targets and conducting reconnaissance. Because they flew low and slow, T-6s were vulnerable to anti-aircraft fire, yet Mosquitoes flew more than 40,000 sorties to support ground forces.

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