MAY 2004/$6

AIR FORCE MAGAZINE

JOURNAL OF THE AIR FORCE ASSOCIATION

2004 USAF Almanac

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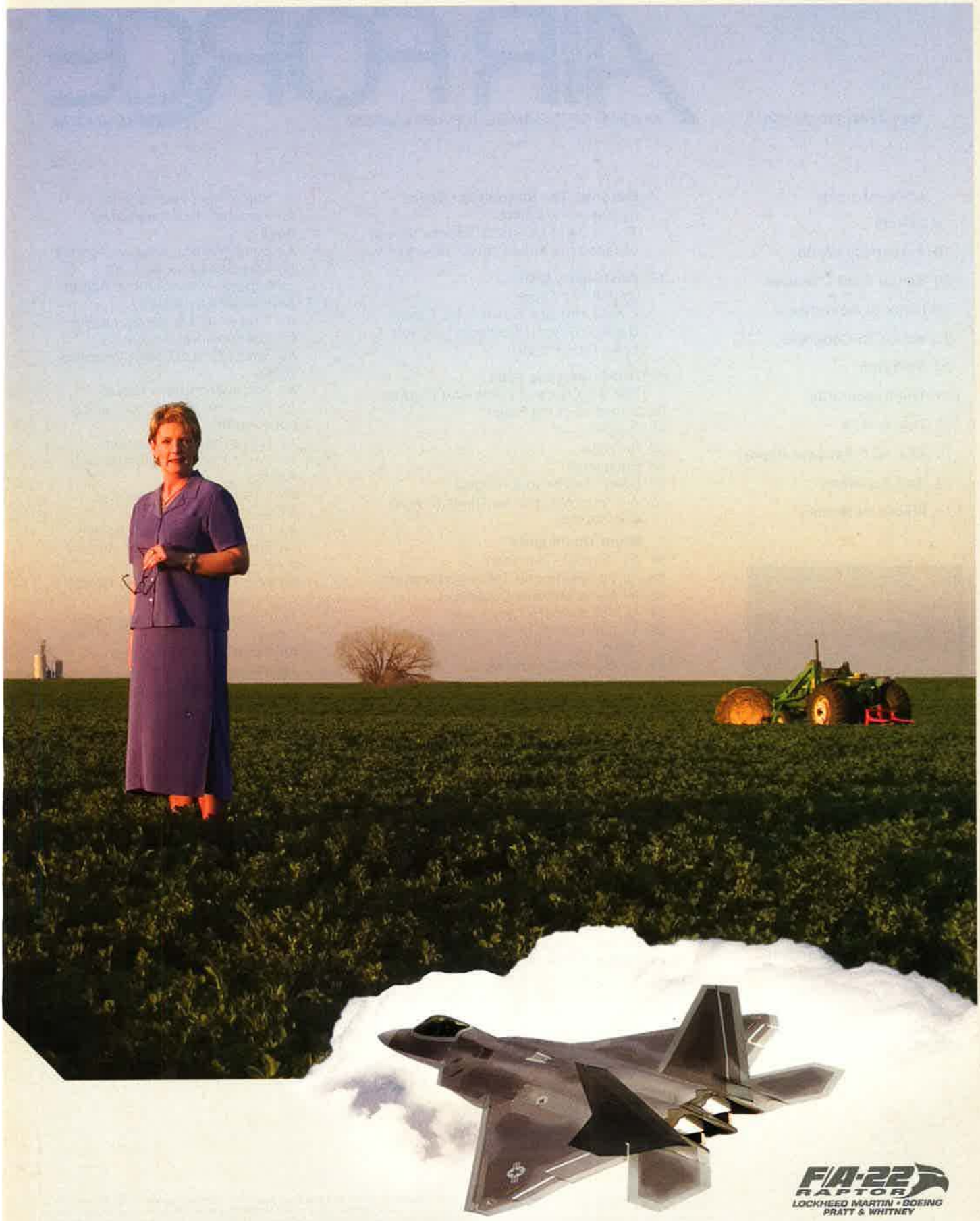
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May 2004, Vol. 87, No. 5

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JOURNAL OF THE AIR FORCE ASSOCIATION

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About the cover: This eagle was photographed near Klamath Falls, Ore., by Ron Winn, Associated Press/ Herald News. The USAF Almanac 2004 starts on p. 32.

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Editorial

By Robert S. Dudney, Editor in Chief

The Struggle for Space

A FEW years ago, retired Gen. Bernard A. Schriever, the godfather of military space, issued a warning: America's superiority in space, the cornerstone of US military power, was not secure. "We have almost no means to deny usage of space to an adversary," said Schriever, "let alone protect our own usage."

To Schriever, the problem was not so much technical as political. Washington, he said, kept letting arms control get in the way of vital Pentagon "space control" programs.

That was in 2000. Four years have passed, and the pursuit of space-related weapons—even defensive ones—still faces ferocious opposition. Critics say it will spark a ruinously expensive arms race, upset nuclear stability, and so forth.

Things look different, though, to the Air Force, which operates most US military space systems and controls 90 percent of the DOD space budget. USAF officials say space systems are vulnerable to disruption, and adversaries are learning to exploit space to their own advantage.

"It's my belief that we can no longer view space as benign or a sanctuary," summed up Gen. Lance W. Lord, commander of Air Force Space Command, Peterson AFB, Colo.

It is a view that appears more and more in Air Force studies, particularly in Space Command's "Strategic Master Plan," a paper that places unprecedented emphasis on the need for "counterspace" capabilities.

This is not really surprising. America's military has come to depend on space to an extent few would have thought possible. In the Iraq war, US forces used 50 satellites for surveillance, communications, navigation, warning, and weather forecasting.

The value of US space assets has not escaped the notice of our adversaries, who now see them as attractive targets. The peril is spelled out in two classified studies, "Threats to US Space Systems and Operations Over the Next 10 Years" and the "Interim Space Capstone Threat Capabilities Assessment." Evidently, they make for somber reading. To quote Space Command: "We cannot expect to continue to have unchallenged access to our space capabilities."

Indeed, such challenges have begun. In Gulf War II, Iraq tried—unsuccessfully—to jam the GPS signals in hopes of snarling the guidance of US precision weapons.

In the future, Space Command will need to do more than prevent such interference. It must also keep adversaries from using space against US forces. Commercial satellite firms produce a flood of quality images and other capabilities, which are now available to almost anyone.

The value of US space assets has not escaped the notice of our adversaries.

The Air Force is approaching the counterspace problem on three fronts.

- Highest priority goes to strengthening "space situation awareness," the foundation of counterspace actions. "There are some 10,000 objects in space," said Peter B. Teets, Air Force undersecretary and DOD point man for space. "We know precious little about many of them, and we'd like to know more."

The nation's Space Surveillance Network comprises older ground-based radars and optical sensors, one space-based sensor, and a control center. It is "less than adequate," says USAF.

Space Command would upgrade some of these systems. It also envisons a Space Based Space Surveillance system—a constellation in low Earth orbit that would track objects using optical sensors—and an Orbital Deep Space Imager system whose powerful sensors would provide detailed images of space objects.

- Next in importance comes development of defensive counterspace powers—ways and means to protect orbital and ground-based space assets.

USAF is undertaking numerous projects to address a range of threats: computer hackers that take over a satellite's controls, lasers that blind delicate sensors, satellites that destroy others, radio transmissions that interfere with command links, and high-altitude nuclear blasts that would fry satellite components.

Space Command is updating defensive tactics, techniques, and procedures. These could include moving a satellite to avoid a crash with a hostile craft or closing apertures to prevent damage. All future spacecraft will be equipped with countermeasures. Off-board systems could help defend spacecraft, too.

Also on tap is a new ground-based Rapid Attack Identification, Detection, and Reporting System—"RAIDRS"—to analyze satellite data and characterize attacks.

- The last and least urgent step focuses on "offensive counterspace" capabilities—the power to keep an adversary from using space systems for his own military advantage.

USAF is developing a small, mobile, ground-based system able to temporarily incapacitate a satellite's communications. A second system would be built to disrupt the workings of a surveillance and reconnaissance craft.

Such systems would cause no permanent damage. At present, there is scant public discussion of destructive antisatellite systems. The Air Force tested such a system in the 1980s.

According to Space Command, no formal US policies prevent development of counterspace capabilities. The major question, as Schriever pointed out, concerns political will.

Unless the US makes a course correction, it will, at some point, probably suffer a serious attack on its assets in space, one that would hamper its military operations. Seen in that light, USAF's space proposals seem not only sensible but restrained.

The Bush Administration and Congress need to get on with the task of funding these projects so that airmen can do their work. They have no doubts about their mission.

"We understand our first role as *airmen* is to gain and maintain *air* superiority," said Lord. "Space is no different. Space superiority is our mandate." ■

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Letters

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Three-Week War

Your detailed recap of the outstanding success of air and space power in Gulf War II was, as always, on point and compelling. *[See "Editorial: The Three-Week War," March, p. 2.]* However, I found it ironic that, in the same issue of *Air Force* Magazine, which trumpets an increasing prominence of air and space power, another article, "The New Drawdown" *[March, p. 50],* appears, detailing drastic cuts in Air Force strength. Can it be that, even as the war on terrorism escalates, our military and civilian leadership is failing to see the folly of armed forces reductions?

Lt. Col. Donato A. Lombardi Jr., USAF (Ret.)
Toms River, N.J.

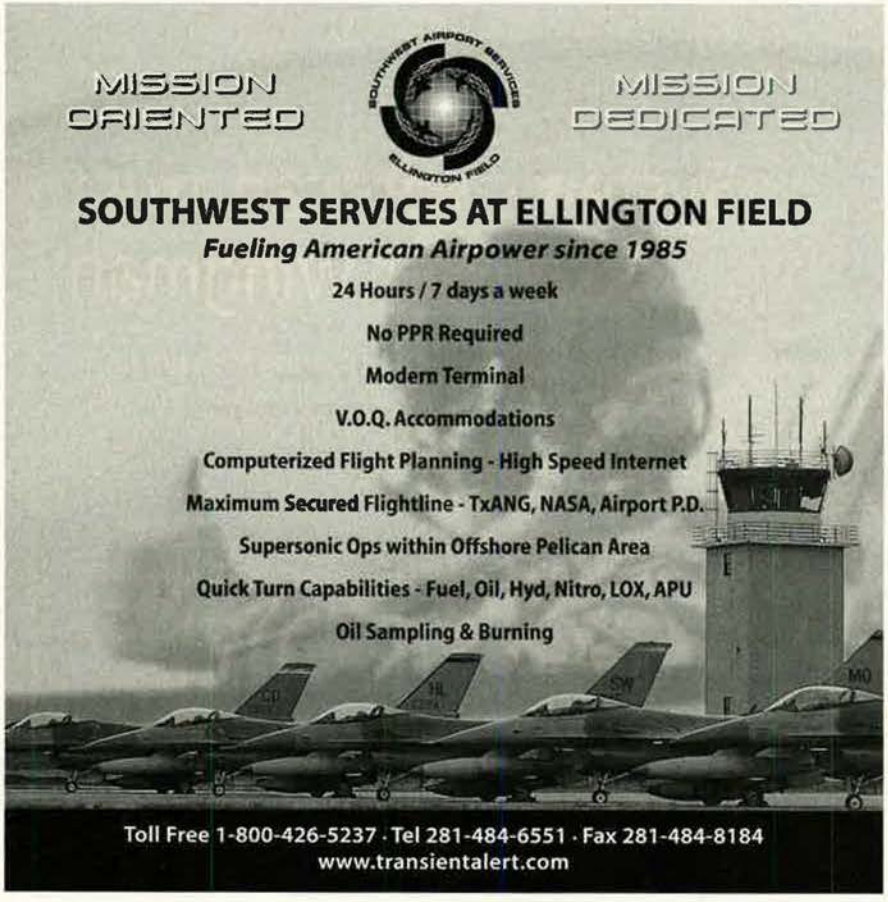
As with much of history, it is easy for the spectators to pick up on the insignificant. The skill, professionalism, and savvy that occurred between March 20 and April 9 [2003] will only be appreciated by those who study or are a part of the military. It is hard to explain to those who know little of ordnance why even the Iraqis were intelligent enough not to stock certain ready-to-use WMDs—that does not mean [their WMD] capability does not exist.

The [war's] bloody aftermath has shown the flexibility the military has.

Hugh Coleman
Kelso, Wash.

Dixon

Thanks to you and Rebecca Grant on the fine piece on Gen. Bob Dixon



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AFA's Mission

To advocate aerospace power and a strong national defense.

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

To promote aerospace education to the American people.

in the March issue. *[See "Dixon," March, p. 64.]*

Ms. Grant touches only briefly on Dixon's work in the TAC/TRADOC efforts to improve Army–Air Force joint battlefield efforts. For me, a sign of the importance of that work was the arrival from Langley [AFB, Va.] of the latest issue of the *Air Land Sea Bulletin* in the same mail that brought the March issue of *Air Force*. Two pairs of Army/Air Force officers had an enormous influence on the Army/Air Force part of the last great "Transformation" of the armed forces of the US. The first pair, [USAF] Gen. George Brown and [Army] Gen. Creighton Abrams, came out of Vietnam with determination to make major improvements inside their own services and in the way the two services worked together. They set in motion the forces that brought the other pair together, that pair being Gen. Robert Dixon at TAC and Gen. William DePuy at the newly organized Army Training and Doctrine Command (TRADOC).

Dixon and DePuy had much in common. Both were veterans of difficult World War II experiences; both had up close and personal views of Korean and Southeast Asia fighting. Both had horizons far beyond the average officer. Both wanted to see changes made faster than either service was accustomed to seeing. Ms. Grant's quote from Larry Welch about Dixon's impatience applies equally to DePuy. Both understood that most of the things each service does to influence the battle are generally done independently of the other and that each benefits from the other doing its part well. They also understood that the times the two have to get together closely are usually the most critical parts of the battle, and that it comes at a time when cooperation is difficult, and that the only way to get it right is to practice and refine the procedures continually. A part of their legacy is the *Air Land Sea Bulletin* and the [Air Land Sea Application Center] at Langley that does the work.

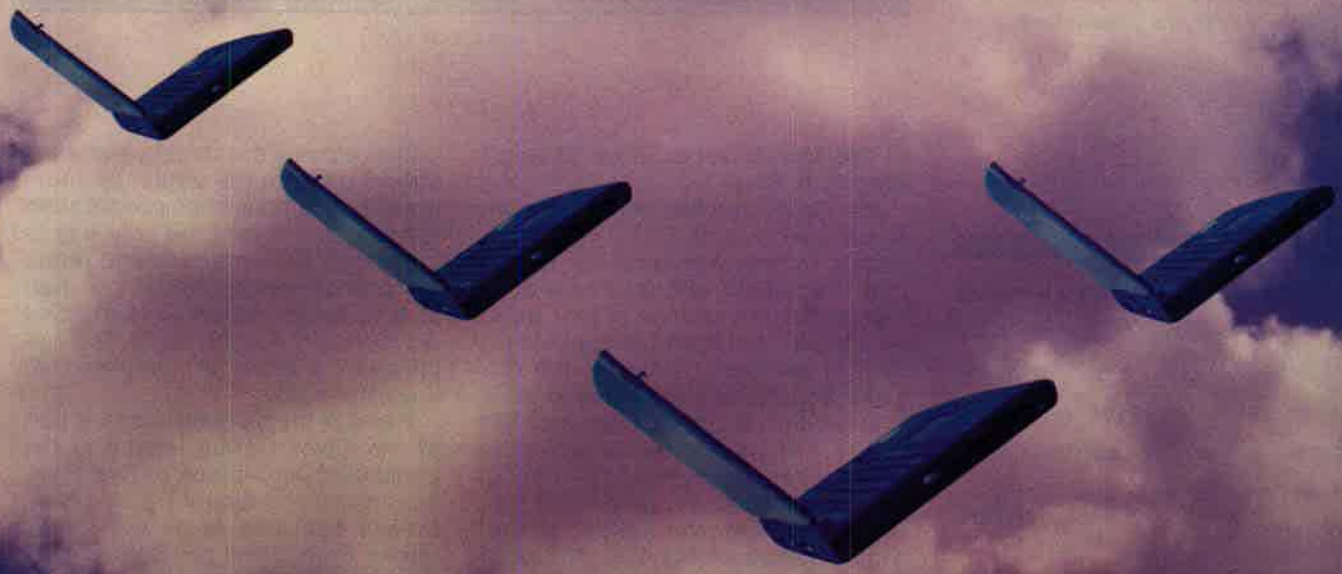
Perhaps the greatest enduring part of the Dixon/DePuy legacy is the continuing importance of Red Flag-like and Army National Training Center-like activities in all the armed forces. Both [Dixon and DePuy] were determined to use good tactical thinking coupled with modern technology to take the subjective "bang-bang you're dead" out of peacetime military training and give soldiers and airmen the sort of realistic introduction to battle that would reduce, if not eliminate, those painful first-day casualties.

The successes of the first and second Gulf Wars owe much to the work those two pairs, Brown and Abrams and Dixon and DePuy, set in motion. Dixon's death marked the passing of the last of that foursome. My prayer is that the armed forces will continually be blessed with officers who have the determination, the foresight, and the intolerance for failure that all of them brought to their service to the nation.

Gen. John W. Vessey, USA (Ret.)
Garrison, Minn.

Thank you for the tribute to General Dixon. As a young captain with the task of briefing Dixon and his staff every morning for a couple of years, I got to see him operate, and I just can't imagine a better learning experience.

Flying In formation.



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Like many great leaders, he tended to polarize people because of his leadership style, but those closest to him respected him and learned from him. It wasn't just Red Flag, it was a whole family of "flags" covering new concepts in every functional area from training to logistics to career management. It was sortie surges to validate WRSK kits and package them to ensure 30 days of operations. It was a bold adjustment of resources to get F-15s, F-16s, and A-10s on the ramp. It was unheard of cooperation with the Army to fight as a team, best demonstrated by his and General DePuy's TAC–TRADOC dialogue.

Perhaps the best measure of his leadership was the future of the people who sat around that conference table in the mid-70s. Operators like Gabriel, Chain, Welsh, Pickett, Leaf, and Carey rose up the ranks. And it wasn't just the operators; the lawyers, doctors, loggies, PA, etc., rose up as well (even the briefer didn't do too badly!), as Dixon taught us all to think out of the box, drill down to the next level, always ask the next question. A small percentage of our most senior Air Force leaders leave a unique and lasting legacy. General Dixon was one of them.

Lt. Gen. Skip Hall,
USAF (Ret.)
Alexandria, Va.

Amidst the Dragons and Snakes

Among the cost-cutting items in the President's 2005 [budget] submission to Congress is an item to deactivate the 13th Bomb Squadron at Dyess AFB, Tex., to transfer four of its B-1 aircraft to another Dyess B-1 squadron, and to place the remaining 13th B-1 aircraft in a storage state. *[See "Editorial: The Dragon and the Snakes," February, p. 2.]*

The 13th Bomb Squadron Association (membership of 1,000 former squadron members) is amazed that the Administration would recommend the deactivation of one of the earliest and most distinguished bomber squadrons, "The Devil's Own Grim Reapers." The squadron dates from June 14, 1917, with battle citations from World War I, World War II, the Korean War, and Vietnam, and is currently conducting B-1 missions throughout the world.

While force structure reductions may be necessary, and while in our view the B-1 fleet is mission essential, it is not the association's place to dispute Air Force force-structure decisions. However, we are concerned that the Air Force will again relegate a distinguished unit to its dusty archives. Military tradition, heritage, and history are important to the Air Force, to its serving units, and to its personnel. Should the proposed reduction take place—and we hope [it does] not—then the Air Force should look toward another suitable unit to assume the 13th's squadron flag.

Col. Perry R. Nuhn,
USAF (Ret.)
Hobe Sound, Fla.

On the Museum

I was happy to see my March issue. After all, it was going to highlight the NASM's Udvar–Hazy Center with two articles. One was titled "The Nation's Hangar" *[p. 22]*, and the other was titled "Airplanes Under Glass" *[p. 30]*.

I spent 20 years in USAF, most of them as a navigator/bombardier in the Strategic Air Command's bomber force. My last crew duty, from 1963 until 1967, was on a very unique bomber. It was so unique that even I am beginning to wonder if it existed at all. It is not discussed or pictured in your article, even though a number of foreign aircraft are shown. The unique bomber I flew in was the world's first supersonic bomber, and she was the B-58 Hustler. The B-58 stood combat-ready alert from August 1962 until phased out in January 1970.

Each B-58 carried five nuclear weapons while on alert. Additionally, combat-ready B-58s set more records than any other single fighter or bomber aircraft in the world. The B-58 won five aeronautical trophies—Thompson, Bleriot, Mackay, Bendix, and Harmon. She also set 14 world speed records, and on Sept.18, 1962, a Hustler carried a payload of 11,000 pounds to an altitude of 85,360 feet.

It's time for folks to recognize the B-58 for what she was—a unique, fast, pretty, and deadly weapon system that was loved by those around her. Please, show her off to the world in her old age!

Lt. Col. B.J. Brown,
USAF (Ret.)
Mountain Home, Ark.

My impression of the aircraft on display at the original downtown NASM facility, having had the opportunity to visit both it and the Silver Hill restoration facility while assigned to the YAV-8B test program at the Naval Air Test Center in 1979, is that the NASM aircraft exhibits were chosen for their historical significance, while many of the Silver Hill aircraft were of greater technical interest or significance.

One correction: The Boeing 307 may have been acquired with the intent of conversion for water bomber purposes, as was done with several B-17s owned by the same operator (including one survivor of atomic tests now flown by the Collings Foundation), but such conversion was never accomplished. The aircraft was exchanged for at least one ex-USAF C-121 Super Constellation, which was converted to a sprayer.

Also, I doubt very much that anywhere close to 150 BD-5s were flying in 2002 or now. Having firsthand experience with one of these completed as a static display due to lack of supply of kit parts by Bede, it is my understanding that very few were actually ever completed due to the parts problem. A few have flown as air show attractions with small jet engines (BD-5J).

Theodore J. Gibson
Apache Junction, Ariz.

The *Enola Gay* has historical significance and [these are historical facts]: 1) Japan attacked Pearl Harbor without provocation, killing and wounding thousands of innocent servicemen and civilians. 2) 11,000 American and Filipino troops died during the 65-mile forced Bataan March—forced by Japanese troops. 3) The *Enola Gay* and its brave crew were instrumental in bringing the Japanese aggression to an end.

Are these historical facts? Yes. Are they politically correct statements? Who cares? Factual history is factual history. It cannot be altered even by the politically correct activist. The *Enola Gay* correctly belongs in the Nation's Hangar. Thank you, John R. Dailey and staff—keep up the great work!

Al Hains
Marina del Ray, Calif.

The one thing that would make the *Enola Gay* more beautiful is to have it housed in an Air Force Museum and not have anything to do with the Smithsonian.

Stanley M. Benskin
Morro Bay, Calif.

Is It True?

The arguments for combat UAVs presented in Colonel Hargrove's letter do not accurately portray the issues associated with combat UAV development. *[See "Letters: Protoplasm Limits" February, p. 12.]* The letter

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focuses on all of the marvelous things that a flying machine could do if only we didn't have to cater to the physical needs of a protoplasmic occupant. But is this oft-repeated litany really true?

Eliminating the weight of the pilot and ejection seat does not automatically mean that the overall weight of the air vehicle will be less. A critical, but often overlooked, ground rule is that we must consider equivalent mission capability for any manned vs. unmanned comparison to be valid. It is certainly possible to build a less capable unmanned weapon system for less, but will it be what the warfighter needs? However, it won't be easy to build an unmanned weapon system that is comparable in performance to an "equivalent" manned system.

That 200 pounds of useless aviator protoplasm is actually a complex support system for a few pounds of the most sophisticated bionic computer ever created. Remove the human brain from the weapon system and we remove all of the situational awareness, situational curiosity, sensor integration, and decision-making capability that the human occupant brings to the table. To compensate, we need to add more sophisticated sensors, computing power, transmitters and receivers, and power conditioning and cooling systems. (In modern manned aircraft, most of the cooling air is for the densely packaged micro-electronic systems, not the aviator.) Without these complex and costly compensations, removing the human potentially decreases air vehicle capability and usefulness, not the opposite.

As for an air vehicle's ability to pull more Gs without a human on board, physics unfortunately gets in the way. Pulling more Gs means that the airframe, avionics, and stores will be subjected to greater sustained acceleration and transient vibration loads. For the airframe, this means a beefier—and therefore, heavier—structure to withstand the extra loads. For the avionics and stores, this means sturdier mounting, isolation, and containment structures. In addition, internal electronic elements will have to be qualified to withstand significantly higher loads.

The ability to pull more Gs, especially in a heavier structure, will only happen with more capable (in other words, larger, stronger, and heavier) control surfaces and actuators and perhaps a more powerful engine with a thrust vectoring system. The cost-to-benefit relation for this capability will have to be looked at carefully, since extreme maneuvering, unlike supercruise, will consume fuel at a greater rate. It is also important to recognize that most optical and electro-optical sensors will provide usable information only in operating envelopes that are relatively benign and stable. Yanking and banking may exceed the capability of the avionics' targeting algorithms to maintain a steady picture.

There is no question that, for certain operational scenarios, replacing protoplasm with silicon will increase the likelihood that US military operations will be more effective. However, combat UAV evolution will be neither simple nor straightforward.

The important question to ask, then, is not: How do we get the human out of the air vehicle? Rather, we need to ask: What needs to be done to support the warfighter in a given scenario? What options are available to reach the desired outcome? And what are the strengths, weaknesses, and risks of each option? Until these issues have been thought out thoroughly and dispassionately for a given scenario, it is imprudent to assume that the protoplasmic element of an airborne weapon system is an expendable liability.

Hank Caruso
California, Md.

Compensation Issue

Thank you for your excellent and most revealing article, "The Compensation Issue," March, p. 58.

May I suggest you do the same analysis on the pay and total cost of members of Congress? That should certainly be a very shocking wake-up call for each taxpayer!

Elise Stern
Cheltenham, Pa.

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

Accidents

Mr. Hebert's February article entitled "A Plague of Accidents" *[p. 58]* was a very well-written and informative reminder that the majority of aircraft mishaps can be prevented by paying the right amount of attention to the role of the human operators in the loop. America's Air Force is the best in the world, and to maintain this enviable status, we've got to vigilantly identify and address any force that threatens the safety and effectiveness of our personnel. As Mr. Hebert's article so eloquently pointed out, the stress imposed by the dramatic increase in op tempo since 9/11 is one such force. However, stress is not the only problem. Instead, there is clear evidence that fatigue is a significant yet often underappreciated risk factor for Air Force pilots and a variety of other Air Force personnel.

According to the Air Force Safety Center, almost eight percent of our reportable Class A flight mishaps over the past three decades have been at least partially attributable to fatigue, and this may represent just the tip of the iceberg. Not only that, but fatigue is a well-known contributor to off-duty injuries and fatalities. The US National Highway Traffic Safety Administration (NHTSA) estimates that each year approximately 100,000 motor vehicle crashes on the nation's highways are principally due to driver fatigue. Fatigue is responsible for 1,500 annual fatalities and 71,000 injuries each year, and many of the victims of these fatigue-related "fall-asleep" crashes are US military personnel.

Statistics like these underscore the importance of work by the Air Force Research Laboratory to develop an array of effective operationally focused fatigue countermeasures, as well as our efforts to educate Air Force personnel and their leaders about the causes, consequences, and countermeasures for fatigue, and the [continuing importance of our partnership] with the National Sleep Foundation to highlight the importance of mental alertness to safety, health, and productivity. If we can work together to improve everyone's "fatigue IQ," the Air Force will be several steps closer to promptly answering Secretary Rumsfeld's call for a 50 percent reduction in military mishaps. Help us spread the word!

John Caldwell,
Principal Research Psychologist
Brooks City–Base, Tex.

Washington Watch

By John A. Tirpak, Executive Editor

F/A-22 Ups and Downs; the Tacair Debate; Beyond Goldwater-Nichols; Long Range Strike ....

Raptor Ready for Prime Time

At a March 22 review of the F/A-22 program, the Defense Acquisition Board found no reason that USAF should not proceed with initial operational test and evaluation (IOT&E) for its new stealthy fighter.

The DAB, which is chaired by acting Pentagon acquisition, technology, and logistics chief Michael W. Wynne, appeared satisfied with the aircraft's progress despite earlier claims by some members that the Air Force was moving too quickly into IOT&E.

The board met to review whether the F/A-22's avionics had met the level of stability that was mandated for entry into IOT&E. The Air Force was required to demonstrate that the avionics suite could sustain a five-hour-mean-time-between-failure rate for critical elements. (See "The F/A-22 Force Forms Up," April, p. 34.)

The day after the DAB meeting, Marvin R. Sambur, USAF's top acquisition official, told lawmakers that Wynne had said he was "very encouraged by the program's progress" and saw "no impediment to entering IOT&E in the April time frame."

Sambur also told a House subcommittee that, although the Air Force Operational Test and Evaluation Center had "not formally completed" its analysis, the AFOTEC commander found the F/A-22's performance "very impressive." That constituted a rave review, according to Sambur.

"I have never heard an AFOTEC commander ... use anything better than, 'It is OK' " when describing a weapon system, said Sambur.

At the same hearing, Lt. Gen. Ronald E. Keys, USAF's deputy chief of staff for air and space operations, responded to a question about a mock dogfight in which eight F-15Cs engaged four F/A-22s. He said the Eagles "all died." Keys added that most of the F-15s never even got off a shot against the F/A-22s.

The thumbs up by the DAB and the upbeat testimony by Air Force officials was in sharp contrast to a March 15 General Accounting Office report. The Congressional watchdog agency had reported that the F/A-22 was still struggling to meet avionics requirements. (See below.)

However, Keys told the lawmakers that the GAO report was simply out of date. "This is a moving target," he said.

Sambur emphasized that the F/A-22 program "is now at 6.1 [hours] vs. the five-hour metric."

GAO Seeks New F/A-22 "Business Case"

The GAO charged, in its report and testimony, that the Pentagon had failed to provide sufficient information to Congress to justify the number of F/A-22s USAF plans to buy or its modernization investment plans for the new stealthy fighter.

The GAO said DOD "did not address key business case questions such as how many F/A-22s are needed, how many are affordable, and if alternatives to planned investments increasing the F/A-22 air-to-ground capabilities exist."

USAF photo by Steve Wallace

F/A-22 wins over lawmakers, yet ....

The business case that DOD *did* provide to Congress said it "planned to buy 277 F/A-22s based on a 'buy-to-budget' concept," according to the GAO. The GAO said that DOD, if held to the $36.8 billion production cost cap imposed by Congress in 1998, could only buy about 218 F/A-22s.

The higher number is based on the Pentagon's production cost cap of $42.2 billion, which several lawmakers at the April hearing said violated the Congressional mandate. DOD and Air Force acquisition leaders stated at the hearing that the Pentagon planned to ask for relief from the statutory cost cap.

Sambur on April 11 told lawmakers that the Air Force was "not happy" with either number. He said the service maintains it needs "something in the order of 381." (See "Editorial: The Raptor Review," April, p. 2.)

GAO claimed that USAF had included $3.5 billion for addition of improved ground-attack capabilities through 2009 but that the service would actually need $11.7 billion.

Air Force Secretary James G. Roche said he finds it hard to grasp the $8 billion difference.

"The biggest change is the radar," Roche said at a Defense Writers Group meeting in mid-March. "In changing the radar, the price of the radar falls 40 percent. So it doesn't go up; it goes down."

Roche said the "second biggest change" is inclusion of the small diameter bomb, but the small diameter bomb is going to go on lots of things." He added, "I don't know what got included in the costs of air-to-ground."

Taking Sides on Tacair

The mostly favorable news on the F/A-22 impressed many members of Congress, most of whom said the F/A-22 is on firmer ground. However, they noted that tactical aviation as a whole is facing stiff problems.

Rep. Curt Weldon (R-Pa.), chairman of the Tactical Air and Land Forces Subcommittee, on March 25 claimed

that, despite his support for the F/A-22, the F-35 Joint Strike Fighter, and the Navy's F/A-18E/F, the long-anticipated procurement "train wreck"—too many programs and not enough money to fund them all—is approaching. He said that the defense budget can't sustain three Tacair programs along with other top defense needs.

"Something has to give," Weldon said. It may be this year or the next several years, he said, but Congress is going to "have to be able to make some extremely difficult and tough decisions."

Weldon pointed out that a year ago no one expected the Army to kill its Comanche scout helicopter program and said that he didn't want to go any further with the three fighter programs if they aren't all affordable.

The mounting pressure on Tacair programs was evident in other Congressional sessions, as well. However, support for the F/A-22 seemed solid, at least for the moment.

In a March 24 Senate Appropriations Committee hearing, chairman Sen. Ted Stevens (R-Alaska) said he is committed to the Raptor. "This committee did save the C-17," said Stevens. "We saved the Predator. We saved the B-2. And, as far as I'm concerned, we're going to save the F/A-22."

One former foe of the F/A-22, Rep. Jerry Lewis (R-Calif.), chairman of the House Appropriations Defense Subcommittee, who dealt the program some significant delays and funding cuts in 1999, told *Congressional Quarterly* that he had turned around on the Raptor.

"Our members have come a long way down the path of believing that the F/A-22 is an asset that we cannot afford to do without," said Lewis.

Weldon said he couldn't see the F/A-22 being terminated, however, because it, like the F/A-18, is already in production. In his view, not being in production makes the F-35 vulnerable.

The F-35, on the other hand, he said, is "just a viewgraph" not a real airplane yet, and that could lead some to make it a target.

Weldon emphasized that the Pentagon does not have the "political clout to support something that is, maybe, three years from now vs. what is here—and that is a practical reality we have to deal with."

However, Weldon pressed the services to "make the case" for the F-35 primarily because canceling the program would leave the Marine Corps "in a bind."

New Study To Address Airlift Shortfall

Gen. John W. Handy, commander of US Transportation Command and Air Mobility Command, told lawmakers in March that the Defense Department will soon begin a new mobility capabilities study (MCS). It is long overdue, he said, because current airlift is about 18 percent short of the now obsolete airlift goals set by a study concluded nearly four years ago.

The earlier study, Mobility Requirements Study 2005, dubbed MRS-05, was released in January 2001. Since then, worldwide operations in support of the war on terrorism have caused airlift demands to surge. "The requirements in our business have gone up dramatically compared to what MRS-05 thought they would be," Handy told the House Armed Services Committee.

He said that the new MCS would be an all encompassing mobility review—air, land, and sea. However, he emphasized that the airlift portion would see the most "dramatic impact."

Handy said TRANSCOM'S No. 1 shortfall is its "aging and numerically inadequate strategic airlift fleet."

The current strategic airlift shortfall of 9.8 million ton-miles per day (MTM/D) is based on the MRS-05 goal of 54.5 MTM/D. The true airlift shortfall is almost certainly greater than MRS-05 indicates.

Handy said that the Pentagon was to begin the new review by June and would issue a report by spring 2005. He noted that the 10-month timeline "presents an ambitious challenge."

The TRANSCOM head also told lawmakers that to meet future air mobility challenges, the Air Force will need "high speed, low observable, multimission strategic mobility aircraft with short takeoff and landing as well as autonomous approach capabilities."

USAF photo by TSgt. Jim Varhegyi

Handy: new airlift study is long overdue.

Beyond Goldwater-Nichols

An independent study by the Center for Strategic and International Studies says that while DOD has made great strides in jointness and rationalizing its structure over the last 20 years, it is still wasting money and stifling innovation with unnecessary red tape and layers of bureaucracy.

Phase 1 of the CSIS report, titled "Beyond Goldwater-Nichols: Defense Reform for a New Strategic Era," reviews and builds on the 1986 Goldwater-Nichols reforms, considered the most comprehensive defense reorganization effort since the 1947 National Security Act. The 1986 reforms enhanced civilian control of the department, secured the role of the Chairman of the Joint Chiefs of Staff as the principal military advisor, and strengthened the authority of combatant commanders—all changes that were intended to speed development of jointness among the services.

The center prepared the study that led to the Goldwater-Nichols legislation, prompting many defense analysts to suggest the new report may serve as a blueprint for a major restructuring of the Pentagon.

CSIS officials said the Beyond Goldwater-Nichols (BGN) team has regularly briefed Defense Secretary Donald H. Rumsfeld and USAF Gen. Richard B. Meyers, Chairman of the Joint Chiefs, on the study.

John J. Hamre, president of CSIS and former deputy defense secretary, said he expects the Pentagon to implement the findings "almost to the degree of the Space Commission" report, issued in January 2001. Rumsfeld originally chaired the Space Commission and acted on its findings when he became Secretary.

In Phase 1 of Beyond Goldwater-Nichols, CSIS recommends eliminating entire layers of staff for the senior levels of the department to promote faster decision-making, shorter system development time, and greater accountability all around.

CSIS said the Office of the Secretary of Defense should "focus on policy formation and oversight, resist the temp-

tation to manage programs, and consolidate housekeeping functions under an assistant secretary."

Two of the senior layers targeted in the BGN report are the separate staffs maintained by each branch of the armed forces to support a service's two most senior civilian and military leaders. For the Air Force, that would lead to the merger of the Secretariat and Air Staffs. CSIS believes this change within each service would "reduce friction," foster better coordination, and "increase the coherency of service positions."

Another recommendation would expand the undersecretary of intelligence position to include command, control, and communications. The BGN team indicated that such a move would improve the Pentagon's ability to acquire and field joint interoperable command and control capabilities, an endeavor it is currently "failing."

CSIS recommends that DOD eliminate competing sources of advice about personnel matters by combining elements of manpower and personnel on the Joint Staff with similar functions on Rumsfeld's staff under a military deputy to the undersecretary of personnel and readiness.

For the logistics arena, the BGN team believes that both the Defense Secretary and JCS Chairman need stronger support. To achieve that, they would integrate much of the Joint Staff's logistics function with the deputy undersecretary of defense for logistics and materiel readiness and place the new entity under a three-star military deputy to the undersecretary of defense for acquisition, technology, and logistics. That would be "a major step in ensuring sufficient OSD attention to this critical function," stated the report.

Other logistics recommendations include making a two-star deputy to the Joint Staff's head of operations responsible for operational logistics planning and moving the Joint Logistics Operations Center under the J-3 (operations) umbrella.

The BGN group believes that Rumsfeld has made some progress toward enhancing joint focus in the resource allocation process, but they recommend more emphasis. Specifically, they want to give the combatant commanders a stronger role.

CSIS suggests the Pentagon must strengthen the defense civilian force, including creating a new Defense Professionals Corps "to attract the best and brightest ... and provide greatly expanded opportunities for professional development."

At least three proposals are beyond the scope of the Pentagon but would significantly impact its operations. CSIS calls for the President to appoint a new Presidential assistant on the National Security Council staff to coordinate action between federal departments involved in operations abroad and create a new NSC Office of Stability Operations. In line with that move, CSIS said Congress should create an independent Agency for Stability Operations that contains a Civilian Stability Operations Corps that would organize, train, equip, and deploy a civilian force for post-military operations.

Additionally, the Beyond Goldwater-Nichols report suggests that Congress "reform itself" with an eye toward "reinvigorating Congressional oversight of DOD." CSIS suggests that armed services committees should focus on macro strategy, policy, and organizational issues. The report also suggests Congress should sharply reduce the size of its authorizing committees and limit claims of jurisdiction over DOD operations.

Since Congress usually doesn't give up power voluntarily, the authors asked Congress to establish a method similar to the base realignment and closure process to accomplish this task of assessing "current committee membership, structures, and jurisdictions and make recommendations on how to enhance Congressional oversight."

A second phase of the report, due to be completed early next year, will examine how DOD organizes for "new missions and new domains of warfare," the acquisition process, defense agencies, and joint professional military education, among other topics.

Long-Range Strike Takes Steps Forward

The Air Force is speeding up its plans to acquire a new long-range strike capability by about a decade. Two new service offices—one at Air Combat Command and one at Air Force Materiel Command—have been set up to help quicken the pace toward finding a successor for today's bombers.

The offices will develop an analysis of alternatives and manage acquisition of a future long-range strike capability, Gen. T. Michael Moseley, USAF vice chief of staff, told the House Armed Services Committee in March. He said that the Air Force planned to have a new system in service by 2025.

That is more than a decade sooner than USAF's previous plan, which called for a bomber replacement to come online around 2037.

The two offices were funded out of the $100 million Congress inserted in the Fiscal 2004 defense authorization bill specifically to begin work on a successor to USAF's bomber fleet. (See "Washington Watch: On to the Next Bomber," January, p. 8.) Congress was concerned that USAF was not moving fast enough.

USAF photo by MSgt. Jim Varhegyi

Moseley says no limit on long-range strike possibilities.

Moseley did not limit the new long-range strike system to a specific platform; instead he said USAF was considering a "portfolio of options that includes manned and unmanned systems, air breathing and space systems, and a wide mix of munitions connected to a network backbone of command and control that facilitates global strike."

However, he noted that the service is still thinking about a "bridge capability" to provide more deep strike choices while the new system is developed.

To form this bridge, the Air Force is considering an F/A-22 variant, called an FB-22, to serve as a "regional" bomber, in the words of Secretary Roche. It would have a theater capability but not global reach. The FB-22 would have a range of about 1,800 miles, with a payload of up to 30 small diameter bombs. The aircraft would not have all the maneuvering capability of the F/A-22, but would retain stealth and high speed. ■

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By Adam J. Hebert, Senior Editor

MC Rates at Six-Year High

Air Force aircraft in 2003 posted an aggregate mission capable rate of 75.9 percent—USAF's highest readiness rate since 1997. This was the third consecutive year that the MC rate had increased after declining throughout the 1990s.

Testifying before lawmakers in March, Gen. T. Michael Moseley, USAF vice chief of staff, said that, in Fiscal 2003, MC rates had improved for 14 of 20 major weapon systems. He noted that the higher rates came "at a time when all of our systems were flying more hours."

MC rates, which measure the percentage of aircraft capable of performing their missions at a given time, bottomed out at 72.7 percent in Fiscal 2000. The 1997 rate was 76.6 percent.

Roche Cites AOC as Top Weapon

Air Force Secretary James G. Roche had a surprising answer when asked to name which Air Force system has been most helpful in post-9/11 operations. His choice was the air operations center (AOC).

At a March 17 meeting with defense reporters, Roche said that the AOC permits "fusion of information that has really made a huge difference." He said it was "most helpful" to have the ability to acquire satellite information and merge it with intelligence from Joint STARS aircraft, Predator unmanned aerial vehicles, and Global Hawk UAVs and then "fuse it and ... cue different parts."

The Air Force currently has five "Falconer" AOCs, which serve as USAF's comprehensive air warfare command centers. "It is that fusion—that integration—that I think has been the most dramatic," Roche said.

AEFs Not Fully Ready

It will take the Air Force a year longer than expected to get its rotational Air and Space Expeditionary Force system completely back on track, Gen. T. Michael Moseley told Senators on March 9.

Last year, officials had predicted that USAF would return to its normal 90-day AEF rotation cycle by March 2004. Now, Moseley said, the target date is March 2005.

After Gulf War II ended last year, officials established two interim AEFs—composed primarily of personnel who had not already deployed in 2003. These new AEFs—called AEF Blue and AEF Silver—were to stand duty for two sequential periods of 120 days while the rest of the force recovered from the demands of operations in Afghanistan and Iraq. Then, regular rotations were to resume.

Most career fields went back to the standard 90-day rotation cycle in March. However, Moseley said, "The AEF continues to be operating in higher than normal sustained pace ... in some stressed career fields."

The Air Force vice chief of staff added that "continued surge operations ... are creating new challenges for reconstitution efforts."

USAF photo by SrA. Joshua Strang

An 18th Fighter Squadron F-16 takes off at Eielson AFB, Alaska, for an operational readiness exercise. In 2003, overall USAF aircraft mission capable rates went up for the third straight year.

USAF Cancels KC-10 Upgrade

The Air Force in March canceled the KC-10 Global Air Traffic Management upgrade although it had already spent $127 million on the program.

In a written response to questions from *Air Force* Magazine, USAF said that service leaders "concluded the current program did not fulfill requirements nor did it provide an adequate growth path to justify continuing the effort." The Air Force cited continued delays and cost growth in the Boeing program plus a change in requirements as key factors in the decision.

Initially, the KC-10 GATM's development was expected to cost $121 million and production, $347 million.

The Air Force issued a stop-work order and will not resume the program. The service currently is reassessing KC-10 avionics modernization plans.

If the KC-10 is to use preferred international air routes, it must meet, by the end of the decade, new international standards for avionics, navigation, and communication equipment. The same holds true for other US mobility aircraft.

USAF Hires Civilians for Security

The Air Force plans to hire between July and October 495 new civilians for security force jobs. The influx of civilians will allow the service to shift some uniformed person-

nel to other duties to help reduce the strain on its security forces.

On April 5, a security forces staffing team at Randolph AFB, Tex., began taking applications for the positions, which are all at the squadron level.

The Air Force expects to fill many of the new positions with military security forces personnel who are separating or retiring.

Survey Finds Stress Factors

The Defense Department on March 8 released the results of its most recent health survey. It showed that, although health habits were improving overall, there was an increase in smoking and heavy drinking for the first time in 20 years. The Pentagon's top health official believes the results are "not entirely surprising."

The 2002 Survey of Health Related Behaviors Among Military Personnel found a rise in the percentage of personnel saying they had smoked in the previous month. The proportion climbed from 29.9 percent in 1998 to 33.8 percent in 2002. For heavy drinking—defined as five or more drinks per occasion at least once a week—the level rose from 15.4 percent to 18.1 percent.

The 2002 numbers are lower than the percentages recorded in a 1980 survey, when the smoking percentage hit 51 percent and heavy drinking hit 20.8 percent.

William Winkenwerder Jr., assistant secretary of defense for health affairs, said the overall results of the new survey were "encouraging." However, he conceded that officials are "concerned" about the increases in smoking and alcohol use.

He said that these findings, along with other mental health factors from the survey, are "indicators of stress"

Lockheed Martin photo

The X-35 STOVL demonstrator flies. The F-35 STOVL has a weight problem.

F-35 Program Delayed One Year

The Pentagon, in March, delayed the F-35 Joint Strike Fighter development schedule by roughly one year to buy time to drive down the weight of the short takeoff and vertical landing (STOVL) version.

The delay affects the timing of two planned events—first flight and critical design review.

Officials said in March that the Air Force's conventional takeoff variant and the Navy's carrier variant were both about 1,400 pounds over their target weights but were able to meet key performance parameters.

However, the STOVL variant developed primarily for the Marine Corps exceeds its target weight by more than 3,000 pounds. As recently as January, STOVL excess weight was projected to be 2,200 pounds. The Air Force in February announced it planned to purchase some STOVL aircraft.

"STOVL cannot be bought at its current weight, and we have to take the time" to fix the problem, Navy acquisition executive John Young told a Senate panel March 24.

The triservice F-35 production program already had been reconfigured to accommodate the additional design work needed to solve the weight problems. (See "The F-35 Gets Real," March, p. 44.)

More than $5 billion had been shifted from production to development accounts, but the plan in February was to hold to the existing development schedule, with a critical design review in April 2004 and first flight in late 2005. Both dates have now been pushed forward, and new schedules will be set later.

USAF Names $2.4 Billion in Unfunded Priorities

The Air Force identified 27 programs in an unfunded priority list put together in response to a Congressional request made earlier this year. The programs would require $2.4 billion over and above the Administration's 2005 budget request.

In his cover letter, Air Force Secretary James G. Roche said that the 2005 request reflects the "most compelling needs."

Last year's list contained 66 items totaling $4 billion.

The Air Force's top five unfunded 2005 priorities are:

1. Precision Air-to-Ground and Radar Modernization. A total of $57.3 million would fund research and development efforts needed for an F-15C/D air-to-ground capability and two "significant" radar upgrades.

2. Advanced Targeting Pod. The Air Force wants $65 million to purchase 46 Sniper advanced targeting pods from Lockheed Martin using an existing contract. The pods would update some older USAF aircraft.

3. Large Aircraft Infrared Countermeasures. The LAIRCM program could be accelerated, with $137 million giving 59 additional C-17s a LAIRCM "Lite" capability three years sooner than now scheduled. Lite provides less protection than the full system but offers "significantly improved performance" over current flare defenses.

4. C-5 Missile Warning. Some $7.7 million would be used to upgrade 51 C-5 airlifters with missile warning system defenses. Without the upgrades, "failing sensors combined with obsolete parts result in decreased capability and limited asset protection."

5. Completing EC-130H Upgrade. The final two (of 14) EC-130H Compass Call electronic warfare aircraft require $60 million for upgrades to a common Block 35 configuration. The EC-130H is DOD's only airborne combat platform that jams specific communications targets.

Roche: Tanker Lease Advantage Is Perishable

Delay in the leasing of new KC-767 refueling tankers diminishes the value of such an arrangement, Secretary of the Air Force James G. Roche said on March 17.

USAF had long planned to begin a traditional tanker procurement program in Fiscal 2006. The service's leasing arrangement, first proposed in 2002, was meant to deliver new aircraft sooner because the need had become more urgent. The current tanker fleet experienced much higher usage rates as a result of the war on terrorism.

"Each year, ... the advantage of the lease is less than it was the year before," said Roche.

Roche noted the Air Force has always acknowledged that leasing tankers would be more expensive, overall, than an outright purchase, but he said the proposal was justified because of the increased need.

The latest Air Force plan to lease 20 and buy 80 KC-767s was put on hold while the Defense Department investigates whether there were contracting violations related to Boeing's hiring of former Air Force procurement official Darleen A. Druyun. (See "Tanker Twilight Zone," February, p. 46.)

Roche maintained that the need for new tankers has not changed. The Air Force's KC-135Es are 43 years old, and a third of the fleet is in depot for maintenance at any given time. The fact that so many are in depot, said Roche, artificially inflates the tanker readiness rate.

The depot KC-135s are "off line," he said. "When you see mission capability rates [for them], it has to do with the remaining two-thirds—not the whole fleet."

arising from the "military's role in worldwide events throughout the past two years."

A-10 Pilot Dies in Crash

Capt. Jonathan Scheer, 31, died Feb. 25 when his A-10 aircraft crashed at 8:30 p.m. shortly after takeoff from Eielson AFB, Alaska. He was on a routine night training mission as lead pilot in a four-ship formation.

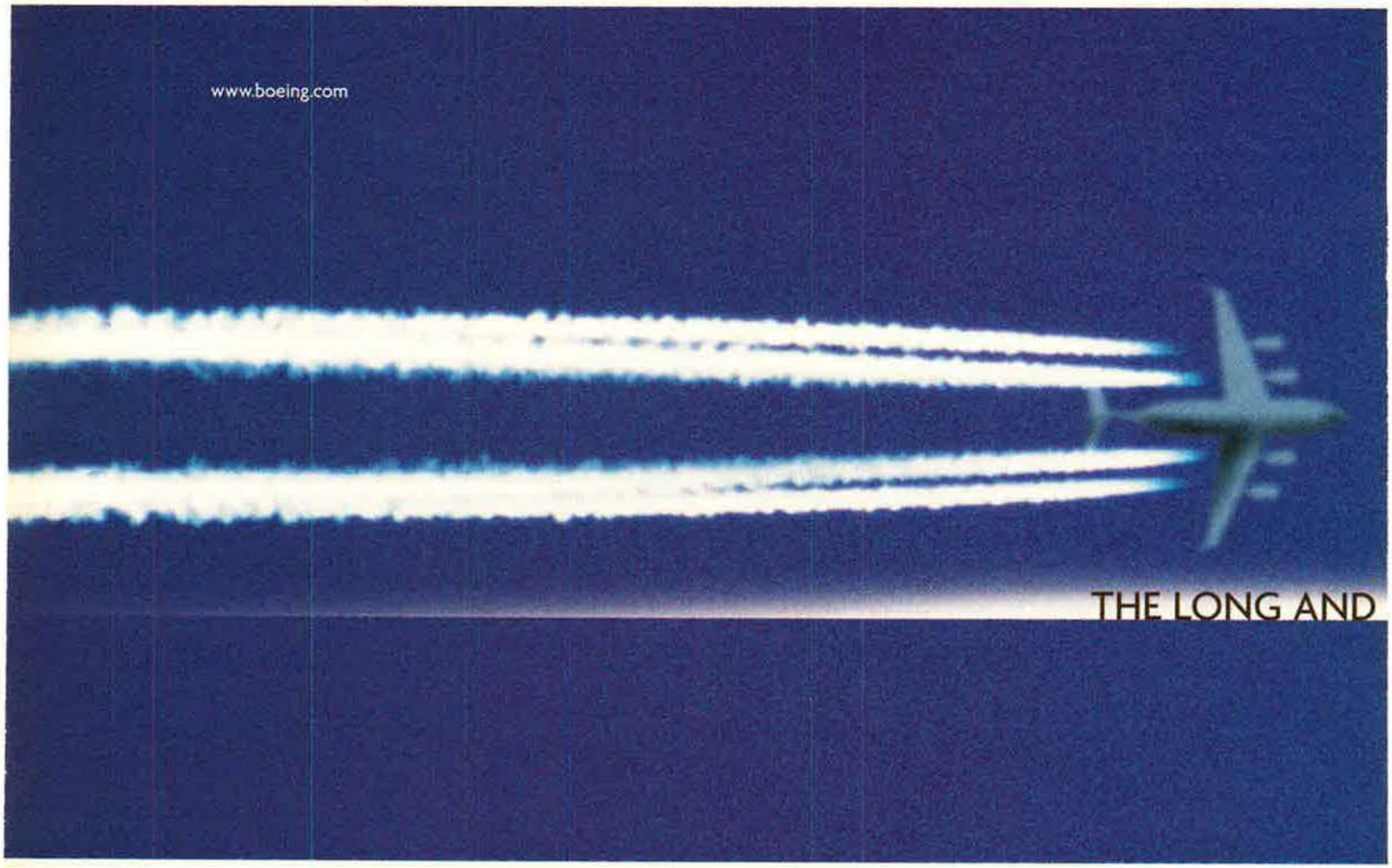
Scheer was a member of the 354th Operations Support Squadron at Eielson. He was a 1995 graduate of the Air Force Academy.

The cause of the crash was not immediately announced, but the Air Force said a board of officers would investigate the mishap.

ANG Crosses Lines for UAV Unit

The Air Force announced March 3 that it would integrate, for the first time, Air National Guard personnel from two different states within a single unit. California and Nevada Guardsmen will be working with the Predator unmanned aerial vehicle squadrons located at Indian Springs AFAF, Nev.

The ANG personnel will join their active duty and Air Force Reserve



Command counterparts in the 11th and 15th Reconnaissance Squadrons.

This organizational transformation, said Maj. Gen. Ronald J. Bath, USAF director of strategic planning, will "increase combat capability."

USAF has expanded the Predator mission envelope from surveillance only to surveillance and strike. The Air National Guard expects to be able to use the UAV in its reconnaissance role for homeland defense, disaster relief, and forest fires.

RIF Would Be Last Resort

Air Force success in retaining personnel during the war on terror may have the unintended effect of forcing the service to resort to involuntary reductions in force. Air Force Secretary James G. Roche said that is something service leaders "fear," but it might be needed if USAF is to meet its authorized end strength.

Roche told defense reporters in March that the Air Force does not want to resort to a RIF and has taken several steps to avoid one. However, the service currently exceeds its authorized end strength by 16,000 airmen. (See "The New Drawdown," March, p. 50.)

USAF expected a certain number

The Battle Over Medals

The House Armed Services Committee approved and sent to the floor a bill to authorize separate campaign medals for Operation Iraqi Freedom in Iraq and Operation Enduring Freedom in Afghanistan. The Bush Administration had opted for one to cover both.

The Administration argued that any US armed forces participant in Iraqi Freedom or Enduring Freedom should receive the Global War on Terrorism (GWOT) Expeditionary Medal.

Opponents of the single-award concept said it doesn't sufficiently recognize those members ordered to serve in both theaters.

Under the House bill, troops deployed to Afghanistan or to Iraq would receive both the GWOT and a campaign medal for the specific theater. Service members who have been assigned both to Iraq and to Afghanistan would qualify for all three medals.

The Senate, last year, had supported the Administration's call for a single award—by one vote.

Rep. Vic Snyder (D-Ark.), who introduced the bill (H.R. 3104), said, "As a Vietnam veteran and former Marine, one of the first things I look for on a soldier's uniform is the campaign ribbon that notes where the soldier served. There is just a camaraderie that comes about by recognizing that campaign ribbon on a uniform."

Rep. Duncan Hunter (R-Calif.), Armed Services Committee chairman, said the bill has wide support.

—Tom Philpott

of troops to leave the service when it lifted Stop-Loss restrictions imposed before Operation Iraqi Freedom. That didn't happen.

Roche said the Air Force goal is to reach its authorized end strength by the end of 2005. If the service doesn't make that goal, but the number is close, he said, USAF will try to get an extension.

Cunningham Honored at Bagram

The Air Force on March 4 renamed the Air Force village at Bagram AB, Afghanistan, in honor of pararescueman SrA. Jason D. Cunningham, who was killed in action in Afghanistan.

The pararescue jumper, or PJ, was assigned to the 38th Rescue Squadron, Moody AFB, Ga. He was killed March 4, 2002, during Operation Anaconda. He was credited with saving the lives of 10 US troops before succumbing to enemy fire.

Cunningham was awarded the Air Force Cross for his actions during Anaconda. (See "Aerospace World: Air Force Posthumously Honors Pararescueman," October 2002, p. 11.)

Air Armament Summit IDs Key Weapons Trends

The Air Force's most recent air armament summit, held in March at Eglin AFB, Fla., identified several key focus areas. They include networked weapons, plug-and-play integration capabilities, improved combat support, modernized test and training ranges, and integrated capability evaluations.

The top-secret summit feeds into USAF's capability review and risk assessment process.

Col. Pamela Arias, director of the Air Armament Center Enterprise Program Office, told *Air Force* Magazine that networking weapons—via two-way data links—is essential because this capability will give planners real-time intelligence on threat areas and information on whether a target was actually killed in an attack. Currently, only the AGM-130 is equipped with a two-way data link, but the Air Force would like to add this capability to as many weapons as possible.

As for plug-and-play capability, Arias noted that it is excessively difficult to add new weapons to existing platforms. Simplifying integration would save time and money, she said, while increasing the number of attack options available. Currently, it can take up to three years to integrate new weapons, but there are proposed systems that could shave that time by two-thirds.

Becoming more agile is critical for an expeditionary Air Force, Arias said. Because of its central role supporting munitions, Eglin deploys more personnel than any other Air Force Materiel Command base.

Discussion at the summit also raised concerns about the Pentagon's test and training ranges. Continuing problems with urban encroachment are threatening a new generation of long-range weapons that need large amounts of airspace for proper testing.

William Dyess, Arias's deputy at Eglin, noted that there are virtually no land-based ranges outside of Australia with enough space to accommodate today's long-range weapons. He added that operating over water is not necessarily the right solution because of the need to position proper instrumentation along flight paths.

Senior Staff Changes

RETIREMENT: Brig. Gen. Simon P. **Worden.**

NOMINATIONS: To be **Brigadier General:** Robert R. **Allardice,** C.D. **Alston,** Thomas K. **Andersen,** Brooks L. **Bash,** Michael J. **Basla,** Mark S. **Borkowski,** Francis M. **Bruno,** Herbert J. **Carlisle,** Gary S. **Connor,** Charles R. **Davis,** Daniel R. **Dinkins Jr.,** Gregory A. **Feest,** Frank **Gorenc,** Blair E. **Hansen,** Mary K. **Hertog,** Jimmie C. **Jackson Jr.,** Frank J. **Kisner,** James M. **Kowalski,** Donald **Lustig,** William N. **McCasland,** Christopher D. **Miller,** Harold W. **Moulton II,** Joseph F. **Mudd Jr.,** Mark H. **Owen,** Ellen M. **Pawlikowski,** Robin **Rand,** Melissa A. **Rank,** Joseph M. **Reheiser,** Joseph **Reynes Jr.,** Cecil R. **Richardson,** Albert F. **Riggle,** Paul G. **Schafer,** Stephen D. **Schmidt,** Mark S. **Solo,** Lawrence A. **Stutzriem,** Janet Anthea **Therianos,** Thomas W. **Travis,** Robert **Yates.**

To be **AFRC Brigadier General:** Richard R. **Moss.**

CHANGES: Brig. Gen. (sel.) Robert R. **Allardice,** from Cmdr., 62nd AW, AMC, McChord AFB, Wash., to Dir., Personnel, AFMC, Wright–Patterson AFB, Ohio ... Brig. Gen. Dana T. **Atkins,** from Cmdr., 35th FW, PACAF, Misawa AB, Japan, to Vice Cmdr., 7th AF, Osan AB, South Korea ... Brig. Gen. Mark G. **Beesley,** from Vice Cmdr., 7th AF, Osan AB, South Korea, to Dep. Dir., Ops., Natl. Mil. Command Center, Jt. Staff, Pentagon ... Brig. Gen. (sel.) Francis M. **Bruno,** from Material Wg. Dir., Strat. Airlift, Warner Robins ALC, AFMC, Robins AFB, Ga., to Dir., Maintenance, Oklahoma City ALC, AFMC, Tinker AFB, Okla. ... Brig. Gen. Duane W. **Deal,** from Cmdr., 21st SW, AFSPC, Peterson AFB, Colo., to Cmdr., Cheyenne Mountain Ops. Center, NORAD, Cheyenne Mountain AS, Colo. ... Brig. Gen. David M. **Edgington,** from Dep. Cmdr., CAOC 6, Allied Air Forces Southern Europe, NATO, Eskisehir, Turkey, to Vice Cmdr., Air Armament Center, AFMC, Eglin AFB, Fla. ... Maj. Gen. Robert J. **Elder Jr.,** from Dep. Combined Forces Air Component Cmdr., CENTCOM, Al Udeid AB, Qatar, to Spec. Asst. to Cmdr., AU, AETC, Maxwell AFB, Ala. ... Brig. Gen. (sel.) Alfred K. **Flowers,** from Chief Financial Exec., SOCOM, MacDill AFB, Fla., to Dir., Force Structure, Rqmts., Resource & Strat. Assessment, SOCOM, MacDill AFB, Fla. ... Brig. Gen. (sel.) Christopher D. **Miller,** from Dir., Assignments, AFPC, Randolph AFB, Tex., to Cmdr., 509th BW, ACC, Whiteman AFB, Mo. ... Brig. Gen. Michael F. **Planert,** from Dep. Dir., Ops., Natl. Mil. Command Center, Jt. Staff, Pentagon, to Dep. Cmdr., CAOC 6, Allied Air Forces Southern Europe, NATO, Eskisehir, Turkey ... Brig. Gen. Douglas L. **Raaberg,** from Cmdr., 509th BW, ACC, Whiteman AFB, Mo., to Dep. Dir., Ops., CENTCOM, MacDill AFB, Fla. ... Brig. Gen. (sel.) Melissa A. **Rank,** from Cmdr., 99th Medical Gp., ACC, Nellis AFB, Nev., to Dep. Asst. Surgeon Gen., Health Care Ops., Office of the Surgeon Gen., USAF, Bolling AFB, D.C. ... Brig. Gen. (sel.) William J. **Rew,** from Dir., Ops., CENTAF, Shaw AFB, S.C., to Cmdr., 35th FW, PACAF, Misawa AB, Japan ... Brig. Gen. (sel.) Cecil R. **Richardson,** from Dir., USAF Chaplain Service Institute, AU, Maxwell AFB, Ala., to Dep. Chief, Chaplain Service, Vice C/S, USAF, Pentagon ... Brig. Gen. (sel.) Albert F. **Riggle,** from Dir., Security Forces, PACAF, Hickam AFB, Hawaii, to Dir., Jt. Security, CENTCOM, MacDill AFB, Fla. ... Maj. Gen. (sel.) Norman R. **Seip,** from Dep. Dir., Ops. & Tng., DCS, Air & Space Ops., USAF, Pentagon, to Dep. Combined Forces Air Component Cmdr., CENTCOM, Al Udeid AB, Qatar ... Brig. Gen. Richard E. **Webber,** from Dir., Comm., AFSPC, Peterson AFB, Colo., to Cmdr., 21st SW, AFSPC, Peterson AFB, Colo.

COMMAND CHIEF MASTER SERGEANT CHANGE: CMSgt. Michael E. **Eitnier,** to CCMS, USAFA, Colorado Springs, Colo.

SENIOR EXECUTIVE SERVICE CHANGE: Martha J. **Evans,** to Dep., AFPEO (Combat & Mission Spt.), Asst. SECAF, Acq., Pentagon. ■

Five Die in Nevada Crash

An Air Force civilian pilot and four USAF contractors died March 16 when their Beechcraft KA 1900 crashed about 125 miles northwest of Nellis AFB, Nev.

Killed were pilot David D. Palay and JT3 Corp. technicians Derrick L. Butler, Michael A. Izold, Daniel M. Smalley, and Roy A. Van Voorhis. Butler, Palay, Smalley, and Voorhis were Air Force veterans.

The contractors worked on test-range equipment throughout the Nevada Test and Training Range, said the Air Force. The aircraft was on its way to the Tonopah Test Range when it went down about 5 a.m.

The cause of the crash is under investigation.

DOD Wants Civilian Experts

The Defense Department on March 1 unveiled a new policy for a competitive-hire compensation package. DOD can hire as many as 2,500 civilian employees for five years under a provision approved by Congress in

Latest GPS Launch Honors Getting

The March 20 launch of a Global Positioning System navigational satellite from Cape Canaveral AFS, Fla., honored the late Ivan A. Getting, who is considered the father of GPS. Getting died Oct. 11, 2003, at his home in California.

To honor his life and work, the 50th GPS satellite launched carried an inscription noting his name, birth and death dates, and words he had used to describe the navigation satellite: "Lighthouses in the sky, serving all mankind."

Getting was born in New York City in 1912 and earned a degree in physics in 1933 from the Massachusetts Institute of Technology. Two years later, as a graduate Rhodes scholar, he received a doctorate in astrophysics at Oxford University in Britain.

He devoted his career to US defense efforts and was recognized as a leading military scientist. His career began at Harvard University, where he did research on cosmic rays and nuclear physics. In 1940, he moved to MIT, where a group he led developed the first automatic microwave tracking fire-control radar. The radar was credited with helping London survive the Nazi V-1 "buzz bombs" during World War II.

During the Korean War, Getting served as the Air Force's assistant for development and planning. From 1951 to 1960, he was vice president of research and engineering at Raytheon. In 1960, when the Aerospace Corp. was created, at Air Force instigation, Getting was elected its first president.

Many consider his work on GPS to be his most important and lasting contribution not only to US defense but to the world.

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News Notes

By Tamar A. Mehuron, Associate Editor

■ USAF activated the 505th Command and Control Wing March 12 at Hurlburt Field, Fla. The wing will manage the operational air and space command and control center and develop air and space C2 capabilities for US and coalition warfighters.

■ The sole Predator unit in Iraq moved to Balad Air Base from Tallil Air Base in early March, according to Air Force officials. USAF Predators have flown in support of Operations Allied Force in Kosovo, Enduring Freedom in Afghanistan, and Iraqi Freedom in Iraq.

■ Air Force Special Operations Command combat controllers will have lighter targeting gear by year's end, according to the Air Force Research Lab's Directed Energy Directorate at Kirtland AFB, N.M. The 10-pound piece of equipment features a day and night laser targeting ability and a geolocation system. The new gear replaces eight different systems weighing a total of 60 pounds.

■ The Air Force Personnel Center received 2,418 applications for early separation or retirement by its March 12 closeout date for phase 1 of USAF's effort to reduce its end strength by some 16,000 airmen. (See "RIF Would Be Last Resort," p. 19.) As of April 16, the Air Force had approved applications from 156 officers and 2,071 enlisted members.

■ Malfunctions and rough terrain caused the Nov. 23, 2003, crash of an MH-53 helicopter east of Bagram AB, Afghanistan, concluded an accident report released March 10. The crash killed four of six crew members and one Army passenger. (See "Aerospace World: Helo Crash Claims Five," January, p. 12.) Combined stresses of high altitude and high gross weight triggered the failure of an engine. Auxiliary fuel tanks also failed to release. Flying in support of Operation Mountain Resolve when the crash occurred, the Pave Low helicopter was assigned to the 20th Special Operations Squadron, Hurlburt Field, Fla.

■ Boeing in late February received a $460 million contract for C-17 sustainment work for USAF and British C-17s. The British portion is about three percent of the total, according to DOD. Work is to be completed by September 2004.

■ Singapore's ministry of defense on March 16 said the country had signed on for the F-35 Joint Strike Fighter program as a security cooperation participant. As a participant, Singapore can request early purchase of the JSF for delivery after 2012. Eight countries had signed on as partners at varying levels. They are: Australia, Britain, Canada, Denmark, Italy, Netherlands, Norway, and Turkey.

■ The Dec. 11, 2003, crash of a remotely piloted Predator UAV in Southwest Asia was due to operator error, concluded an Air Combat Command accident report released March 17. The pilot overcorrected when the UAV "abruptly pitched upward because of a software program anomaly," said the report. The pilot and UAV, which was destroyed in the crash, were assigned to the 15th Reconnaissance Squadron at Indian Springs AFAF, Nev.

■ ACC's 116th Air Control Wing, Robins AFB, Ga., took delivery of USAF's 16th Joint STARS aircraft in late February from Electronic Systems Center, Hanscom AFB, Mass.

■ The 12 additional Civil Support Teams Congress funded in the Fiscal 2004 defense bill will stand up this year, according to a March 9 DOD news release. The teams, each composed of 22 Army and Air National Guard members, will be located in Connecticut, Indiana, Maryland, Mississippi, Nebraska, Nevada, New Jersey, North Carolina, Oregon, Rhode Island, and Wisconsin. Congress has directed DOD to establish 11 more new teams. DOD has certified 32 teams so far.

■ US and European officials agreed in February on terms regarding the development and use of the European navigation satellite system, Galileo, that avoid interfering with the Pentagon's GPS system. (See "Aerospace World: US, EU Set for NavSat Deal," March, p. 15.) The agreement settled a four-year dispute.

■ The Air Force in early March said it had made it easier for its military and civilian personnel to access personnel information via the Web by creating the Air Force Portal—a one-stop entryway that provides access to several online services with just one user ID and password. Click on www.my.af.mil to access the site.

■ NASA officials earlier this year selected MacDill AFB, Fla., as an alternate landing site for the space shuttle. Landing the shuttle at MacDill rather than the other alternate—Edwards AFB, Calif.—would save processing time for the next mission and the expense of returning the shuttle to its Cape Canaveral, Fla., home station.

■ After nearly 60 years, Kenneth Kinsinger, a World War II Army Air Corps B-24 bomber pilot, was honored in February with formal presentation of the Distinguished Flying Cross for his heroism during a July 1944 bombing mission—one of six he made over the Ploesti oil fields in Romania. Flying through a wall of intense flak, Kinsinger, as lead pilot, kept his group of 100 bombers on track and on target. Kinsinger also received the Air Medal for finishing 50 missions with the 449th Bomb Group in Italy from April to August 1944.

■ Another Army Air Corps veteran, Lynn Tipton, was awarded a Purple Heart in March at Edwards AFB, Calif., for combat wounds he received on Sept. 12, 1944, on a B-24 mission over Magdenburg, Germany. When his bomber came under attack from German fighters, he was hit by ammunition rounds. The crew had to bail out and were interned in a POW camp for about 10 months.

■ Two Joint Direct Attack Munition (JDAM) contracts, on March 1, went to Boeing. The total value of the contracts is $857 million. Under one contract, Boeing is to produce 32,000 JDAMs to replenish Air Force and Navy stocks after the wars in Afghanistan and Iraq. The second calls for future integration of JDAM on foreign military sales aircraft.

■ USAF awarded Raytheon a $52.6 million contract for Advanced Medium-Range Air-to-Air Missile and AIM-120 work for foreign military sales to Greece and Sweden. Work will be completed by August 2005.

■ Rockwell Collins received a $36.8 million USAF contract for full rate production work on the Global Air Traffic Management Program for KC-135s. Work is to be finished by February 2005.

■ Israel Aircraft Industries officials signed a $1.1 billion contract with Indian defense ministry officials in March for IAI to deliver three airborne early warning aircraft for the Indian Air Force.

■ Two airmen assigned to the US Air Force Academy took weight-class honors at the 2004 Armed Forces Wrestling Championships in March in New Orleans. SSgt. Steven Woods won the 163-pound weight class for Greco-Roman wrestling, and 2nd Lt. Kevin Hoy won the 264.5-pound weight class in freestyle wrestling. Both are with USAFA's 10th Services Squadron.

the Fiscal 2004 defense budget.

Defense leaders hope the policy will enable them to attract civilians with the "expertise and corporate knowledge to fill critical positions," stated a Pentagon news release.

There are several restrictions on this new provision. For instance, the new employees cannot fill continuing functions or fill-in during staff shortages. And DOD cannot use the provision to try to bypass established pay ceilings.

Although the department did not release any specifics on pay or work for potential employees, it did say they must be individuals "possessing uncommon, special knowledges or skills in a particular occupational field beyond the usual range of expertise." An individual must also be regarded by others "as an authority or practitioner of unusual competence and skill."

USAF Tests Network Defenses

The Air Force in March ran a major cyber-defense exercise to test network security capabilities and procedures. Exercise Black Demon was the largest-ever event of its kind and the first of this type in two years. Participating were more than 500 personnel from every USAF major command.

Many details of the exercise are classified. Col. Larry Thompson, commander of the Air Force Information Warfare Center at Lackland, AFB, Tex., said the emphasis was on making sure that network operators had the capability to work through disruptions.

"You can't just throw the big red switch to off" every time a possible attack takes place, he explained. For example, USAF personnel try to keep e-mail and Web servers available during such network "events," he said.

During Black Demon, operators were tested on their ability to evaluate possible attacks on Air Force networks and analyze their possible impact, Thompson said. Other objectives included improving network operator responses to multiple threats and determining how best to employ network defenses.

According to an AFIWC statement, a 2002 exercise "led directly to positive changes in daily operational procedures at all echelons of Air Force network defense."

The exercise was run by the 23rd Information Operations Squadron at Lackland. By mid-April, many of the

USAF Initiates Servicewide Review of Rapes

A recent Pacific Air Forces review found at least 92 rape accusations by personnel in PACAF between 2001 and 2003. Those findings, coupled with the problems identified last year at the Air Force Academy, prompted Air Force leaders to initiate a wider review across the entire service. (For more on the USAFA situation, see "Upheaval at the Academy," January, p. 56.)

In the PACAF cases, a total of 106 airmen were accused of rape. Seven were convicted and sentenced to an average of eight years in prison, while many more received lesser administrative penalties, such as demotions.

Air Force Secretary James G. Roche told a March 17 Defense Writers Group session that some victims assistance programs were run so that aid to alleged victims stopped if charges were not brought against the alleged rapists. "That's just dumb," he said. He added that there were other such "systemic problems."

Roche said that, during a visit to PACAF bases late last year, he talked with Gen. William J. Begert, PACAF commander, about the academy situation and the question of "how good is the Air Force" as a whole on this issue. Begert launched a review "quietly," said Roche.

Roche and Gen. John P. Jumper, Air Force Chief of Staff, reviewed the PACAF findings. They took the issue up at the February Corona, a meeting of USAF's senior military and civilian leaders, and decided to direct a servicewide review. Within days of the Corona meeting, news reports began to surface about alleged sexual assault problems at Sheppard AFB, Tex., a major technical training facility.

In early March, Air Force sexual assault assessment teams began fanning out to Air Force installations worldwide to collect data on the scale of the problem.

Recent allegations of sexual assaults and mishandling of victims assistance has touched each of the military branches. News reports over the past few months have highlighted problems being encountered by US female military personnel serving in Southwest Asia.

These reports prompted the Pentagon to establish a Task Force on Care for Victims of Sexual Assaults. Heading the group is Ellen P. Embrey, deputy assistant secretary of defense for force health protection and readiness.

The DOD task force was formally created Feb. 13 and was to report its findings by April 30.

The Air Force planned to discuss the findings of its own review at its Corona meeting this month.

USAF Outlines F/A-22 Block Upgrade Plan

The Air Force has a multiyear plan to upgrade its new F/A-22 fighter through a series of block improvements, and the service still plans to attain initial operational capability (IOC) at the end of 2005, according to a USAF briefing document.

The first major upgrade will come in late 2006 when Block 20 capability takes the F/A-22 to a "Global Strike Basic" configuration. This will improve air-to-ground capability and deployability, add an improved envelope for Joint Direct Attack Munitions, and enhance electronic protection. Block 20 aircraft also will incorporate the "final" avionics processor, according to USAF modernization plans.

Next will come Block 30 Raptors with capabilities added through 2009. Spiral 3A of Block 30 will add an air-to-ground radar, enhanced attack capabilities against integrated air defense systems, Link 16 data link, and "basic" Small Diameter Bomb capabilities.

Block 30's Spiral 3B will add updated air traffic identification systems and the ability to record high fidelity signals from aircraft sensors. This will permit intelligence assets to use the Raptor's sensor suite as an extension of other dedicated intelligence-surveillance-reconnaissance assets.

These upgrades take the F/A-22 to the "Global Strike Enhanced" configuration. The work up to this point is included in the Air Force's out-year budget at a cost of $3.5 billion.

Also under consideration, officials said in March, are additional upgrades that would further improve attack, networking, and ISR capabilities. Air Force acquisition chief Marvin R. Sambur said that, if all the upgrades under consideration were funded, the cost could total $11.7 billion. He said there are "a lot of wish-list types of items, ... everything under the sun."

These out-year efforts are not currently funded, and the Air Force is "not thinking of going anywhere near that," Sambur told a Senate panel March 24.

The Iraq Story Continues

One Year in Iraq

The US government marked the one-year anniversary of Operation Iraqi Freedom March 19 by highlighting what the campaign has accomplished in Iraq.

An Air Force news release stated that more than 230,000 Iraqis have been trained to provide security for their country's 25 million citizens, and the international community has pledged more than $32 billion to help restore the nation's infrastructure.

The State Department noted that Iraq's interim constitution guarantees freedom of religion and expression, the right to assemble and protest, and the right to vote.

And while 46 of the 55 most wanted Iraqis had been killed or captured by the anniversary date, defense officials said that operations needed to continue in the country.

Air Force statistics showed that US forces have been carrying out more than 1,600 patrols daily and conducting an average of 180 military raids a week.

In a March 17 speech, Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff, said that the nature of the threat to US and coalition forces in Iraq continues to morph. Most recent attacks have come not from Iraqis loyal to the former regime but from foreign "Jihadists," Myers said. He gave a rough estimate that there may be 1,000 Jihadists in Iraq but cautioned that exact numbers are difficult to determine because these terrorists "don't show up for the census."

Because of the lingering security concerns, Myers noted that Iraq won't be able to assume all required security functions by June 30, when sovereignty over the nation is transferred from the US governing authority to the new Iraqi government.

USAF photo by MSgt. Glenn Wilkowitz

An Air National Guard F-16 pilot, 107th Fighter Squadron, Selfridge ANGB, Mich., checks his aircraft prior to a mission in Iraq.

Casualties

By March 19, a total of 570 US troops had died supporting OIF. Of these casualties, 387 were killed by hostile action, while another 183 died in noncombat incidents.

President Bush declared an end to major combat operations in Iraq on May 1, 2003. Since that time, 432 troops have died in Iraq: 272 in combat and 160 in nonhostile incidents.

F-16s Deploy to Kirkuk

A detachment of 10 F-16s and 200 personnel from Selfridge ANGB, Mich., deployed to Kirkuk air base in northern Iraq on March 1. The ANG personnel, providing the only operational squadron of F-16s in Iraq, are on a standard 90-day deployment.

They relieved A-10s of the 354th Expeditionary Fighter Squadron from Davis-Monthan AFB, Ariz. Falcons from Selfridge's 107th Fighter Squadron were also deployed in support of Iraqi Freedom last year, when they were sent to Kuwait.

"Iron Promise" Counters Attacks on Civilians

US Central Command on March 17 launched a major campaign against insurgents in Baghdad after a series of attacks on civilians. Dubbed "Iron Promise," the operation went after suspected terrorists and their weapons and hideouts.

The operation came after two attacks earlier that week killed two European and four American civilians working on separate water projects.

Officials were looking specifically for people moving weapons and improvised explosive devices.

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lessons from the 2004 Black Demon were still under evaluation.

Massive Exercise Held in Pacific

US and South Korean forces launched their largest annual exercise on March 21. Some 5,500 US troops deployed to South Korea to join 3,000 US troops permanently stationed there who were participating in the Foal Eagle and Reception, Staging, Onward Movement, and Integration exercise.

The two-week exercise allows the combined forces defending South Korea to realistically train to defend against a possible invasion from Communist North Korea. Foal Eagle and RSOI were conducted separately until 2002.

Earthquake Relief Via Hercules

USAF active duty and Air National Guard forces on March 28 provided aid to Morocco in the aftermath of a major earthquake.

A C-130 Hercules assigned to the 86th Airlift Wing's 37th Airlift Squadron, Ramstein AB, Germany, delivered four pallets of emergency relief supplies and a US European Command humanitarian response team. Within hours, a Utah ANG KC-135 from Salt Lake City arrived with another load of supplies, including first-aid and hygiene kits and blankets.

The 6.4-magnitude earthquake reportedly killed nearly 600 Moroccans. The deliveries were part of an international relief effort.

The Utah National Guard is partnered with Morocco through a program called the State Partnership for Peace, a Guard endeavor to foster cultural exchanges.

Airmen Deliver Aid to Chad

On March 13, 86th Airlift Wing units, from Ramstein, delivered urgently needed blankets, food, and medical supplies to the African nation of Chad. The assistance was requested by Chad's government, which was engaged in a battle with terrorists.

According to Capt. Jeff Menasco, mission commander, 19 tons of supplies were airborne by C-130 less than an hour after the unit was notified of the mission. This type mission usually takes two days to plan, he said.

Accompanying the C-130 crew were troops from the 86th Contingency Response Group to provide security and four flying crew chiefs from the 86th Aircraft Maintenance Squadron in case the aircraft encountered maintenance problems.

New Deal for Retired Civilians

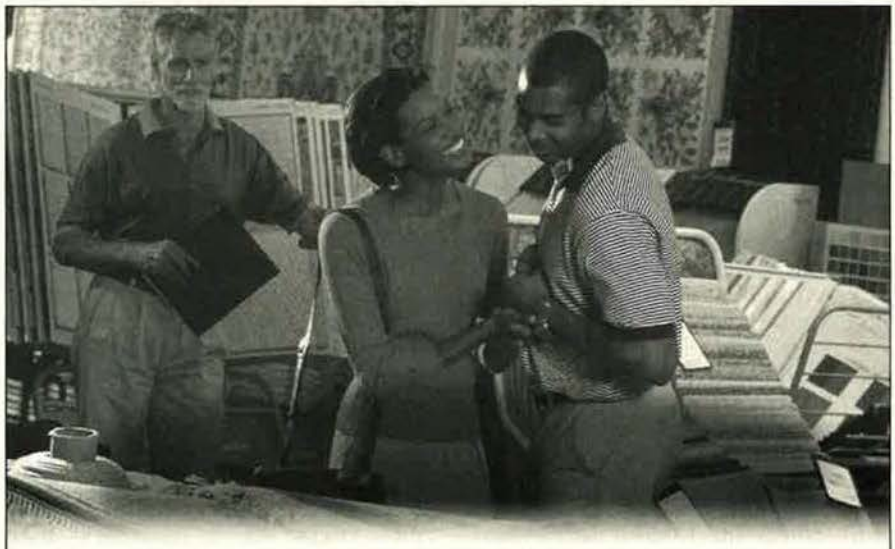
DOD on March 22 announced that civil service retirees needed for critical positions could return to work in the department without suffering an offset to their retired pay.

The new program is retroactive to Nov. 24, 2003. It is only open to retirees who have unique skills for hard-to-fill jobs. Additionally, before a retiree can be hired, the position must be opened to qualified employees who were cut under personnel reductions.

Obituary

Retired Navy Capt. Arthur R. Hawkins, a World War II fighter ace with 14 aerial victory credits, died March 21 following a stroke. He was 81.

Hawkins was awarded three Navy Crosses among other medals. One of his postwar assignments was with the Navy's Blue Angels aerial demonstration team. After retiring from the Navy in 1973, he worked with the Naval Aviation Museum Foundation for more than 20 years. An F-6 Hellcat showing his combat victories is on display at the National Museum of Naval Aviation at NAS Pensacola, Fla. ■



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Action in Congress

By Tom Philpott, Contributing Editor

Possible SBP Fixes; Reserve Benefits Boosts; Worries Over Entitlements; New Pay Commission ...

An SBP Fix On the Way?

Both houses of Congress have sent strong signals that lawmakers, this year, may vote to raise benefits for elderly spouses of deceased military retirees. Currently, the Survivor Benefit Plan (SBP) contains a sharp drop in benefits for spouses when they reach 62.

Beginning at age 62, benefits typically fall from 55 percent of the SBP-covered annuity down to as low as 35 percent. That provision, known as the Social Security Offset, has been part of the plan since its introduction in 1972 because most surviving spouses begin to draw Social Security at that age.

The 2005 Senate budget resolution earmarks for SBP $2.7 billion that could go toward a 10-year phaseout of the benefit drop. The Senate budget action, which came from a floor amendment offered by Sen. Mary Landrieu (D-La.), would be financed by raising taxes on US companies that re-incorporate in foreign tax havens and by ending tax breaks on individuals who forfeit their US citizenship.

Senators agreed to the amendment by unanimous consent.

The budget committee action gives the Senate Armed Services and Appropriations Committees the headroom to phase out the offset as part of the 2005 defense authorization and spending bills.

The House Budget Committee declined to match that action. Its members voted down an identical SBP offset amendment. Many who voted against the amendment list themselves as co-sponsors of legislation (H.R. 3763), sponsored by Rep. Jeff Miller (R-Fla.), that would phase out the SBP offset over 10 years. Rep. Jim Nussle (R-Iowa), budget committee chairman, said he would work with the House Armed Services Committee "to arrive at a financial fix."

Reps. Duncan Hunter (R-Calif.) and Ike Skelton (D-Mo.), the Armed Services Committee's chairman and ranking Democrat, earlier had urged the budget committee to support a phaseout of the SBP offset.

The "Paid-Up" SBP Rule

Service associations are pressing Congress to enact legislation to advance by four years the effective date of a rule favorable to Survivor Benefit Plan participants. It would allow them to stop paying monthly premiums after 30 years or when they reach the age of 70, whichever is later.

In 1999, Congress set Oct. 1, 2008, as the effective date for the "paid-up" provision. Advocates for military retirees have been pressing for an earlier start date ever since.

Making 2008 the start date meant that more than 200,000 military retirees who signed up for SBP in its first six years (1972 through 1977) would end up paying monthly premiums longer (up to six years) than enrollees from 1978 and after.

Sen. Jon Corzine's (D-N.J.) Military Survivors' Fairness Act (S. 2177) would change the effective date to Oct. 1, 2004. Rep. Jim Saxton (R-N.J.) introduced similar legislation (H.R. 1653) in the House last year. Both measures are in their respective armed services committees.

Congress Boosts Reserve Benefits

The Senate Budget Committee approved legislation expanding health care coverage for Guardsmen and Reservists and benefits under the Montgomery GI Bill.

To participate in Tricare, reservists would agree to pay modest monthly premiums on top of the standard Tricare enrollment fees and cost-sharing paid by beneficiaries not on active duty.

The Senate Tricare initiative was offered by Sens. Lindsey Graham (R-S.C.) and Tom Daschle (D-S.D.). Before the vote, they added language from Sen. Jim Bunning (R-Ky.) to boost monthly MGIB benefits for reserve members from $282 up to almost $400.

When the Montgomery GI Bill began in 1985, Bunning said, the reserve benefits were equal to about 47 percent of the active duty benefits. However, hefty MGIB raises in the late 1990s did not apply to reserve benefits, reducing their relative value to roughly 27 percent of active benefits. Bunning's proposal would raise the reserve MGIB benefits to 40 percent of the active duty benefit.

To pay for reserve Tricare through 2009, the Senate would tap $5.6 billion in unspent funds earmarked for Iraq reconstruction. The MGIB increase would cost another $1.2 billion over five years.

Worries Over Entitlements

Defense officials have urged Congress to re-examine the recent growth in military entitlements, which they say do not change readiness. The Pentagon wants lawmakers to shelve several new initiatives.

David S.C. Chu, undersecretary of defense for personnel and readiness, told the Senate subcommittee on military personnel in March that one of the department's greatest challenges is "the growing list of military entitlements that do not leverage readiness."

Charles S. Abell, Chu's principal deputy, reinforced that view before a House subcommittee, warning, "It is possible to create a force that is too expensive for the nation, especially when it comes to programs that are essentially deferred compensation or when the benefits accrue only to those who no longer serve."

Chu and Abell outlined entitlement spending for three recently approved programs—Tricare for Life, concurrent receipt (limited to retirees with disability ratings of at least 50 percent), and Tricare for reservists who are unemployed or lack health insurance. They indicated that those three new entitlements will total more than $12 billion annually by 2005 and will hit about $18 billion by 2009.

New proposals threaten to raise costs even more, they argued.

They said that lowering the starting age from 60 to 55 for Guard and Reserve retirement pay would cost, over the next 10 years, $6.6 billion in retirement pay and $4 billion in health care costs, according to preliminary estimates.


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WINNING TECHNOLOGY

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Chu and Abell maintained that the phaseout of the SBP offset for surviving spouses could cost $1 billion a year within five years. They said that allowing concurrent receipt of retired pay and VA disability compensation to all retirees with disabilities would cost $8.4 billion a year within 10 years. Opening Tricare to all nonactivated reservists and their families, even charging extra premiums, they said, would cost at least $1 billion a year.

Out of Money Already?

Defense officials in March warned Congress that they likely do not have sufficient funds to implement all the reserve health care initiatives enacted last November. Congress authorized three new temporary provisions for Guard and Reserve members but limited the total cost to $400 million.

By mid-March, the department had put into effect only one of the provisions that was to enter into force on Nov. 6, 2003, when the law was signed. (See "Total Force Tricare," April, p. 60.) Officials blamed the delay on the funding cap that requires precise monitoring of program costs and on difficult enrollment challenges.

On March 17, DOD implemented the provision that lengthens Tricare eligibility for certain reservists from 60 or 120 days to 180 days under the Transitional Assistance Management Program (TAMP). The extension, which applies to all Guard and Reserve members who deactivated or separated from active duty after Nov. 6, 2003, expires Dec. 31, 2004.

TAMP-eligible reservists who saved their medical receipts since last November can apply for reimbursement. (Information is at http://www.tricare.osd.mil/claims/default.cfm.)

Tricare officials planned to implement a second initiative, providing premobilization Tricare coverage to Guard or Reserve members and their families when members are called to active duty for longer than 30 days. Coverage begins upon notice of a pending call-up or 90 days before the period of active duty. This provision, too, is retroactive for members who learned of mobilization on or after Nov. 6, 2003.

The Pentagon expected these two provisions alone to use up the $400 million Congress authorized. Although officials continued to work on draft regulations for the third temporary provision—opening Tricare to reservists who are unemployed or lack employer-sponsored health care—prospects of the program starting before its Dec. 31 expiration date appeared dim.

Tricare officials said that starting such a complex benefit typically would take 12 to 18 months. And, even though reservists would pay 28 percent of program costs, in the form of monthly premiums, the Office of Management and Budget has pegged the annual costs at $1 billion a year.

For this benefit even to be tested, Pentagon officials say, Congress will have to provide more money and extend authority through 2005.

New Pay Commission

Last year's move by Congress, raising certain special pays for military members, highlighted a weakness in the current military pay system, said DOD officials. As a result, DOD plans to create an independent commission to assess military pays and benefits.

Last year, lawmakers wanted to boost the pay of troops serving in Afghanistan and Iraq and did so by raising the monthly Family Separation Allowance by $150 and Imminent Danger Pay by $75.

The Pentagon opposed the increases because they went to thousands of troops not serving in those war zones.

Senior defense officials told lawmakers that they have dropped plans to roll back the IDP raise and will seek to combine a partial rollback of the FSA hike with a grandfather provision to prevent a drop in pay for service members in Iraq or Afghanistan.

The seven-member panel of outside pay and personnel experts will advise the Pentagon on how it might make military pay more flexible and ensure balance between pay and noncash benefits and between current and future compensation such as retirement.

The commission, which is to make recommendations by early 2005, also will review Guard and Reserve compensation.

The Part B Penalty

Congress last year authorized an open window through 2004 for up to 90,000 military Medicare-eligible retirees and qualified family members to apply for waivers of penalties due to late enrollment in Medicare Part B. By early April, the agency tasked with implementing the waiver provision had not issued the necessary guidelines or applications.

Elderly beneficiaries must obtain Part B coverage to use Tricare for Life as a robust supplement to Medicare. Those who delay enrollment face a 10 percent increase in Part B premiums for each year they wait past age 65.

Medicare-eligible military retirees who were not enrolled in Part B before Congress enacted Tricare for Life in January 2001 were caught short and face heavy penalties.

A spokesman for the Centers for Medicare and Medicaid Services, Peter Ashkenaz, said on March 29 that CMS was "still working with Tricare folks and the Social Security Administration, putting together all of the systems we can to identify these people."

Rep. Benjamin Cardin (D-Md.), primary sponsor of the Part B penalty waiver provision, called the agency's delay in implementation "an outrage."

Cardin said that this far into 2004, "CMS needs to immediately stop assessing these penalties [and] must adjust premiums for retirees who have been fined in error since Jan. 1 and refund all overpayments."

Ashkenaz said his agency can't predict yet when applications for waivers might be available or when rebates would be paid, but eligible retirees will be notified by mail of what actions they need to take.

"We're working off three different enrollment systems to identify everybody," he said. "We have to make sure all the computers can talk to each other. And we don't want to miss anybody."

Retro R&R Pay

The House was poised to take up a measure favorable to 29,000 troops who last year returned from Iraq and Afghanistan under the rest and recuperation leave program. The bill would make them eligible for retroactive travel reimbursement from point of entry in the US to their home and back. The Senate, on March 4, passed an identical bill.

On Sept. 23, 2003, when the Pentagon implemented the 15-day R&R program for troops serving a year in Afghanistan or Iraq, it only covered travel costs to and from certain points of US entry. On Dec. 19, 2003, the program was expanded to cover the leg of the journey home from the point of entry.

However, defense officials said they needed Congressional authority to reimburse retroactively the troops who used the R&R program between those two dates. The Senate and House legislation would close the reimbursement gap. ■

Verbatim

By John T. Correll, Contributing Editor

Fly With the Best

"He's a good pilot. I'm his passenger quite often, and only when I want to tease him do I get a life preserver and a whistle and a flashlight. But he's a terrific pilot."—***Secretary of the Air Force James G. Roche on riding with Gen. John P. Jumper, USAF Chief of Staff, C-Span interview Feb. 23, cited by*** **Inside the Air Force.**

New Europe and Old Russia

"East Europeans think Western Europeans are completely silly and appeasement minded when it comes to Russia."—***Toomas Hendrik Ilves, former Estonian foreign minister, now member of Parliament,*** **Wall Street Journal,** ***Feb. 18.***

Giving In

"We are giving birth to a new world, and it is sad and dangerous and sick. We are giving a signal to the terrorists that they can have their way because we have given in."—***Spain's departing foreign minister, Ana Palacio, interview with the*** **New York Times,** ***March 16.***

Sustain What You've Got

"Part of the task for our forces and our planning of the goals that we try to foster through our transformation is to keep strong where we are. Other countries don't contest the air; we have the oceans."—***Andrew W. Marshall, Pentagon director of net assessment, remarks at Heritage Foundation conference,*** **Inside the Pentagon,** ***March 4.***

Rumsfeld's Spigot

"Think of a barrel of water and the spigot is about a third of the way down from the top. And you open the spigot and you can only access the amount of water that's above the spigot. ... So think of that barrel with 2.6 million [people in the active and reserve forces]. Our task is to sustain, on a rotational basis ... what? One hundred fifteen thousand in Iraq, add another 100,000 for the sake of argument. ... Out of 2.6 million, we can't sustain 200,000 people? Why? Because the spigot's too high. ... When you've got a spigot that's one-third of the way down, instead of down at the bottom, I don't think the taxpayers of the United States want us enlarging that barrel. I think they want us to make better use of what's in the barrel."—***Secretary of Defense Donald H. Rumsfeld, Pentagon news briefing, March 9.***

Objective Hasn't Changed

"My resolve is the same as it was on the day when I walked in the rubble of the Twin Towers. I will not relent until this threat to America is removed. And neither will you."—***President Bush at Ft. Polk, La., to National Guard troops bound for Iraq, Feb. 17.***

Support Peacefulness or Else

"The Chinese people love peace, but we will not allow any external force to interfere in our peaceful reunification."—***Chinese Foreign Minister Li Zhaoxing, warning foreigners not to aid activists for Taiwan independence,*** **Washington Post,** ***March 6.***

Blitz on Blix

"I learnt that I had been vilified, crucified, and made to look like an imbecile, and I realized that I saved a lot of adrenaline by hardly ever watching TV and by limiting my reading to a few high-quality newspapers."—***Hans Blix, former chief UN weapons inspector, in new book,*** **Disarming Iraq: The Search for Weapons of Mass Destruction,** ***published March 9.***

Lobotomy Zone

"Profound Reverence for Kim Jong Il Expressed Worldwide."—***North Korean newspaper headline on the dictator's birthday, quoted by*** **Wall Street Journal,** ***Feb. 19.***

Careful of the Cuts

"The US military requires air dominance to fight future wars the way we did in Iraq. We must expect future adversaries that possess improving air defenses to challenge our military. Only the F/A-22—with its stealthiness, supercruise, maneuverability, and advanced avionics—will be able to gain and maintain our dominance of the air. Even the planned Joint Strike Fighter cannot promise this. Saying no to the F/A-22 means having to buy a lot more nonstealthy, older aircraft. That will not save money and could cost lives. Before we cut more defense programs, let's really consider the true costs involved."—***Daniel Goure, Lexington Institute, "Opposing View" column in*** **USA Today,** ***March 4.***

A Shot From Chu ...

"We want to focus attention on those still on active duty, not those who are finished with active duty."—***David S.C. Chu, undersecretary of defense for personnel and readiness, on burden of paying for military retiree benefits, quoted in*** **Air Force Times,** ***March 15.***

... Draws Return Fire

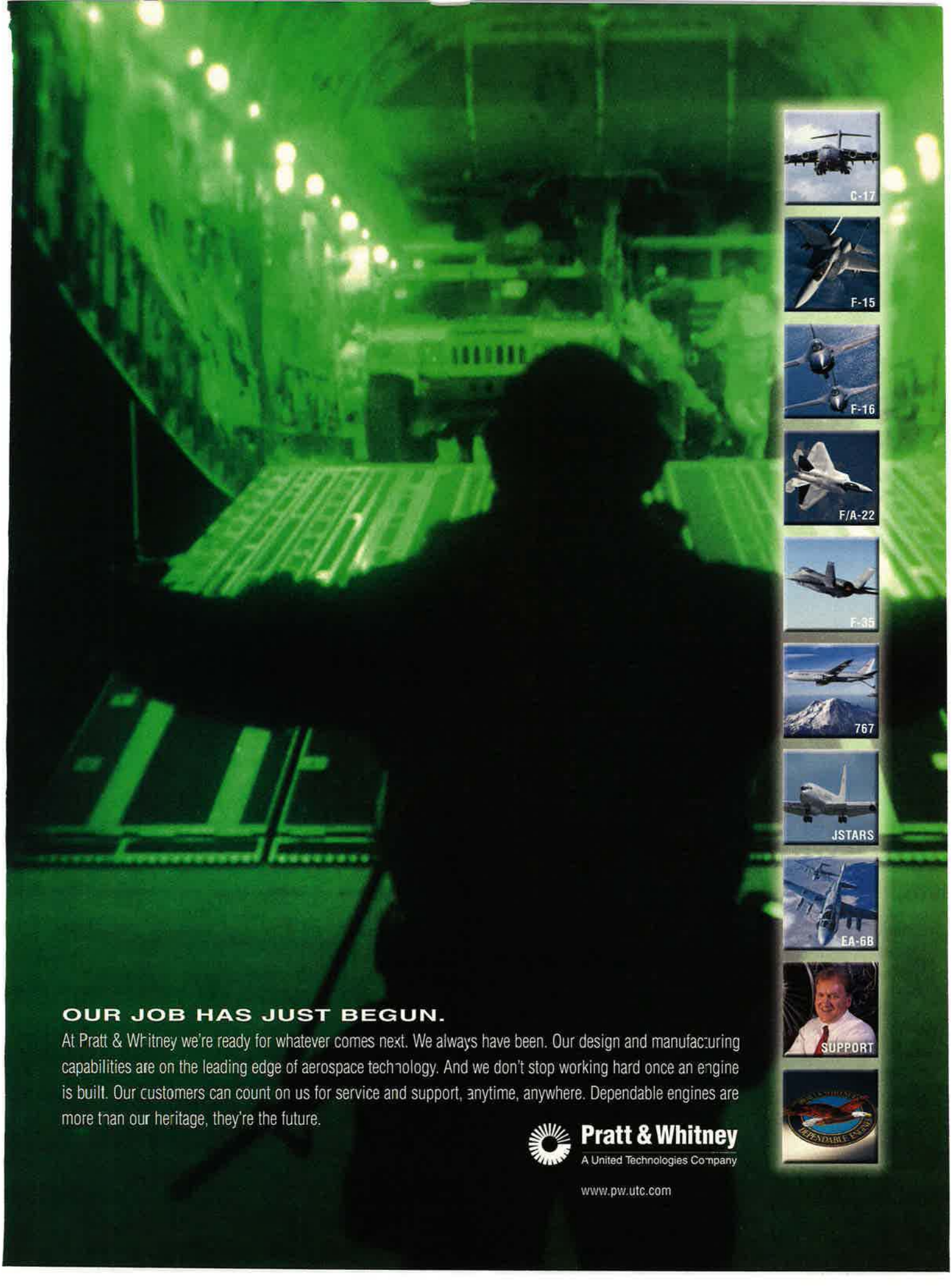
"We are fed up with defense and budget leaders whining about the cost of doing the right thing. It seems like they don't see retirees as anything other than a line on the debit sheet. The Department of Defense has been more than willing to extract ever-increasing sacrifices from military people for decades. Now, they want to act like they don't have an obligation to treat them fairly in retirement."—***Steve Strobridge, Military Officers Association of America,*** **Air Force Times,** ***March 15.***

Clarity From the Commission

"It is clear that using force is not the answer to resolving the conflict with terrorists."—***European Commission President Romano Prodi,*** **Washington Post,** ***March 16.***

New Attacks Threatened

"We remind Bush that he did not crush two-thirds of al Qaeda. ... Bush, fortify your defenses and intensify your security measures, because the Muslim nation which sent brigades to New York and Washington has decided to send you one brigade after another, carrying death and seeking paradise."—***Ayman al-Zawahiri, top lieutenant to Osama bin Laden, recording broadcast on al Jazeera, quoted by*** **New York Times,** ***Feb. 25.***



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USAF Almanac

AP photo by Robert A. Martin

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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

AP photo by Ron Winn

Edited by Tamar A. Mehuron, Associate Editor

The Air Force in Facts and Figures

2004 USAF Almanac

Structure of the Force

How the Air Force Is Organized

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

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

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

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

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

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

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

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

The Air and Space Expeditionary Force

To relieve chronic optempo problems stemming from back-to-back deployments and operations, the Air Force developed an expeditionary concept called the Expeditionary Aerospace Force **(EAF).** The term EAF has since been supplanted by the term Air and Space Expeditionary Force **(AEF),** which refers to the concept as well as its basic organizational element. USAF groups its power projection and support forces into 10 AEF "buckets of capability." The 10 AEFs are grouped into five pairs. These five pairs of AEFs rotate through a 15-month cycle, with each pair assigned to one of five 90-day periods. During each 90-day period, a designated pair of AEFs is vulnerable to deployment. Each AEF comprises combat air forces **(CAF),** mobility air forces **(MAF),** and low-density, high-demand **(LD/HD)** forces consisting of various active duty, ANG, and AFRC units.

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

The AEF system also features on-call units that can provide additional capability on short notice to support any of the 10 AEFs. Many of the LD/HD forces appear in both rotational and on-call listings.

The current AEF system began with Cycle 1 in October 1999. USAF has completed two cycles since then. Cycle 4, which began June 1, 2003, included two temporary stopgap AEFs, designated AEF Blue (June 1-Oct. 31, 2003) and AEF Silver (Nov. 1, 2003-Feb. 29, 2004), formed in the wake of Operation Iraqi Freedom. They mostly comprised forces not used in the war. During the Blue and Silver deployments, USAF was able to reconstitute its wartime forces for return to the standard 90-day rotation cycle.

AEF The Air and Space Expeditionary Force

AEF Cycle 4: June 1, 2003-Aug. 31, 2004

AEF Rotational Combat Air Forces (Scheduled)

	June 1, 2003-Aug. 31, 2003		Sept. 1, 2003-Nov. 30, 2003		Dec. 1, 2003-Feb. 29, 2004		March 1, 2004-May 31, 2004		June 1, 2004-Aug. 31, 2004	
	AEF 1	**AEF 2**	**AEF 3**	**AEF 4**	**AEF 5**	**AEF 6**	**AEF 7**	**AEF 8**	**AEF 9**	**AEF 10**
Active	12th FS 79th FS 81st FS 335th FS 421st FS	9th BS 23rd FS 58th FS 90th FS	19th FS 34th FS 75th FS 77th FS 96th BS	493rd FS 494th FS 523rd FS 524th FS	13th FS 23rd BS 44th FS 74th FS 390th FS 391st FS 510th FS	27th FS 78th FS	14th FS 67th FS 354th FS 492nd FS 555th FS	37th BS 94th FS 522nd FS	18th FS 22nd FS 60th FS 355th FS	4th FS 71st FS 77th BS 336th FS 389th FS
ANG	102nd FW 131st FW 159th FW	115th FW 150th FW 183rd FW	113th Wing 144th FW 174th FW 192nd FW	169th FW		103rd FW 111th FW 119th FW 132nd FW 138th FW 147th FW 148th FW 175th Wing 180th FW 188th FW		104th FW 110th FW 114th FW 124th Wing 127th Wing 181st FW	122nd FW 158th FW 177th FW	120th FW 125th FW 140th Wing 142nd FW 154th Wing 187th FW
AFRC		442nd FW 926th FW	917th Wing					301st FW 419th FW 482nd FW		
Aircraft	A-10 F-15A/C F-15E F-16CG F-16CJ	A-10 B-1B F-15A/C F-15E F-16C F-16CJ	A-10 B-52 F-15A/C F-16C F-16CG F-16CJ	F-15A/C F-15E F-16C F-16CG F-16CJ	A-10 B-52 F-15A/C F-15E F-16CG F-16CJ	A-10 F-15A/C F-16A/C F-16CG F-16CJ	A-10 F-15A/C F-15E F-16CG F-16CJ	A-10 B-1B F-15A/C F-16C F-16CG F-16CJ	A-10 F-15A/C F-16C F-16CG F-16CJ	B-1B F-15A/C F-15E F-16C F-16CG F-16CJ

AEF On-Call Forces

	Combat Air Forces		Mobility Air Forces		LD/HD Forces	
	Unit	**Aircraft**	**Unit**	**Aircraft**	**Unit**	**Aircraft**
Active	8th FS	F-117	60th AMW	KC-10/C-5	41st RQS	HH-60
	9th FS	F-117	62nd AMW	C-17	55th Wing	RC-135
	20th BS	B-52	305th AMW	KC-10/C-141	57th Wing	RQ-1
	25th FS	A-10	436th AW	C-5	71st RQS	HC-130
	35th FS	F-16C	437th AW	C-17	93rd ACW	E-8
	36th FS	F-16CG			355th Wing	EC-130
	80th FS	F-16C			552nd ACW	E-3
	325th BS	B-2				
	393rd BS	B-2				
ANG			137th AS	C-5		
			155th AS	C-141		
			183rd AS	C-141		
AFRC			68th AS	C-5		
			337th AS	C-5		
			445th AMW	C-141		
			452nd AMW	C-141		
			756th AS	C-141		

AEF Cycles Through the Years

Number	Dates
Cycle 1	Oct. 1, 1999-Nov. 31, 2000
Cycle 2	Dec. 1, 2000-Feb. 28, 2002
Cycle 3	March 1, 2003-May 31, 2003

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AEF Rotational Mobility Air Forces (Scheduled)

	June 1, 2003-Aug. 31, 2003		Sept. 1, 2003-Nov. 30, 2003		Dec. 1, 2003-Feb. 29, 2004		March 1, 2004-May 31, 2004		June 1, 2004-Aug. 31, 2004	
	AEF 1	AEF 2	AEF 3	AEF 4	AEF 5	AEF 6	AEF 7	AEF 8	AEF 9	AEF 10
Active	41st AS 96th ARS 99th ARS 905th ARS 906th ARS	41st AS 61st AS 92nd ARS 344th ARS 350th ARS	39th AS 91st ARS 97th ARS 384th ARS 912th ARS	39th AS 93rd ARS 349th ARS 911th ARS	50th AS 92nd ARS 96th ARS 99th ARS 905th ARS	50th AS 61st AS 91st ARS 344th ARS 350th ARS 906th ARS	2nd AS 93rd ARS 97th ARS 912th ARS	2nd AS 61st AS 91st ARS 349th ARS 384th ARS 911th ARS	40th AS 92nd ARS 96th ARS 906th ARS	40th AS 61st AS 99th ARS 344th ARS 350th ARS 905th ARS
ANG	116th ARS 117th ARS 147th ARS 165th AS 173rd ARS	106th ARS 108th ARS 109th AS 126th ARS 136th ARS 146th ARS 151st ARS 153rd ARS 156th AS 164th AS 197th ARS	115th AS 116th ARS 150th ARS	61st AS 106th ARS 141st ARS 143rd AS 181st AS 185th AS 198th AS	126th ARS 133rd ARS 136th ARS 145th ARS 151st ARS 153rd ARS 166th ARS	108nd ARS 142nd AS 146th ARS 147th ARS 150th ARS 158th AS 169th AS 192nd AS	171st AS 189th AS 191st ARS	141st ARS 167th AS 187th AS	105th AS 132nd ARS 133rd ARS 147th ARS 166th ARS 196th ARS	130th AS 141st ARS 144th AS 145th ARS 146th ARS 150th ARS 173rd ARS 180th AS 191st ARS 197th ARS 204th AS
AFRC		731st AS	336th ARS	77th ARS 357th AS 465th ARS 757th AS	327th AS 773rd AS	327th AS	63rd ARS 72nd ARS	95th AS 314th ARS 758th AS		96th AS 328th AS
Aircraft	C-130E C-130H KC-135E KC-135R	C-130E C-130H KC-135E KC-135R KC-135T	C-130E C-130H KC-135E KC-135R	C-130E C-130E/J C-130H KC-135E KC-135R KC-135T	C-130E C-130H KC-135E KC-135R KC-135T	C-130E C-130H KC-135E KC-135R	C-130E KC-135E KC-135R KC-135T	C-130E C-130H KC-135E KC-135R	C-130H KC-135E KC-135R KC-135T	C-130E C-130H KC-135E KC-135R

AEF Rotational Low-Density, High-Demand Forces (Scheduled)

	June 1, 2003-Aug. 31, 2003		Sept. 1, 2003-Nov. 30, 2003		Dec. 1, 2003-Feb. 29, 2004		March 1, 2004-May 31, 2004		June 1, 2004-Aug. 31, 2004	
	AEF 1	AEF 2	AEF 3	AEF 4	AEF 5	AEF 6	AEF 7	AEF 8	AEF 9	AEF 10
Active	11th RS 12th ACCS 38th RS 41st ECS 41st RQS 71st RQS 99th RS 728th ACS 965th AACS	15th RS 16th ACCS 38th RS 43rd ECS 66th RQS 99th RS 960th AACS	11th RS 12th ACCS 38th RS 41st ECS 41st RQS 71st RQS 99th RS 726th ACS 962th AACS	15th RS 16th ACCS 38th RS 43rd ECS 66th RQS 99th RS 963rd AACS	11th RS 12th ACCS 38th RS 41st ECS 41st RQS 71st RQS 99th RS 603rd ACS 964th AACS	15th RS 16th ACCS 38th RS 43rd ECS 99th RS 965th AACS	11th RS 12th ACCS 38th RS 41st ECS 41st RQS 71st RQS 99th RS 729th ACS 961st AACS	15th RS 16th ACCS 38th RS 43rd ECS 99th RS 960th AACS	11th RS 12th ACCS 38th RS 41st ECS 41st RQS 71st RQS 99th RS 606th ACS 963rd AACS	15th RS 16th ACCS 38th RS 43rd ECS 66th RQS 99th RS 965th AACS
ANG					109th ACS			102nd RQS 129th RQS 210th ARS	123rd ACS	
AFRC						39th RQS 301st RQS 305th RQS		970th AACS		
Aircraft	E-3B/C E-8 EC-130H HC-130 HH-60 RC-135V/W RQ-1 U-2	E-3B/C E-8 EC-130H HH-60 RC-135V/W RQ-1 U-2	E-3B/C E-8 EC-130H HC-130 HH-60 RC-135V/W RQ-1 U-2	E-3B/C E-8 EC-130H HH-60 RC-135V/W RQ-1 U-2	E-3B/C E-8 EC-130H HC-130 HH-60 RC-135V/W RQ-1 U-2	E-3B/C E-8 EC-130H HC-130 HH-60 RC-135V/W RQ-1 U-2	E-3B/C E-8 EC-130H HC-130 HH-60 RC-135V/W RQ-1 U-2	E-3B/C E-8 EC-130H HC-130 HH-60 RC-135V/W RQ-1 U-2	E-3B/C E-8 EC-130H HC-130 HH-60 RC-135V/W RQ-1 U-2	E-3B/C E-8 EC-130H HH-60 RC-135V/W RQ-1 U-2

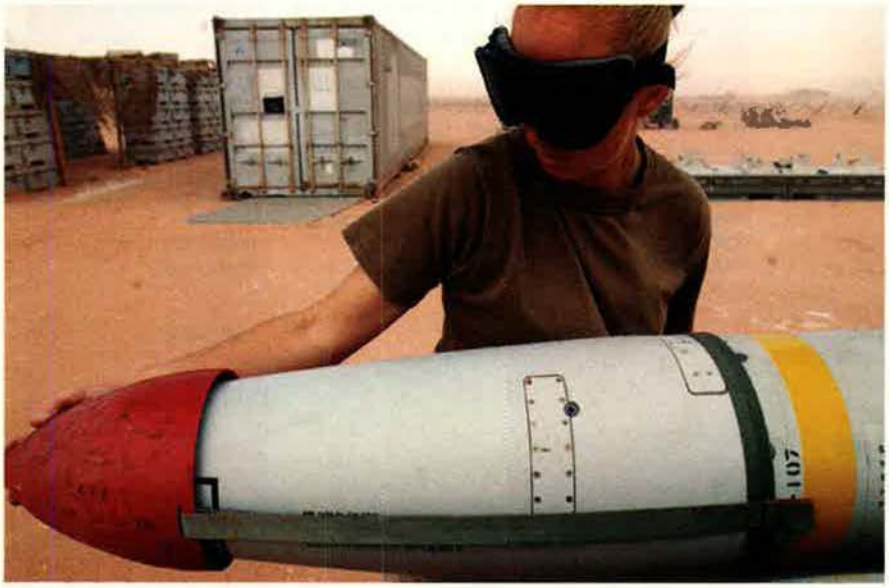
AEF Rotation Cycle, Expeditionary Combat Support Forces

	June 1, 2003-Aug. 31, 2003		Sept. 1, 2003-Nov. 30, 2003		Dec. 1, 2003-Feb. 29, 2004		March 1, 2004-May 31, 2004		June 1, 2004-Aug. 31, 2004	
	AEF 1	**AEF 2**	**AEF 3**	**AEF 4**	**AEF 5**	**AEF 6**	**AEF 7**	**AEF 8**	**AEF 9**	**AEF 10**
Active	3rd Wing 10th ABW 20th FW 21st SW 42nd ABW 43rd AW 81st TW 347th RW 436th AW 437th AW ESC OK-ALC WR-ALC	4th FW 6th ARW 7th BW 14th FTW 33rd FW 36th ABW 45th SW 47th FTW 52nd FW 56th FW 82nd TW 86th AW 97th AMW 305th AMW 375th AW	2nd BW 9th RW 12th FTW 16th SOW 17th TW 30th SW 35th FW 60th AMW 90th SW 92nd ARW 354th FW 355th Wing 374th AW 388th FW 460th ABW AFFTC	27th FW 28th BW 48th FW 49th FW 50th SW 55th Wing 62nd AW 89th AW 99th ABW 169th FW 311th HSW 319th ARW 325th FW 509th BW AEDC SMC	5th BW 11th Wing 15th ABW 18th FW 22nd ARW 31st FW 47th FTW 56th FW 341st SW 366th FW 377th ABW 436th AW	1st FW 6th ARW 10th ABW 20th FW 37th TW 42nd ABW 71st FTW 100th ARW 305th AMW 314th AW 375th AW 437th Wing ASC ESC WR-ALC	3rd FW 4th FW 30th SW 35th FW 36th ABW 43rd AW 45th SW 48th FW 52nd FW 62nd AW 86th AW 99th ABW 347th RW 355th FW 388th FW AFFTC SMC	7th BW 14th FTW 16th SOW 21st SW 27th FW 28th BW 33rd FW 50th SW 60th AMW 81st TW 82nd TW 97th AMW 319th ARW 460th ABW 552nd ACW AEDC	2nd BW 11th Wing 12th FTW 17th TW 22nd ARW 31st FW 49th FW 55th Wing 100th ARW 311th HSW 314th AW 325th FW 354th FW 366th FW 374th AW 377th ABW ASC	1st FW 5th BW 9th RW 15th ABW 18th FW 37th TW 71st FTW 89th AW 90th SW 92nd ARW 341st SW 509th BW
ANG	117th ARW 164th AW 172nd AW	115th FW 123rd AW 131st FW 133rd AW 145th AW 150th FW 159th FW 178th FW 179th AW	108th ARW 109th AW 113th Wing 126th ARW 151st ARW 174th FW 189th AW 192nd FW	137th AW 143rd AW 144th FW 146th FW 162nd FW 173rd FW 178th FW 301st FW	101st ARW 105th AW 116th ACW 134th ARW 152nd AW 161st ARW 171st ARW 184th BW 190th ARW	103rd FW 111th FW 119th FW 129th RW 132nd FW 138th FW 147th FW 148th FW 165th AW 166th AW 175th Wing 180th FW 182nd AW 188th FW	124th Wing 141st ARW 157th ARW 168th ARW	102nd FW 106th RQW 110th FW 114th FW 127th Wing 130th AW 149th FW 153rd AW 156th AW 181st FW 185th FW	107th ARW 121st ARW 128th ARW 155th ARW 163rd ARW 186th ARW	118th AW 120th FW 122nd FW 125th FW 130th AW 139th AW 140th Wing 142nd FW 154th Wing 158th FW 176th Wing 177th FW 187th FW 193rd SOW
AFRC	433rd AW 439th AW 512th AW 919th SOW	315th AW 442nd FW 926th FW 932nd AW	452nd AMW 908th AW 911th AW	184th BW 507th ARW 917th Wing	94th AW 445th AW 934th AW 939th ARW	45th SW 302nd AW 355th Wing 914th AW	301st FW 434th ARW 482nd FW 927th ARW 944th FW	9th RW 403rd Wing 419th FW 910th AW 927th ARW	349th AMW 440th AW 446th AW 459th AW	514th AMW 913th AW

Note: USAF draws expeditionary combat support (ECS) personnel from the units listed here. ECS forces include communicators, contracting personnel, engineers, logisticians, medics, security forces, services, and others needed to establish air expeditionary force locations anywhere in the world.

Acronyms

AACS	Airborne Air Control Squadron
ABW	Air Base Wing
ACS	Air Control Squadron
ACCS	Airborne Command & Control Sq.
ACW	Air Control Wing
AEDC	Arnold Engineering Development Center
AFFTC	Air Force Flight Test Center
ALC	Air Logistics Center
AMW	Air Mobility Wing
ARS	Air Refueling Squadron
ARW	Air Refueling Wing
AS	Airlift Squadron
ASC	Aeronautical Systems Center
AW	Airlift Wing
BS	Bomb Squadron
BW	Bomb Wing
ECS	Electronic Combat Squadron
ECS	Expeditionary Combat Support
ESC	Electronic Systems Center
FS	Fighter Squadron
FTW	Flying Training Wing
FW	Fighter Wing
HSW	Human Systems Wing
LD/HD	Low Density, High Demand
RS	Reconnaissance Squadron
RQS	Rescue Squadron
RQW	Rescue Wing
RW	Reconnaissance Wing
SMC	Space & Missile Systems Center
SOW	Special Operations Wing
SW	Space Wing
TW	Training Wing



USAF photo by SSgt. Matthew Hannen

SrA. Lisa Jones, 363rd Expeditionary Equipment Maintenance Squadron, places a protective cover on the tip of a missile that is being prepared for use during Operation Iraqi Freedom.

US101

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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	Aug. 11, 2003
Gen. T. Michael Moseley	Aug. 12, 2003	

Chief Master Sergeants of the Air Force

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

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	Aug. 22, 2003
Gen. Gregory S. Martin	Aug. 22, 2003	

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 A. Brubaker (acting)	Dec. 3, 2001	June 3, 2002
Lt. Gen. Daniel James III	June 3, 2002	

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. W.L. Creech	May 1, 1978	Nov. 1, 1984
Gen. Jerome F. O'Malley	Nov. 1, 1984	April 20, 1985
Gen. Robert D. Russ	May 22, 1985	March 26, 1991
Gen. John Michael Loh	March 27, 1991	June 1, 1992

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

US Air Forces in Europe

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

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	June 1, 2003
Lt. Gen. John W. Rosa Jr.	June 1, 2003	

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	July 7, 2003
Gen. John Abizaid, USA	July 7, 2003	

US European Command

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

US Joint Forces Command

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

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

US Northern Command

Gen. Ralph E. Eberhart, USAF	Oct. 1, 2002

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	May 2, 2002
Adm. Thomas B. Fargo, USN	May 2, 2002	

US Southern Command

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

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

US Space Command

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

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

US Special Operations Command

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

US Strategic Command

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

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

US Transportation Command

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

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	

People

2004 USAF Almanac

USAF Total Force

(As of Sept. 30, 2003)

	FY98	FY99	FY00	FY01	FY02	FY03	FY04
Air Force active duty							
Officers	71,892	70,318	69,023	68,862	72,032	73,758	69,500
Enlisted	291,590	286,169	282,356	280,410	292,061	297,219	285,800
Cadets	3,988	4,103	4,275	4,299	4,158	4,085	4,000
Total Air Force active duty	**367,470**	**360,590**	**355,654**	**353,571**	**368,251**	**375,062**	**359,300**
Career re-enlistments (second term)	31,300	30,392	32,042	30,380	34,093	31,026	30,000
Rate	85%	84%	84%	84%	88%*	90%*	85%
First-term re-enlistments	10,400	8,196	9,917	10,485	10,666	8,232	9,000
Rate	54%	49%	52%	56%	72%*	61%*	55%
Civilian personnel							
Direct hire (excluding technicians)	133,332	126,685	122,312	121,321	124,392	129,358	128,195
ANG	23,388	22,892	22,781	24,228	24,109	20,718	24,405
Technicians: AFRC	9,376	9,470	9,583	9,871	8,480	8,041	9,991
Indirect hire—foreign nationals	6,749	6,693	6,508	6,450	6,331	6,416	6,171
Total civilian personnel	**172,845**	**165,740**	**161,184**	**161,870**	**163,312**	**164,533**	**168,762**
Guard and Reserve							
Air National Guard, Selected Reserve	108,096	105,715	106,365	108,485	112,075	108,137	107,030
AFRC, Selected Reserve	71,970	71,772	72,340	74,869	76,632	74,754	75,800
AFRC, Individual Ready Reserve	56,459	54,271	50,304	47,940	41,095	36,665	48,000
Total Ready Reserve	**236,525**	**231,758**	**229,009**	**231,294**	**229,802**	**219,556**	**230,830**
Standby	16,042	17,129	16,429	17,826	17,430	17,587	18,000
Total Guard and Reserve	**252,567**	**248,887**	**245,438**	**249,120**	**247,232**	**237,143**	**248,830**

FYs 1998-2003 are actual figures; FY 2004 is an estimate. *FY02 and FY03 rates higher due to Stop-Loss.

Armed Forces Manpower Trends, End Strength in Thousands

(As of Sept. 30, 2003)

	FY98	FY99	FY00	FY01	FY02	FY03	FY04
Active duty military							
Air Force	368	361	356	354	368	375	359
Army	484	479	482	481	487	499	482
Marine Corps	173	173	173	173	174	178	175
Navy	382	373	373	378	383	382	374
Total	**1,407**	**1,386**	**1,384**	**1,386**	**1,412**	**1,434**	**1,390**
Selected Guard and Reserve							
Air National Guard	108	106	106	109	112	108	107
AFRC	72	72	72	75	77	75	76
Army National Guard	362	358	353	352	351	351	350
Army Reserve	205	207	207	206	207	212	205
Marine Corps Reserve	41	40	40	40	40	41	40
Naval Reserve	93	89	87	88	88	88	86
Total	**881**	**872**	**865**	**870**	**875**	**875**	**864**
Direct-hire civilian (full-time equivalents)							
Air Force	166	160	155	155	154	149	149
Army	239	232	230	229	231	226	226
Navy/Marine Corps	196	190	185	183	185	182	181
Defense agencies	116	110	107	104	101	86	86
Total	**717**	**692**	**677**	**671**	**671**	**643**	**642**

FY04 numbers are estimates.

USAF Educational Levels

(As of Dec. 31, 2003)

	Number	Percent
Enlisted		
High school	24,841	8.3
Some college (< 2 years)	218,466	73.0
AA/AS degree or equivalent hours	41,598	13.9
Bachelor's degree	12,569	4.2
Master's degree	1,795	0.6
Total	**299,269**	**100**
Officers		
Bachelor's degree	36,884	50.5
Master's degree	28,995	39.7
Doctoral degree	1,022	1.4
Professional degree	6,135	8.4
Total	**73,036**	**100**

Does not include 4,085 cadets.

USAF Marital Status

(As of Dec. 31, 2003)

Total percent married	58.4
Percent of enlisted	55.3
Percent of officers	71.0
Number of USAF couples	20,786
Number married to members of other services	1,410

Air Force Personnel Strength

(As of Sept. 30, 2003)

Year	Strength	Year	Strength	Year	Strength
1907	3	1940	51,165	1973	690,999
1908	13	1941	152,125	1974	643,795
1909	27	1942	764,415	1975	612,551
1910	11	1943	2,197,114	1976	585,207
1911	23	1944	2,372,292	1977	570,479
1912	51	1945	2,282,259	1978	569,491
1913	114	1946	455,515	1979	559,450
1914	122	1947	305,827	1980	557,969
1915	208	1948	387,730	1981	570,302
1916	311	1949	419,347	1982	582,845
1917	1,218	1950	411,277	1983	592,044
1918	195,023	1951	788,381	1984	597,125
1919	25,603	1952	973,474	1985	601,515
1920	9,050	1953	977,593	1986	608,199
1921	11,649	1954	947,918	1987	607,035
1922	9,642	1955	959,946	1988	576,446
1923	9,441	1956	909,958	1989	570,880
1924	10,547	1957	919,835	1990	535,233
1925	9,670	1958	871,156	1991	510,432
1926	9,674	1959	840,028	1992	470,315
1927	10,078	1960	814,213	1993	444,351
1928	10,549	1961	820,490	1994	426,327
1929	12,131	1962	883,330	1995	400,409
1930	13,531	1963	868,644	1996	389,001
1931	14,780	1964	855,802	1997	377,385
1932	15,028	1965	823,633	1998	367,470
1933	15,099	1966	886,350	1999	360,590
1934	15,861	1967	897,426	2000	355,654
1935	16,247	1968	904,759	2001	353,571
1936	17,233	1969	862,062	2002	368,251
1937	19,147	1970	791,078	2003	375,062
1938	21,089	1971	755,107	2004	359,300
1939	23,455	1972	725,635		

2004 number is an estimate.

Active Duty Force Demographics

(As of Sept. 30, 2003)

Grade	Total	Blacks	Women	Other Minorities
Officers				
General	274	12	13	0
Colonel	3,789	218	448	20
Lieutenant Colonel	10,683	617	1,364	94
Major	16,007	956	2,436	276
Captain	22,670	1,607	4,742	707
First Lieutenant	9,636	770	2,088	268
Second Lieutenant	10,699	778	2,388	365
Total	**73,758**	**4,958**	**13,479**	**1,730**
Enlisted				
Chief Master Sergeant of the Air Force	1			
Chief Master Sergeant	2,856	494	330	19
Senior Master Sergeant	5,718	1,128	617	57
Master Sergeant	30,362	6,228	3,396	397
Technical Sergeant	46,000	8,499	6,521	692
Staff Sergeant	75,806	13,107	16,509	1,678
Sergeant/Senior Airman	52,477	10,008	12,411	1,377
Airman First Class	57,963	9,420	12,632	2,791
Airman	12,124	1,846	3,853	622
Airman Basic	13,912	2,118	3,066	715
Total	**297,219**	**52,848**	**59,335**	**8,348**
Total personnel	**370,977**	**57,806**	**72,814**	**10,078**

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

Total does not include 4,085 cadets.

The Civilian Force

(As of Sept. 30, 2003)

General Schedule/ Other

Grade	Force
1	47
2	143
3	689
4	2,816
5	8,284
6	5,706
7	8,299
8	1,119
9	12,192
10	621
11	15,657
12	16,714
13	9,442
14	2,814
15	962
16	0
17	0
18	0
ST[a]	0
SES[b]	161
Other	0
Total	**85,666**

Wage Grade

Grade	Force
1	21
2	262
3	354
4	188
5	1,183
6	936
7	1,781
8	3,394
9	2,931
10	11,683
11	3,084
12	1,442
13	203
14	40
15	2
16	0
17	0
18	0
Total	**27,504**

Wage Grade Leader

Grade	Force
1	0
2	10
3	5
4	4
5	21
6	26
7	47
8	101
9	221
10	695
11	151
12	62
13	6
14	0
15	1
16	0
17	0
18	0
Total	**1,350**

Wage Grade Supervisory

Grade	Force
1	21
2	16
3	20
4	21
5	49
6	92
7	107
8	191
9	699
10	971
11	396
12	204
13	138
14	169
15	90
16	37
17	27
18	16
Total	**3,264**

Air Force Civilian Personnel: Average Age and Length of Service

General schedule	**47**
Federal wage system	**46**
Average age	**47**
Average length of service (overall)	**17.4 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, 2003)

	Military	Civilian	Total
Major commands			
Air Combat Command (ACC)	93,115	9,690	102,805
Air Education and Training Command (AETC)	71,666	14,712	86,378
Air Force Materiel Command (AFMC)	23,377	56,497	79,874
Air Force Reserve Command (AFRC)	400	13,191	13,591
Air Force Space Command (AFSPC)	19,523	6,471	25,994
Air Force Special Operations Command (AFSOC)	9,407	743	10,150
Air Mobility Command (AMC)	53,083	8,727	61,810
Pacific Air Forces (PACAF)	34,095	8,464	42,559
United States Air Forces in Europe (USAFE)	29,278	5,817	35,095
Total major commands	**333,944**	**124,312**	**458,256**
Field Operating Agencies (FOAs)			
Air Force Agency for Modeling and Simulation	18	16	34
Air Force Audit Agency	0	817	817
Air Force Center for Environmental Excellence	38	365	403
Air Force Civil Engineer Support Agency	90	116	206
Air Force C2ISR Center*	265	54	319
Air Force Communications Agency	235	296	531
Air Force Cost Analysis Agency	23	34	57
Air Force Flight Standards Agency	122	40	162
Air Force Frequency Management Agency	10	18	28
Air Force Historical Research Agency	12	79	91
Air Force Inspection Agency	107	17	124
Air Force Legal Services Agency	371	111	482
Air Force Logistics Management Agency	57	23	80
Air Force Manpower Agency	121	83	204
Air Force Medical Operations Agency	102	50	152
Air Force Medical Support Agency	91	41	132
AFNSEPA*	18	4	22
Air Force News Agency	296	87	383
AFNWCA*	12	15	27
Air Force Office of Special Investigations	1,516	558	2,074
Air Force Operations Group	87	5	92
Air Force Pentagon Communications Agency	393	207	600
Air Force Personnel Center	906	991	1,897
Air Force Personnel Operations Agency	30	4	34
Air Force Program Executive Office	30	10	40
Air Force Real Property Agency	0	198	198
Air Force Review Boards Agency	12	44	56
Air Force Safety Center	63	48	111
Air Force Security Forces Center	325	13	338
Air Force Services Agency	91	172	263
Air Force Technical Applications Center	543	0	543
Air Force Weather Agency	555	200	755
Air Intelligence Agency	9,689	2,017	11,706
Air National Guard Readiness Center	129	456	585
Total FOAs	**16,357**	**7,189**	**23,546**
Direct Reporting Units (DRUs)			
Air Force Doctrine Center	69	17	86
Air Force Operational Test and Evaluation Center	549	206	755
Air Force Studies and Analyses Agency	69	25	94
United States Air Force Academy	2,686	1,387	4,073
11th Wing	1,780	806	2,586
Total DRUs	**5,153**	**2,441**	**7,594**
Other			
Other units	15,523	30,591	46,114
USAFA cadets	4,085	0	4,085
Total for all categories	**375,062**	**164,533**	**539,595**

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

USAF Personnel by Geographic Area

(As of Sept. 30, 2003)

Total military personnel	**375,062**
US territory and special locations	**300,383**
Total in foreign countries	**74,679**
Western and southern Europe	**35,568**
Germany	16,208
UK	9,866
Italy	4,626
Turkey	1,669
Spain	297
All other countries	2,902
East Asia and Pacific	**24,094**
Japan/Okinawa	14,319
South Korea	9,600
All other countries	175
Africa, Near East, South Asia	**4,722**
Saudi Arabia	637
Egypt	52
All other countries	4,033
Western hemisphere	**351**
Canada	81
All other countries	270
Other areas	**9,944**

Active Duty Force by Grade

(As of Sept. 30, 2003)

Grade	Number
Officers	
General	13
Lieutenant General	39
Major General	83
Brigadier General	139
Colonel	3,789
Lieutenant Colonel	10,683
Major	16,007
Captain	22,670
First Lieutenant	9,636
Second Lieutenant	10,699
Total	**73,758**
Cadets	4,085
Enlisted	
Chief Master Sergeant of the Air Force	1
Chief Master Sergeant	2,856
Senior Master Sergeant	5,718
Master Sergeant	30,362
Technical Sergeant	46,000
Staff Sergeant	75,806
Sergeant/Senior Airman	52,477
Airman First Class	57,963
Airman	12,124
Airman Basic	13,912
Total	**297,219**
Total strength	**375,062**

Specialties in the Enlisted Force

(As of Sept. 30, 2003)

Code	Career Field	Assigned	Percent
1A	Aircrew Operations	8,133	2.7
1C	Command Control Systems Operations	13,113	4.4
1N	Intelligence	10,412	3.5
1S	Safety	370	0.1
1T	Aircrew Protection	2,796	0.9
1W	Weather	2,467	0.8
2A	Manned Aerospace Maintenance	65,427	22.0
2E	Communications–Electronics Systems	12,432	4.2
2F	Fuels	4,515	1.5
2G	Logistics Plans	703	0.2
2M	Missile & Space Systems Maintenance	2,613	0.9
2P	Precision Measurement	1,052	0.4
2R	Maintenance Management Systems	1,853	0.6
2S	Supply	9,967	3.4
2T	Transportation & Vehicle Maintenance	13,193	4.4
2W	Munitions & Weapons	16,315	5.5
3A	Information Management	10,314	3.5
3C	Communications–Computer Systems	15,371	5.2
3E	Civil Engineering	21,023	7.1
3H	Historian	106	0.0
3M	Morale, Welfare, Recreation, & Services	4,557	1.5
3N	Public Affairs	1,546	0.5
3P	Security Forces	23,651	8.0
3S	Mission Support	8,622	2.9
3U	Manpower	635	0.2
3V	Visual Information	1,293	0.4
4A–V	Medical	20,281	6.8
4Y	Dental	2,629	0.9
5J	Paralegal	956	0.3
5R	Chapel Services Support	483	0.2
6C	Contracting	1,293	0.4
6F	Financial	3,357	1.1
7S	Special Investigation	782	0.3
8	Special Duty Identifiers	7,111	2.4
9	Reporting Identifiers	7,466	2.5
	Unassigned	382	0.1
	Total	**297,219**	**100**

Percentages have been rounded.

Specialties in the Officer Force

(As of Sept. 30, 2003)

Code	Utilization Field Title	Assigned	Percent
X0	Commander & Director	772	1.0
11	Pilot	12,014	16.3
12	Navigator	4,014	5.4
13	Space, Missile, Command & Control	5,128	7.0
14	Intelligence	2,999	4.1
15	Weather	717	1.0
16	Operations Support	1,374	1.9
21	Aircraft Maintenance & Munitions	4,447	6.0
31	Security Forces	936	1.3
32	Civil Engineering	1,399	1.9
33	Communications–Computer Systems	4,430	6.0
34	MWR & Services	604	0.8
35	Public Affairs	496	0.7
36	Personnel	1,806	2.4
38	Manpower	396	0.5
4X	Medical	11,832	16.0
51	Law	1,339	1.8
52	Chaplain	610	0.8
61	Scientific/Research	907	1.2
62	Developmental Engineering	2,435	3.3
63	Acquisition	2,935	4.0
64	Contracting	998	1.4
65	Financial	962	1.3
71	Special Investigations	420	0.6
8X	Special Duty Identifiers	1,754	2.4
9X	Reporting Identifiers	6,426	8.7
	Other	1,608	2.2
	Total	**73,758**	**100**

Total does not include 4,085 cadets. Percentages have been rounded.

USAF photo by SSgt. Suzanne M. Jenkins

SSgt. Richard Panepinto, 1st Expeditionary RED HORSE Group, grinds down a weld on a roll-up door at a forward deployed location in Southwest Asia. RED HORSE units provide USAF with a mobile civil engineer response force at operating locations worldwide.

Budgets 2004 USAF Almanac

Terms Explained

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

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

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

Air Force Budget—A 10-Year Perspective

(Budget authority in millions of current and constant FY05 dollars)

Current dollars	**FY95**	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**
Military personnel	$19,602	$19,309	$19,186	$19,111	$19,357	$20,217	$20,956	$24,751	$28,732	$29,844
Operation & maintenance	24,561	23,519	22,728	25,174	27,107	27,254	29,328	34,364	43,254	38,406
Procurement	16,529	15,558	14,247	15,258	18,434	18,755	22,054	23,229	31,380	32,335
RDT&E	11,787	12,427	14,017	14,265	13,807	14,511	14,297	14,519	18,825	20,294
Military construction	816	1,285	1,567	1,537	862	1,174	1,410	1,806	1,634	1,821
Family housing	1,106	1,124	1,135	1,114	1,082	1,158	1,084	1,374	1,536	1,455
Rev. & mgmt. funds	n/a	n/a	790	234	1,510	434	515	292	31	0
Trust & receipts	-470	-231	-453	-409	-248	-453	-95	-108	-147	-120
Total	**$73,932**	**$72,992**	**$73,216**	**$76,284**	**$81,914**	**$83,050**	**$89,549**	**$100,228**	**$125,245**	**$124,034**
Constant FY05 dollars										
Military personnel	$24,482	$23,414	$22,742	$22,296	$22,097	$22,320	$22,506	$26,163	$29,688	$30,351
Operation & maintenance	30,676	28,519	26,940	29,370	30,944	30,089	31,497	36,324	44,693	39,059
Procurement	20,644	18,866	16,888	17,801	21,043	20,706	23,685	24,544	32,424	32,885
RDT&E	14,722	15,069	16,615	16,643	15,761	16,020	15,354	15,347	19,451	20,639
Military construction	1,019	1,558	1,857	1,793	984	1,296	1,514	1,909	1,688	1,852
Family housing	1,381	1,363	1,345	1,300	1,235	1,278	1,164	1,452	1,587	1,480
Rev. & mgmt. funds	n/a	n/a	936	273	1,724	479	553	309	32	0
Trust & receipts	-587	-280	-537	-477	-281	-500	-102	-114	-152	-122
Total	**$92,340**	**$88,510**	**$86,786**	**$88,998**	**$93,510**	**$91,689**	**$96,171**	**$105,945**	**$129,412**	**$126,143**
Percentage real growth										
Military personnel	5.0	-4.4	-2.9	-2.0	-0.9	1.0	0.8	16.2	13.5	2.2
Operation & maintenance	-2.6	-7.0	-5.5	9.0	5.4	-2.8	4.7	15.3	-23.0	-12.6
Procurement	-9.2	-8.6	-10.5	5.4	18.2	-1.6	14.4	3.7	32.1	1.4
RDT&E	-4.6	2.4	10.3	0.2	-5.3	1.6	-4.2	0.0	26.7	6.1
Military construction	-48.9	52.9	19.2	-3.5	-45.1	31.7	16.8	26.1	-11.6	9.7
Family housing	16.6	-1.3	-1.3	-3.4	-5.0	3.5	-8.9	24.8	9.3	-6.8
Total	**-3.6**	**-4.1**	**-1.9**	**2.5**	**5.1**	**-1.9**	**4.9**	**10.2**	**22.2**	**-2.5**

Numbers do not add due to rounding.

Air Force Major Force Programs

(Total obligation authority in billions of constant FY05 dollars)

	FY95	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**
Forces										
Strategic Forces	$5.9	$5.8	$4.4	$4.9	$9.6	$8.7	$4.2	$4.9	$5.5	$5.6
General-Purpose Forces	19.5	19.2	18.7	19.1	40.9	42.0	23.8	28.2	36.4	34.3
Airlift Forces	10.5	9.8	9.7	10.3	23.4	22.9	11.2	12.9	15.7	13.4
Guard and Reserve Forces	8.5	8.0	7.9	8.4	17.4	17.6	9.1	9.5	10.3	11.1
Special Operations Forces	0.5	0.5	0.5	0.5	0.9	1.0	0.4	0.5	0.5	0.6
Total	**$44.8**	**$43.3**	**$41.2**	**$43.2**	**$92.1**	**$92.1**	**$48.8**	**$56.0**	**$68.4**	**$65.0**
Support										
Intelligence & Communications	$20.9	$21.0	$20.6	$21.4	$43.9	$42.4	$23.0	$24.2	$31.8	$31.8
Research & Development	9.7	9.7	9.2	9.1	16.2	16.8	7.6	7.3	9.0	9.8
Central Supply & Maintenance	5.0	4.6	4.4	4.4	9.7	10.0	5.3	5.3	5.7	5.3
Training, Medical, & Personnel	10.1	9.7	9.2	9.3	18.7	18.9	9.8	11.0	12.3	12.7
Administration & Other	1.6	1.6	1.7	1.6	3.4	3.4	1.8	2.0	2.6	2.1
Total	**$47.3**	**$46.6**	**$45.2**	**$45.9**	**$92.0**	**$91.5**	**$47.5**	**$49.8**	**$61.4**	**$61.7**

Defense Department Budget Topline

(In billions of current and constant FY05 dollars)

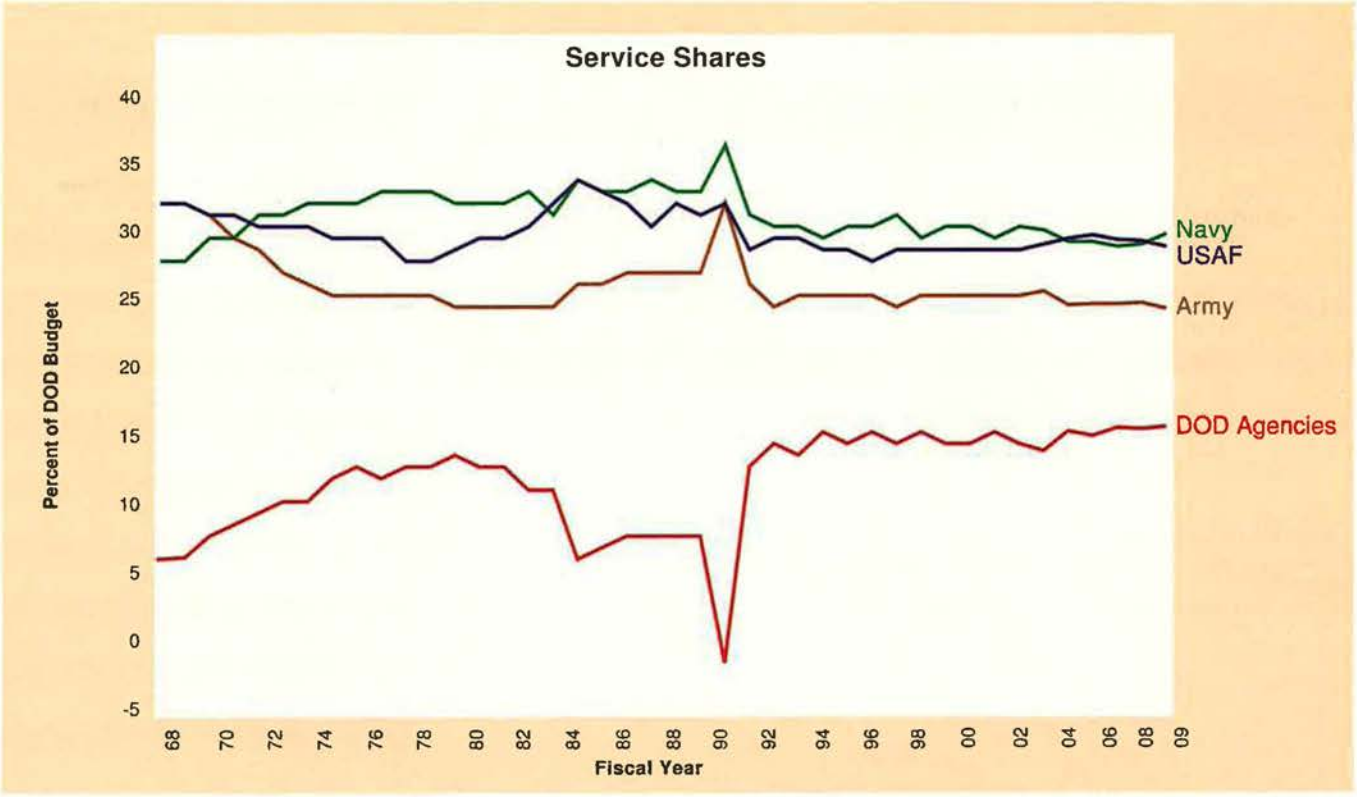
	FY03	FY04	FY05	FY06	FY07	FY08	FY09
Budget authority (current $)	$365.3	$375.3	$401.7	$422.7	$443.9	$465.7	$487.7
Budget authority (constant FY05 $)	$377.5	$381.7	$401.7	$415.5	$426.8	$437.9	$448.5
Outlays (current $)	$339.3	$377.7	$403.5	$415.6	$426.9	$447.6	$467.9
Outlays (constant FY05 $)	$350.6	$384.1	$403.5	$408.5	$410.4	$420.8	$430.3

Numbers have been rounded.

Service Shares

(In billions of constant FY05 dollars)

Budget authority	FY03	FY04	FY05	FY06	FY07	FY08	FY09
Air Force	$109.4	$112.8	$120.5	$126.0	$127.5	$130.5	$131.2
Army	94.3	97.0	97.2	101.0	103.8	106.9	107.1
Navy	117.0	117.1	119.3	123.4	125.2	129.3	136.3
Defense agencies, DOD-wide	56.6	54.8	64.7	65.2	70.2	71.2	73.8
Total	**$377.5**	**$381.7**	**$401.7**	**$415.5**	**$426.8**	**$437.9**	**$448.5**
Percent of budget authority							
Air Force	29.0%	29.5%	30.0%	30.3%	29.9%	29.8%	29.3%
Army	25.0%	25.4%	24.2%	24.3%	24.3%	24.4%	23.9%
Navy	31.0%	30.7%	29.7%	29.7%	29.3%	29.5%	30.4%
Defense agencies, DOD-wide	15.0%	14.4%	16.1%	15.7%	16.4%	16.3%	16.5%



Monthly Military Basic Rates of Pay in Dollars

(Effective Jan. 1, 2004)

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]												12,525	12,586	12,848	13,304
O-9[a]												10,955	11,112	11,340	11,738
O-8[a]	7,751	8,005	8,221	8,221	8,430	8,782	8,864	9,197	9,293	9,580	9,996	10,379	10,635		
O-7[a]	6,441	6,740	6,878	6,989	7,187	7,384	7,612	7,839	8,067	8,782	9,386	9,386	9,386	9,386	9,434
O-6	4,774	5,244	5,588	5,588	5,610	5,850	5,882	5,882	6,216	6,807	7,154	7,501	7,698	7,898	8,285
O-5	3,980	4,483	4,793	4,852	5,045	5,161	5,416	5,603	5,844	6,214	6,390	6,563	6,761		
O-4	3,434	3,975	4,240	4,299	4,545	4,809	5,138	5,394	5,572	5,674	5,733				
O-3	3,019	3,422	3,694	4,027	4,220	4,432	4,569	4,794	4,911						
O-2	2,608	2,971	3,422	3,537	3,610										
O-1	2,264	2,357	2,849												
O-3E[b]				4,027	4,220	4,432	4,569	4,794	4,984	5,093	5,241				
O-2E[b]				3,537	3,610	3,725	3,919	4,069	4,180						
O-1E[b]				2,849	3,042	3,155	3,269	3,382	3,537						

Enlisted Members

E-9							3,769	3,855	3,962	4,089	4,217	4,421	4,594	4,777	5,055
E-8						3,086	3,222	3,306	3,408	3,518	3,716	3,816	3,986	4,081	4,314
E-7	2,145	2,341	2,431	2,550	2,642	2,801	2,891	2,980	3,140	3,220	3,296	3,342	3,498	3,599	3,855
E-6	1,856	2,041	2,131	2,219	2,310	2,516	2,596	2,685	2,763	2,791	2,810				
E-5	1,700	1,814	1,901	1,991	2,131	2,251	2,340	2,368							
E-4	1,558	1,638	1,727	1,814	1,892										
E-3	1,407	1,496	1,586	1,586	1,586										
E-2	1,338														
E-1 4 mos.+	1,193														
E-1<4 mos.	1,104														

Amounts have been rounded to the nearest dollar.
[a]Basic pay for pay grades O-7 through O-10 is limited to $12,050.00. Basic pay for O-6 and below is limited to $10,608.30.
[b]Commissioned officers with more than four years' active service as enlisted members.
While serving as Chairman of the Joint Chiefs of Staff or Chief of Staff of the Air Force, basic pay is $14,634.20.
For the Chief Master Sergeant of the Air Force, basic pay is $6,090.90.

Aviation Career Incentive Pay

(Effective Jan. 1, 2004)

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
$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, 2004)

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, 2004)

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	$15,442	$15,958	$16,471	$16,982	$17,497	$17,799	$18,305	$18,816	$18,837	$19,314
GS-2	17,363	17,775	18,350	18,837	19,047	19,607	20,167	20,727	21,287	21,847
GS-3	18,944	19,575	20,206	20,837	21,468	22,099	22,730	23,361	23,992	24,623
GS-4	21,266	21,975	22,684	23,393	24,102	24,811	25,520	26,229	26,938	27,647
GS-5	23,794	24,587	25,380	26,173	26,966	27,759	28,552	29,345	30,138	30,931
GS-6	26,522	27,406	28,290	29,174	30,058	30,942	31,826	32,710	33,594	34,478
GS-7	29,473	30,455	31,437	32,419	33,401	34,383	35,365	36,347	37,329	38,311
GS-8	32,640	33,728	34,816	35,904	36,992	38,080	39,168	40,256	41,344	42,432
GS-9	36,052	37,254	38,456	39,658	40,860	42,062	43,264	44,466	45,668	46,870
GS-10	39,702	41,025	42,348	43,671	44,994	46,317	47,640	48,963	51,286	51,609
GS-11	44,621	45,075	46,529	47,983	49,437	50,891	52,345	53,799	55,253	56,707
GS-12	52,281	54,024	55,767	57,510	59,253	60,996	62,739	64,482	66,225	67,968
GS-13	62,170	64,242	66,314	68,386	70,458	72,530	74,602	76,674	78,746	80,818
GS-14	73,467	75,916	78,365	80,814	83,263	85,712	88,161	90,610	93,059	95,508
GS-15	86,417	89,298	92,179	95,060	97,941	100,882	103,703	106,584	109,465	112,346

Senior Executive Service

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

SES Pay System Structure	Minimum	Maximum
Certified SES performance appraisal system	$104,927	$158,100
Non-certified SES performance appraisal system	$104,927	$145,600

Housing Allowance

(Effective Jan. 1, 2004)

Pay Grade	With Dependents	Without Dependents
O-10	$1,292.70	$1,050.60
O-9	1,292.70	1,050.60
O-8	1,292.70	1,050.60
O-7	1,292.70	1,050.60
O-6	1,163.70	936.90
O-5	1,121.70	927.90
O-4	988.80	839.80
O-3	818.10	689.40
O-2	698.40	546.60
O-1	624.90	460.50
O-3E	879.30	744.30
O-2E	793.50	632.40
O-1E	733.20	544.20
E-9	840.00	637.20
E-8	774.60	585.00
E-7	719.10	499.50
E-6	664.50	453.10
E-5	597.60	417.00
E-4	519.30	362.50
E-3	483.30	355.80
E-2	460.50	289.20
E-1	460.50	258.00

Subsistence Allowance

(Effective Jan. 1, 2004)

	Cash/In-Kind
Officers	$175.23/month
Enlisted Members Standard	$254.46/month
When rations in-kind are not available	$262.50/month

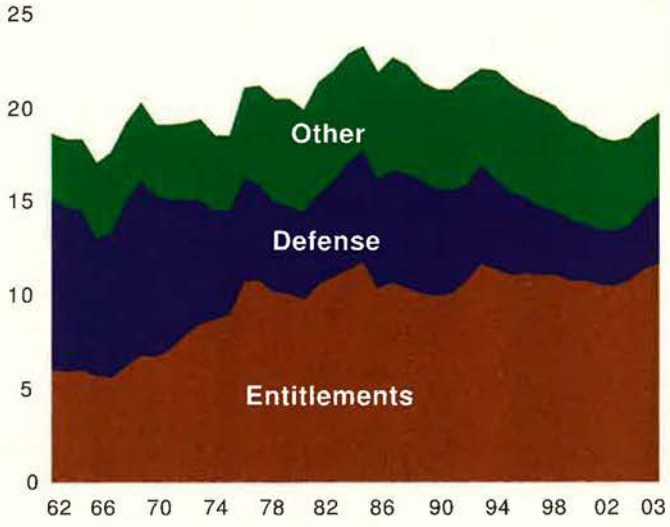
Historical Federal Budget Data

Current dollars (In billions)					Constant FY05 dollars (In billions)				
Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense	Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	$106.8	$5.9	$34.7	$52.6	1962	$672.7	$37.2	$218.5	$331.3
1963	111.3	4	36.2	53.7	1963	692.0	24.9	225.1	333.9
1964	118.5	6.5	38.9	55.0	1964	727.3	39.9	238.8	337.6
1965	118.2	1.6	39.7	51.0	1965	714.0	9.7	239.8	308.1
1966	134.5	3.1	43.4	59.0	1966	789.6	18.2	254.8	346.4
1967	157.5	12.6	50.9	72.0	1967	896.8	71.7	289.8	410.0
1968	178.1	27.7	59.7	82.2	1968	973.3	151.4	326.2	449.2
1969	183.6	0.5	64.6	82.7	1969	951.0	2.6	334.6	428.4
1970	195.6	8.7	72.5	81.9	1970	958.5	42.6	355.3	401.3
1971	210.2	26.1	86.9	79.0	1971	986.7	122.5	407.9	370.8
1972	230.7	26.4	100.8	79.3	1972	1,049.3	120.1	458.5	360.7
1973	245.7	15.4	116.0	77.1	1973	1,052.3	66.0	496.8	330.2
1974	269.4	8.0	130.9	80.7	1974	1,039.5	30.9	505.1	311.4
1975	332.3	55.3	169.4	87.6	1975	1,175.2	195.6	599.1	309.8
1976	371.8	70.5	189.1	89.9	1976	1,242.8	235.7	632.1	300.5
1977	409.2	49.8	203.7	97.5	1977	1,284.4	156.3	639.4	306.0
1978	458.7	54.9	227.4	104.6	1978	1,338.0	160.1	663.3	305.1
1979	504.0	38.7	247.0	116.8	1979	1,320.9	101.4	647.4	306.1
1980	590.9	72.7	291.2	134.6	1980	1,364.5	167.9	672.4	310.8
1981	678.2	73.9	339.4	158.0	1981	1,419.8	154.7	710.5	330.8
1982	745.7	120.0	370.8	185.9	1982	1,470.0	236.6	731.0	366.5
1983	808.4	208	410.6	209.9	1983	1,544.2	397.3	784.3	400.9
1984	851.9	185.6	405.6	228.0	1984	1,560.2	339.9	742.8	417.6
1985	946.4	221.7	448.2	253.1	1985	1,673.0	391.9	792.3	447.4
1986	990.4	237.9	461.8	273.8	1986	1,718.1	412.7	801.1	475.0
1987	1,004.1	169.3	474.2	282.5	1987	1,681.4	283.5	794.1	473.1
1988	1,064.5	194.0	505.0	290.9	1988	1,712.3	312.1	812.3	467.9
1989	1,143.6	205.2	548.6	304.0	1989	1,755.3	315.0	842.0	466.6
1990	1,253.2	277.8	626.9	300.1	1990	1,825.0	404.5	912.9	437.0
1991	1,324.4	321.5	702.3	319.7	1991	1,850.9	449.3	981.5	446.8
1992	1,381.7	340.5	716.8	302.6	1992	1,874.8	462.0	972.6	410.6
1993	1,409.5	300.4	738.0	292.4	1993	1,856.8	395.7	972.2	385.2
1994	1,461.9	258.9	786.1	282.3	1994	1,877.0	332.4	1,009.3	362.5
1995	1,515.8	226.4	818.5	273.6	1995	1,893.2	282.8	1,022.3	341.7
1996	1,560.5	174.1	858.7	266.0	1996	1,892.3	211.1	1,041.3	322.6
1997	1,601.3	103.3	896.3	271.7	1997	1,898.1	122.4	1,062.4	322.1
1998	1,652.6	30.0	938.6	270.2	1998	1,928.0	35.0	1,095.0	315.2
1999	1,701.9	**1.9**	976.8	275.5	1999	1,942.8	**2.2**	1,115.1	314.5
2000	1,788.8	**86.6**	1,029.8	295.0	2000	1,974.9	**95.6**	1,136.9	325.7
2001	1,863.8	33.3	1,095.2	306.1	2001	2,001.6	35.8	1,176.2	328.7
2002	2,011.0	317.5	1,196.6	348.9	2002	2,125.7	335.6	1,264.9	368.8
2003	2,157.6	536.1	1,279.0	404.9	2003	2,229.4	553.9	1,321.6	418.4

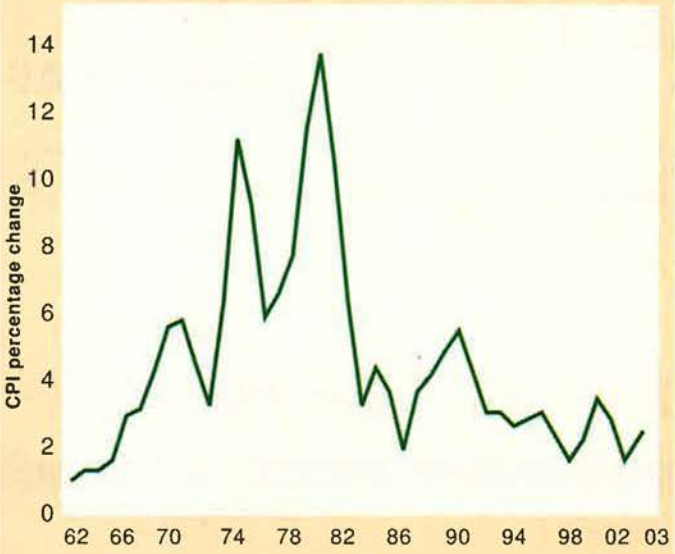
Source: "The Budget and Economic Outlook: Fiscal Years 2005-14," published by the Congressional Budget Office, January 2004; Budget of the United States Government Historical Tables, Fiscal Year 2005. (Constant dollar figures are derived.)

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	19.2	0.3	10.9	3.1
1999	18.6	0.0	10.7	3.0
2000	18.4	0.9	10.6	3.0
2001	18.6	0.3	10.9	3.0
2002	19.4	3.1	11.5	3.4
2003	19.9	5.0	11.8	3.7



Inflation Rates



CPI=Consumer Price Index

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

Equipment
2004 USAF Almanac

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, 2003)

Type	TAI	PAI
Bomber		
B-1	67	52
B-2	21	16
B-52	85	50
Total	**173**	**118**
Fighter/Attack		
A-10	123	120
OA-10	83	60
F-15	608	527
F-16	742	631
F/A-22	17	17
F-117	55	47
Total	**1,628**	**1,402**
Helicopter		
HH-60	68	58
UH-1	61	46
Total	**129**	**104**
Reconnaissance/BM/C3I		
E-3	32	27
E-4	4	3
E-8	16	13
EC-130	15	10
M/RQ-1	6	5
OC-135	2	2
RC-135	21	16
RQ-4	2	0
U-2	34	33
WC-135	2	0
Total	**134**	**109**
Special Ops Forces		
AC-130	21	16
MC-130	44	41
MH-53	36	31
Total	**101**	**88**

Type	TAI	PAI
Tanker		
HC-130	17	14
KC-10	59	54
KC-135	249	213
Total	**325**	**281**
Trainer		
T-1	180	150
T-3	110	0
T-6	110	92
T-37	333	309
T-38	489	401
T-41	4	4
T-43	10	9
TC-135	2	2
Gliders	67	30
UV-18	3	2
Total	**1,308**	**999**
Transport		
C-5	81	70
C-9	6	6
C-12	27	23
C-17	109	95
C-20	10	6
C-21	75	72
C-32	4	4
C-37	9	6
C-40	2	1
C-41	2	2
C-130	190	163
C-135	3	2
C-141	10	0
VC-25	2	2
Total	**530**	**452**
Total Active	**4,328**	**3,553**

Air National Guard Inventory

(As of Sept. 30, 2003)

Type	TAI	PAI
Fighter/Attack		
A-10	76	72
OA-10	26	18
F-15	126	101
F-16	549	440
Total	**777**	**631**
Helicopter		
HH-60G	17	15
Reconnaissance/BM/C3I		
EC-130	7	5
Special Ops Forces		
MC-130	4	4
Tanker		
HC-130	9	7
KC-135	227	203
Total	**236**	**210**
Transport		
C-5	13	12
C-21	2	2
C-22	2	0
C-26	11	11
C-32	1	0
C-38	2	2
C-40	2	0
C-130	219	207
C-135	0	0
C-141	9	9
LC-130	10	10
Total	**271**	**253**
Total ANG	**1,312**	**1,118**

Air Force Reserve Command Inventory

(As of Sept. 30, 2003)

Type	TAI	PAI
Bomber		
B-52	9	8
Fighter/Attack		
A-10	44	39
OA-10	7	6
F-16	70	60
Total	**121**	**105**
Helicopter		
HH-60	18	17
Reconnaissance/BM/C3I		
WC-130	20	10
Special Ops Forces		
MC-130	14	12
Tanker		
HC-130	6	5
KC-135	70	70
Total	**76**	**75**
Transport		
C-5	32	28
C-130	103	99
C-141	40	40
Total	**175**	**167**
Total AFRC	**433**	**394**

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E-10A BMC2

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L-3 Communications • ALPHATECH • ZelTech

Speed. Precision. Confidence. On board the E-10A, they'll have all three, thanks to a revolutionary Battle Management Command and Control system. The Lockheed Martin team has the technical capabilities, open architecture experience, and vision to deliver a BMC2 solution that will go far beyond information gathering. We'll accelerate the decision cycle, and give commanders the power to act quickly, accurately, and decisively. And we'll tie in the Air Operations Center and Distributed Common Ground System to create a seamless, distributed battle management enterprise that connects Joint warfighters across the theatre. To deliver a truly integrated BMC2 system, look to a truly integrated team. Lockheed Martin.

Total Number of USAF Aircraft in Service Over Time

(As of Sept. 30, 2003)

Type of aircraft	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Bomber	182	179	179	181	181	183	173
Fighter/attack	1,700	1,683	1,666	1,658	1,619	1,631	1,628
Helicopter	125	116	123	130	126	126	129
Reconnaissance/BM/C3I	172	140	138	141	140	143	135
Special Ops Forces	124	123	118	107	107	102	101
Tanker	325	326	327	328	330	322	325
Trainer	1,234	1,272	1,274	1,289	1,289	1,342	1,308
Transport	626	608	588	567	546	538	529
Total active duty	**4,488**	**4,447**	**4,413**	**4,401**	**4,338**	**4,387**	**4,328**
Air National Guard	1,375	1,381	1,360	1,362	1,361	1,350	1,312
AFRC	454	446	430	442	445	446	433
Total active duty, ANG, and AFRC	**6,317**	**6,274**	**6,203**	**6,205**	**6,144**	**6,183**	**6,073**
Total aircraft, including foreign-government-owned	6,399	6,373	6,302	6,304	6,245	6,286	6,167

Age of the Active Duty Fleet

(As of Sept. 30, 2003)

	Age in Years										
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24+	Total	Average
A-10							49	153	4	206	21.8
B-1B						67				67	16.1
B-2		1	11	6	3					21	9.1
B-52									85	85	41.8
C-5					11	39			31	81	21.8
C-9									6	6	30.6
C-10					1	23	24	11		59	18.7
C-12						4	8		15	27	23.1
C-17	42	31	20	15	1					109	4.5
C-20			1	1		8				10	14.7
C-21						4	71			75	18.7
C-25					2					2	12.9
C-32		4								4	5
C-37	6	3								9	2.7
C-40	2									2	0.7
C-41		2								2	3
C-130			3	15	14	17	1		237	287	31
C-135									279	279	41.7
C-141									10	10	36.6
E-3							5	9	18	32	23.8
E-4									4	4	29.3
E-8	7	6	2		1					16	4
F-15	5	16		72	130	92	100	161	32	608	17.3
F-16	21	8	39	231	302	90	46	5		742	12.4
F/A-22	14	2	1							17	1.8
F-117					12	18	24	1		55	17.2
H-1									61	61	32.7
H-53									36	36	33.2
H-60		7		14	28	9	10			68	13.4
Q-1	3	3								6	2.5
Q-4		1	1							2	5.2
T-1		1	90	89						180	8.9
T-3			78	32						110	8.6
T-6	98	12								110	1.6
T-37									333	333	39.6
T-38									489	489	36.5
T-41									4	4	34.1
T-43									10	10	29.5
U-2					2	11	14	3	4	34	20.2
UV-18			1						2	3	19.5
Gliders	34	0	7	0	4	9	6	3	4	67	8.6
Total	232	97	254	475	511	391	358	346	1,664	4,328	22.7
Percent	5%	2%	6%	11%	12%	9%	8%	8%	38%		

Age of the Air National Guard Fleet

(As of Sept. 30, 2003)

	Age in Years										
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24+	Total	Average
A-10							11	68	23	102	22.8
C-5									13	13	32.4
C-21						2				2	16
C-22							2			2	18.7
C-26			6	5						11	9.3
C-32	1									1	0.9
C-38		2								2	5.5
C-40	2									2	1
C-130	5	12	28	34	34	24	17	15	80	249	20.8
C-135									227	227	43.3
C-141									9	9	36.8
F-15							4	6	116	126	25.2
F-16			12	12	134	282	100	9		549	16
H-60				6	11					17	13
Total	8	14	46	57	179	308	134	98	468	1,312	23.2
Percent	**1%**	**1%**	**4%**	**4%**	**14%**	**23%**	**10%**	**7%**	**36%**		

Age of the Air Force Reserve Command Fleet

(As of Sept. 30, 2003)

	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	47	3	51	23
B-52									9	9	41.5
C-5									32	32	32.3
C-130	7	7	15	17	15	24	7	1	50	143	21.1
C-135									70	70	42.6
C-141									40	40	36.9
F-16					17	52	1			70	15.7
H-60					18					18	12.9
Total	7	7	15	17	50	76	9	48	204	433	26.3
Percent	**2%**	**2%**	**3%**	**4%**	**12%**	**18%**	**2%**	**11%**	**47%**		

ICBMs and Spacecraft in Service

(As of Sept. 30, 2003)

Type of system	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Minuteman III ICBM	530	530	500	500	500	500	500
Peacekeeper ICBM*	50	50	50	50	50	50	23
Total ICBMs	**580**	**580**	**550**	**550**	**550**	**550**	**523**
DMSP satellite	2	2	2	2	2	2	2
DSCS satellite	5	5	5	5	5	5	10
DSP satellite (data classified)	—	—	—	—	—	—	—
GPS satellite	26	26	26	24	27	28	28
Milstar satellite	2	2	2	2	3	4	5
Total satellites	**35**	**35**	**35**	**33**	**37**	**39**	**45**

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

USAF Aircraft Flying Hours

(In thousands, as of Sept. 30, 2003)

	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Active duty	1,680	1,644	1,633	1,555	1,579	1,768	1,695
ANG	375	361	357	342	341	410	426
AFRC	150	149	142	139	146	186	198
Total	**2,205**	**2,154**	**2,132**	**2,036**	**2,066**	**2,364**	**2,319**

USAF Squadrons by Mission Type

(As of Sept. 30, 2003)

	FY99	FY00	FY01	FY02	FY03
Active forces					
Bomber	10	10	9	9	9
Air refueling	24	26	26	26	26
Strategic command & control	2	2	2	2	2
Fighter	46	46	46	46	46
Reconnaissance	0	1	4	4	9
Electronic warfare	3	3	2	2	2
Special operations	13	14	14	21	38
Ground theater air control	8	7	7	2	2
Airborne theater air control	8	8	8	8	8
Rescue	7	7	6	6	8
Theater airlift	12	12	12	12	12
Long-range airlift	20	20	18	18	18
Aeromedical airlift	3	3	3	3	0
ICBM	14	14	14	14	11
Space operations	10	8	8	8	8
Space communications	1	1	1	0	0
Space warning	8	7	7	8	8
Space surveillance	6	6	4	3	3
Space launch	5	3	3	3	4
Range	2	2	2	2	2
Space control	1	2	3	3	3
Space aggressor	0	0	0	0	1
Total	**203**	**202**	**199**	**200**	**220**
Reserve forces					
ANG Selected Reserve					
Flying	89	101	101	101	101
Space operations	0	0	1	1	3
Space warning	0	0	1	1	1
AFRC					
Flying	61	60	60	60	61
Space operations	3	4	4	4	4
Space warning	1	1	1	1	1
Space aggressor	0	0	0	0	1
Total	**154**	**166**	**168**	**168**	**172**
Grand total	**357**	**368**	**367**	**368**	**392**

Aircraft per Active Duty USAF Squadron

(As of Sept. 30, 2003)

Aircraft	Number
A/OA-10	18/24
AC-130H	8
AC-130U	13
B-1B	12/18
B-2	8
B-52	12
C-5	16
C-17	15
C-130	15
C-141B	10
E-3	2/5
E-8	8
EC-130	6/10
F-15	18/24
F-15E	18/24
F-16	18/24
F-117A	18
HC-130	3/4
HH-60	12/14
KC-10	15
KC-135	27
MC-130E	14
MC-130H/P	10/12
MH-53	16/17
U-2	29

Air National Guard Air Defense Unit Fin Flashes

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

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

If you recognized the CV-22, F-35A, Global Hawk, CC-130J and C-37, you obviously know your aircraft. American-built Rolls-Royce engines have been powering U.S. military air forces since World War I. Today, Rolls-Royce provides nearly one-fourth of all gas turbine engines in service on America's military aircraft. The current Rolls-Royce portfolio of modern turboprop, turboshaft and turbofan engines allows you to constantly push the edge of the mission envelope. When it comes to innovative and reliable propulsion solutions, Rolls-Royce earns its Air Force wings every day.

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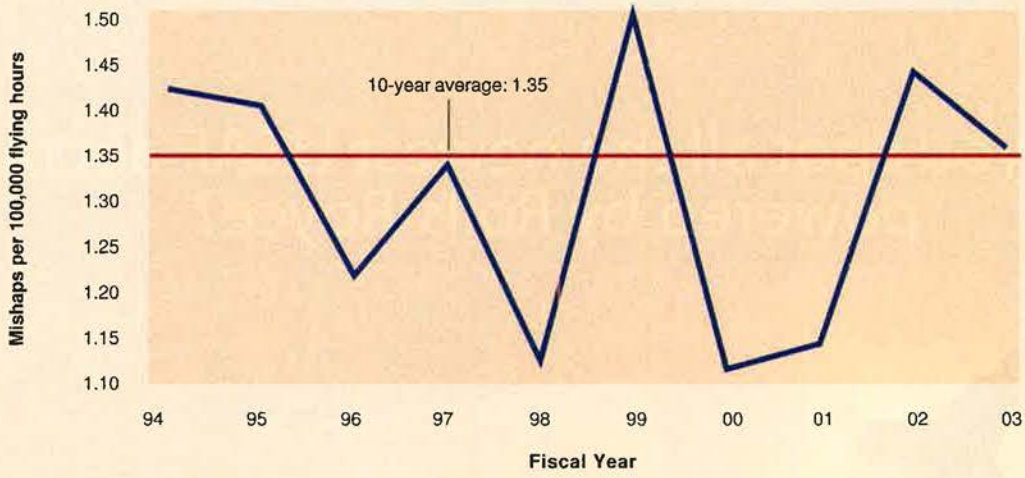
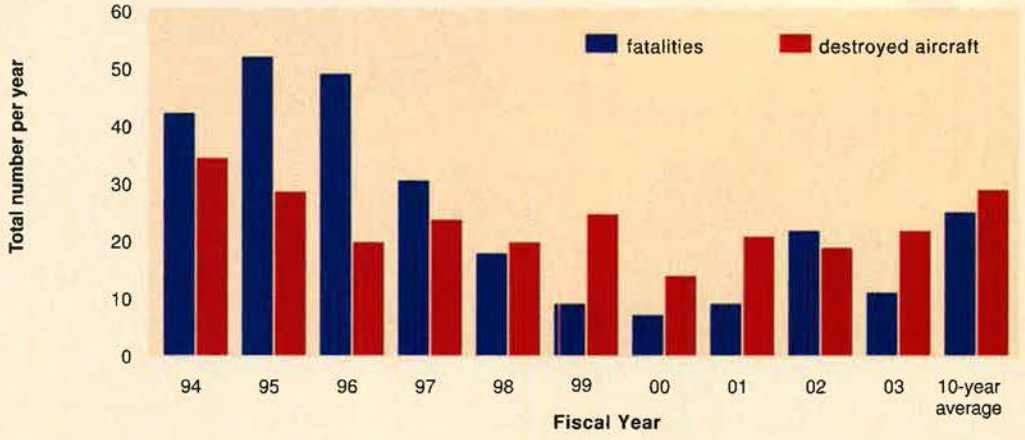
Class A Aircraft Mishaps

(As of Sept. 30, 2003)

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





Data provided by USAF.

USAF photo by SMSgt. Eric J. Peterson

An F-16C from the Montana Air National Guard's 120th Fighter Wing runs up its engine on the ramp as a crew chief inspects its operation prior to launch.

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.
AL	KC-135	117th ARW (ANG), Birmingham Arpt., Ala.
AN	C-130H, HC-130N, HH-60G	176th Wing (ANG), Kulis ANGB, Alaska
AV	F-16C/D	31st FW, Aviano AB, Italy
AZ	F-16A/B/C/D	162nd FW (ANG), Tucson Arpt., Ariz.
BB	T-38A, 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/C	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.
CR	C-130H	302nd AW (AFRC), Peterson AFB, Colo.
CT	A/OA-10A	103rd FW (ANG), Bradley Arpt., Conn.
DC	F-16C/D	113th Wing (ANG), Andrews AFB, Md.
DE	C-130H	166th AW (ANG), New Castle Co. Arpt., Del.
DM	A/OA-10A	355th Wing, Davis–Monthan AFB, Ariz.
DM	EC-130E/H	55th Wing, Davis–Monthan AFB, Ariz.
DR	HH-60G	305th RQS (AFRC), Davis–Monthan AFB, Ariz.
DY	B-1B	7th BW, Dyess AFB, Tex.
ED	Various	412th TW, Edwards AFB, Calif.
EF	F-16C/D	147th FW (ANG), Ellington Fld., Tex.
EG	F-15C/D	33rd FW, Eglin AFB, Fla.
EL	B-1B	28th BW, Ellsworth AFB, S.D.
EN	T-37B,T-38A	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 SW, 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 ARB, 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	E-8C, TE-8A	116th ACW (ACC, ANG), Robins AFB, Ga.
GA	C-130H	165th AW (ANG), Savannah Arpt., Ga.
HA	KC-135	185th ARW (ANG), Sioux Gateway Arpt., Iowa
HD	QF-4	53rd WEG, Holloman AFB, N.M.
HH	C-130H, F-15A/B, KC-135R	154th Wing (ANG), Hickam AFB, Hawaii
HI	F-16C/D	419th FW (AFRC), Hill AFB, Utah
HL	F-16C/D	388th FW, Hill AFB, Utah
HO	F-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 SW, 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, NAS Keflavik, Iceland
JZ	F-15A/B	159th FW (ANG), NAS JRB New Orleans
KC	A/OA-10	442nd FW (AFRC), Whiteman AFB, Mo.
LA	B-52H	2nd BW, Barksdale AFB, La.
LF	F-16	56th FW, Luke AFB, Ariz.
LI	HC-130P, HH-60G	106th RW (ANG), F.S. Gabreski Arpt., N.Y.
LN	F-15C/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.
MI	KC-135	927th ARW (AFRC) Selfridge ANGB, Mich.
MM	UH-1N	341st SW, Malmstrom AFB, Mont.
MN	C-130H	133rd AW (ANG), Minn.–St. Paul Arpt./ARS
MN	F-16C	148th FW (ANG), Duluth Arpt., Minn.
MO	F-15C/D/E, F-16CJ/D	366th FW, Mountain Home AFB, Idaho
MT	B-52H	5th BW, Minot AFB, N.D.
MT	UH-1N	91st SW, Minot AFB, N.D.
MY	HC-130P, HH-60G	347th Rescue Wing, Moody AFB, Ga.
MY	T-6A, T-38C	479th FTG (AETC), Moody AFB, Ga.
NM	F-16C/D	150th FW (ANG), Kirtland AFB, N.M.
NO	A/OA-10A	926th FW (AFRC), NAS JRB New Orleans
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 AW (ANG), Mansfield Lahm Arpt., Ohio
OH	F-16C/D	180th FW (ANG), Toledo Exp. Arpt., Ohio
OK	C-130H	137th AW (ANG), Will Rogers World Arpt., Okla.
OK	F-16C/D	138th FW (ANG), Tulsa Arpt., Okla.
OK	E-3B/C	552nd ACW, Tinker AFB, Okla.
OS	A/OA-10A, C-12, F-16C/D	51st FW, Osan AB, South Korea
OT	B-1, B-2, B-52, F-15A/C/D/E, F-16C/D, RQ-1A, RQ-4A	85th TES, 53rd Wing (ACC), Eglin AFB, Fla.
OT	F/A-22, 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), NAS JRB Willow Grove, Pa.
PD	KC-135	939th ARW (AFRC), Portland Arpt., Ore.
PR	C-130E	156th AW (ANG), Luis Munoz Marin Arpt., Puerto Rico
RA	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	52nd FW, Spangdahlem AB, Germany
ST	Various	82nd TW, Sheppard AFB, Tex.
SW	F-16C/CJ/D	20th FW, Shaw AFB, S.C.
TD	QF-4	53rd Wing, Tyndall AFB, Fla.
TH	F-16C/D	181st FW (ANG), Hulman Arpt., Ind.
TX	C-130H	136th AW (ANG), NAS JRB F.W., Tex.
TX	F-16C/D	301st FW (AFRC), NAS JRB F.W., Tex.
TY	F-15C/D, F/A-22	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-16C/D, F/A-22, HH-60, RQ-1/MQ-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
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-6A, 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

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USAF Grades and Insignia

Officer

Second Lieutenant
(O-1)

Brigadier General
(O-7)

First Lieutenant
(O-2)

Major General
(O-8)

Captain
(O-3)

Lieutenant General
(O-9)

Major
(O-4)

General
(O-10)

Lieutenant Colonel
(O-5)

Colonel
(O-6)

Enlisted

Airman Basic
(E-1)
No insignia

Airman
(E-2)

Airman First Class
(E-3)

Senior Airman
(E-4)

Staff Sergeant
(E-5)

Technical Sergeant
(E-6)

Master Sergeant
(E-7)

Senior Master Sergeant
(E-8)

Chief Master Sergeant
(E-9)

Chief Master Sergeant of
the Air Force

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

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

Awards and Decorations—Currently Awarded Ribbons


Medal of Honor


Air Force Cross


Defense Distinguished Service Medal


Distinguished Service Medal (AF)


Silver Star


Defense Superior Service Medal


Legion of Merit


Distinguished Flying Cross


Airman's Medal


Bronze Star Medal


Purple Heart


Defense Meritorious Service Medal


Meritorious Service Medal (AF)


Air Medal


Aerial Achievement Medal


Joint Service Commendation Medal


Air Force Commendation Medal


Joint Service Achievement Medal


Air Force Achievement Medal


Presidential Unit Citation


Joint Meritorious Unit Citation


Air Force Gallant Unit Award


Air Force Meritorious Unit Award


Air Force Outstanding Unit Award


Air Force Organizational Excellence Award


Prisoner of War Medal


Combat Readiness Medal


Air Force Good Conduct Medal


Good Conduct Medal


Air Reserve Forces Meritorious Service Medal


Outstanding Airman of the Year Ribbon


Air Force Recognition Ribbon


National Defense Service Medal


Antarctica Service Medal


Armed Forces Expeditionary Medal


Vietnam Service Medal


Southwest Asia Service Medal


Kosovo Campaign Medal


Global War on Terrorism Expeditionary Medal


Global War on Terrorism Service Medal

Korea Defense Service Medal

Armed Forces Service Medal

Humanitarian Service Medal

Military Outstanding Volunteer Service Medal

Air & Space Campaign Medal

Air Force Overseas Ribbon-Short

Air Force Overseas Ribbon-Long

Air Force Expeditionary Service Ribbon

Air Force Longevity Service Award Ribbon

USAF Basic Military Training Instructor Ribbon

Air Force Recruiter Ribbon

Armed Forces Reserve Medal

USAF NCO PME Graduate Ribbon

USAF Basic Military Training Honor Graduate Ribbon

Small Arms Expert Marksmanship Ribbon

Air Force Training Ribbon

RVN Gallantry Cross with Palm*

United Nations Medal

NATO Medal Yugoslavia

NATO Medal Kosovo

Republic of Vietnam Campaign Medal

Kuwait Liberation Medal, Kingdom of Saudi Arabia

Kuwait Liberation Medal, Government of Kuwait

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

Awards and Decorations—Previously Awarded Ribbons

Pre-World War I

Mexican Service Medal

World War I

Victory Medal

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

American Defense Service Medal

Women's Army Corps Service Medal

American Campaign Medal

Asiatic–Pacific Campaign Medal

European–African–Middle Eastern Campaign Medal

World War II Victory Medal

Army of Occupation Medal

Medal for Humane Action

Korean Service Medal

Philippine Defense Ribbon

Philippine Liberation Ribbon

Philippine Independence Ribbon

Philippine Presidential Unit Citation

ROK Presidential Unit Citation

United Nations Service Medal

Republic of Korea Korean War Service Medal

Currently Awarded Devices

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

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

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

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

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

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

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

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

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

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

Previously Awarded Devices

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

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

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

Berets

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

Force Protection

Pararescue

Tactical Air Control Party

USAF Badges

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

Pilot

Navigator/Observer

Enlisted Aircrew

Astronaut

Flight Surgeon

Flight Nurse

Officer Aircrew Member

Air Battle Manager

Parachutist

Transportation

Space/Missile

Command and Control

Intelligence

Operations Support

Maintenance

Supply/Fuels

Logistics

Judge Advocate

Civil Engineer

Communications and Information

Services

Manpower and Personnel

Public Affairs

Band

Historian

Air Traffic Control

Force Protection

Paralegal

Chaplain Service Support

Acquisition and Financial Management

Meteorologist

Explosive Ordnance Disposal

Information Management

Weapons Director

Nurse Corps

Biomedical Science Corps

Dental Corps

Medical Corps

Enlisted Medical

Missile

Missile With Operations Designator

Medical Service Corps

Christian

Jewish

Buddhist

Muslim

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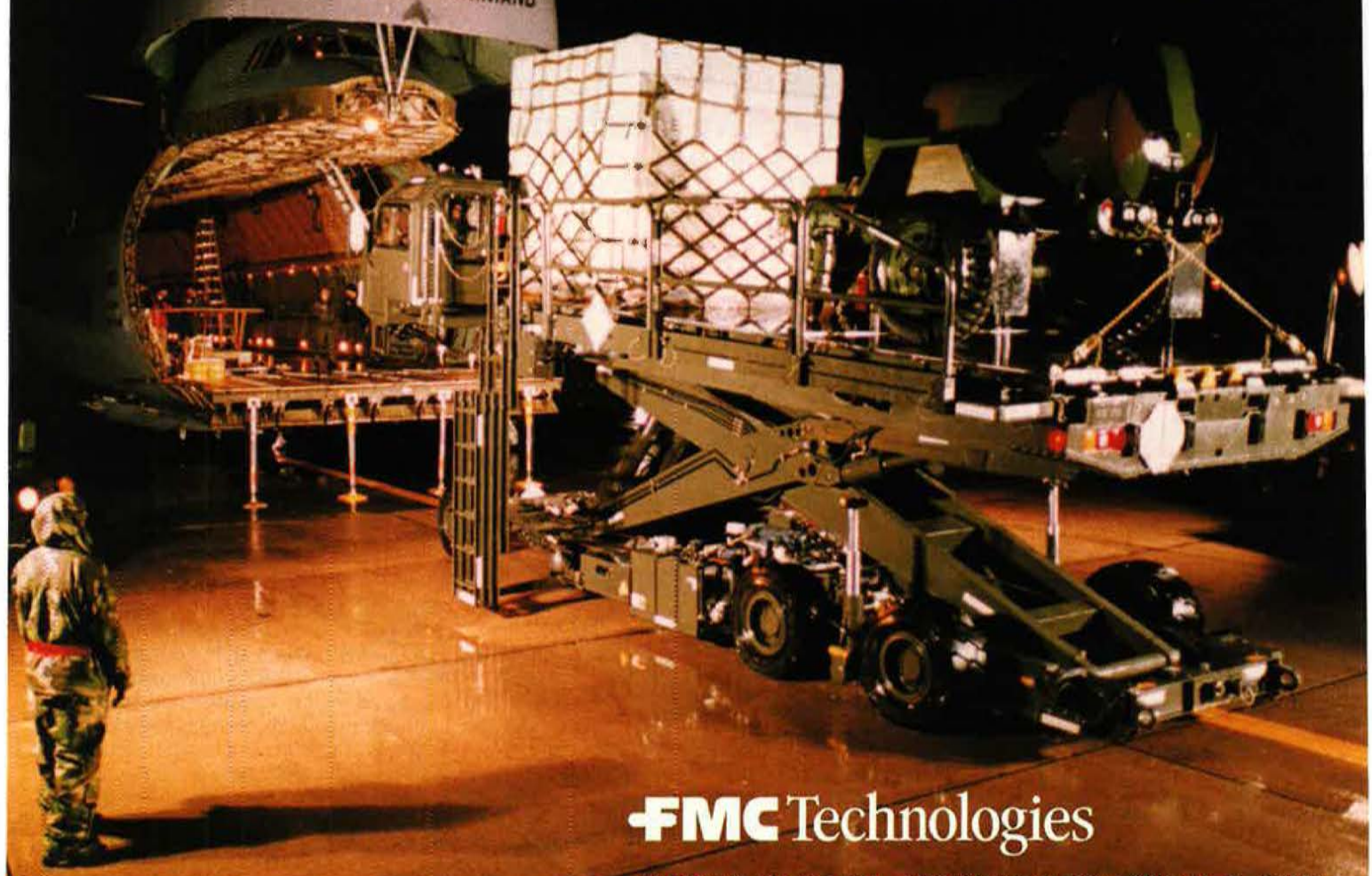

FMC Technologies

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AIR FORCE Magazine's

Guide to Aces and Heroes

2004 USAF Almanac

Striking a pose in front of Capt. Eddie Rickenbacker's airplane are (l-r) 1st Lt. Joseph Eastman, Capt. James Meissner (8 victories), Rickenbacker (26), 1st Lt. Reed Chambers (7), and 1st Lt. Thorne Taylor (2).

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

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 relies on USAF's official accounting of aerial victory credits, which is the responsibility of the Air Force Historical Research Agency, Maxwell AFB, Ala.

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

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

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

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

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

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


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Team Osprey

American Aces of World War I

Capt. Eddie Rickenbacker (26)

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

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

2nd Lt. Frank Luke Jr. (18)

Army Air Forces Aces of World War II

Maj. Richard Bong (40)

Ranks are as of last victory in World War II.

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

Maj. Thomas McGuire Jr. (38)

Varnell, Capt. James S. Jr.	17
Johnson, Maj. Gerald W.	16.50
Godfrey, Capt. John T.	16.33
Anderson, Capt. Clarence E. Jr.	16.25
Dunham, Lt. Col. William D.	16
Harris, Lt. Col. Bill	16
Welch, Capt. George S.	16
Beerbower, Capt. Don M.	15.50
Brown, Maj. Samuel J.	15.50
Peterson, Capt. Richard A.	15.50
Whisner, Capt. William T. Jr.	15.50
Bradley, Lt. Col. Jack T.	15
Cragg, Maj. Edward	15
Foy, Maj. Robert W.	15
Hofer, 2nd Lt. Ralph K.	15
Homer, Capt. Cyril F.	15
Landers, Lt. Col. John D.	14.50
Powers, Capt. Joe H.	14.50
Brown, Capt. Henry W.	14.20
Carr, 1st Lt. Bruce W.	14
Curtis, Maj. Robert C.	14
Dahlberg, Capt. Kenneth H.	14
DeHaven, Capt. Robert M.	14
Emmer, Capt. Wallace N.	14
Goodson, Maj. James A.	14
Jeffrey, Lt. Col. Arthur F.	14
McComas, Lt. Col. Edward O.	14
Roberts, Capt. Daniel T. Jr.	14
West, Capt. Richard L.	14
Bochkay, Maj. Donald H.	13.83
Strait, Maj. Donald J.	13.50
Bryan, Capt. Donald S.	13.33
Carpenter, Maj. George	13.33
Brooks, 1st Lt. James L.	13
Hampshire, Capt. John F. Jr.	13
Head, Capt. Cotesworth B. Jr.	13
Hively, Maj. Howard D.	12
Ladd, Capt. Kenneth G.	12
Moore, Maj. Robert W.	12
Olds, Maj. Robin	12
Schreiber, Capt. Leroy A.	12
Skogstad, 1st Lt. Norman C.	12
Sloan, 1st Lt. William J.	12
Watkins, Capt. James A.	12
Megura, Capt. Nicholas	11.83
Blakeslee, Col. Donald J.M.	11.50
Conger, Maj. Paul A.	11.50

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

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

Col. Hubert Zemke (17.75)

Maj. Donald Strait (13.50)

Capt. John Godfrey (16.33)

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

Lt. Col. Boyd Wagner (8)

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

Capt. William Shomo (8)

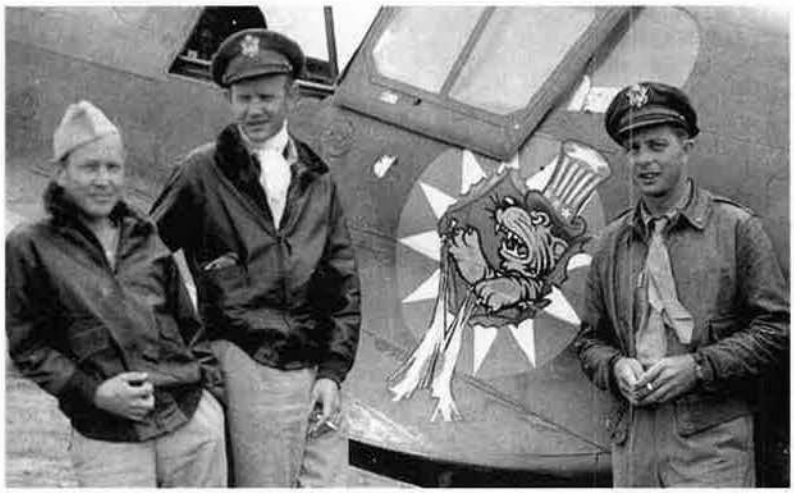
*Squadron Leader Gladych was Polish and flew in service with American units, but because the Polish government in exile was headquartered in London, Polish pilots had British designations.

Miklajcyk, Capt. Henry J.	7.5
Righetti, Lt. Col. Elwyn G.	7.5
Garrison, 1st Lt. Vermont	7.33
Morris, Capt. James M.	7.33
Goodnight, 1st Lt. Robert E.	7.25
Adams, Capt. Burnell W.	7
Allen, 1st Lt. Calvin D. Jr.	7
Anderson, 1st Lt. William Y.	7
Becker, Capt. Robert H.	7
Blair, Capt. Samuel V.	7
Browning, Capt. James W.	7
Carder, 1st Lt. John B.	7
Chapman, Maj. Philip G.	7
Cramer, Maj. Darrell S.	7
Crenshaw, 1st Lt. Claude J.	7
Davis, 1st Lt. George A. Jr.	7
Dean, 1st Lt. Zach W.	7
Duke, Capt. Walter F.	7
Dunaway, 1st Lt. John S.	7
Edens, 2nd Lt. Billy G.	7
Elliot, 1st Lt. Vincent T.	7
Fisher, Capt. Edwin O.	7
Fisk, Capt. Jack A.	7
Franklin, 1st Lt. Dwaine R.	7
Graham, Lt. Col. Gordon M.	7
Grant, 1st Lt. Marvin E.	7
Gregg, 1st Lt. Lee O.	7
Griffin, Maj. Joseph H.	7
Hennon, Capt. William J.	7
Hill, Maj. Frank A.	7
Hockery, Capt. John J.	7
Howard, Col. James H.	7
Jackson, Lt. Col. Willie O. Jr.	7
Jamison, Capt. Gilbert L.	7
Jett, Capt. Verl E.	7
Johnson, Capt. Clarence O.	7
Keen, 1st Lt. Robert J.	7
King, Capt. Benjamin H.	7
Kinsey, 2nd Lt. Claude R. Jr.	7
Klibbe, 2nd Lt. Frank W.	7
Kuentzel, 2nd Lt. Ward A.	7
Lamb, Capt. Robert A.	7
Lewis, Maj. Warren R.	7
Lewis, Lt. Col. William H.	7
Liebers, 2nd Lt. Lawrence P.	7
Little, 1st Lt. James W.	7
Lombard, Maj. John D.	7
Maguire, Capt. William J.	7
Marshall, Maj. Bert W. Jr.	7
McLaughlin, Capt. Murray D.	7
Moore, Maj. John T.	7
O'Brien, 1st Lt. Gilbert M.	7
Older, Lt. Col. Charles H.	7
Pierce, 1st Lt. Joseph F.	7
Pierce, 1st Lt. Sammy A.	7
Poindexter, Capt. James N.	7
Popek, Maj. Edward S.	7
Purdy, 1st Lt. John E.	7
Reynolds, 1st Lt. Robert	7
Rogers, Capt. Felix M.	7
Ross, Maj. Herbert E.	7
Sears, 1st Lt. Meldrum L.	7
Shafer, Lt. Col. Dale E. Jr.	7
Shipman, 1st Lt. Ernest	7
Shuler, 1st Lt. Lucien B.	7
Simmons, 1st Lt. John M.	7
Smith, Maj. Leslie C.	7
Smith, 1st Lt. Richard E.	7
Stone, 2nd Lt. Robert J.	7
Strand, Capt. William H.	7
Truluck, 1st Lt. John H.	7
Turner, Lt. Col. William L.	7
Tyler, 1st Lt. Gerald E.	7
Vaughn, Maj. Harley C.	7
Waters, 1st Lt. Edward T.	7
Wheadon, Capt. Elmer M.	7
Whittaker, Capt. Roy E.	7
Wicker, Maj. Samuel J.	7
Wilkinson, Capt. James W.	7
Wire, 1st Lt. Calvin C.	7
Woods, Lt. Col. Sidney S.	7
Woody, Capt. Robert E.	7
Zoerb, Capt. Daniel J.	7
Murphy, Lt. Col. John B.	6.75
Cummings, Capt. Donald M.	6.5
Gray, Maj. Rockford V.	6.5
Hoffman, 1st Lt. James E. Jr.	6.5
Hubbard, Lt. Col. Mark E.	6.5
Hunt, 1st Lt. Edward E.	6.5
Koenig, 1st Lt. Charles W.	6.5
Kruzel, Lt. Col. Joseph J.	6.5
Moseley, Capt. Mark L.	6.5
Rader, 1st Lt. Valentine S.	6.5
Riley, 1st Lt. Paul S.	6.5
Welden, 1st Lt. Robert D.	6.25
Adams, 1st Lt. Charles E. Jr.	6
Alison, Lt. Col. John R.	6
Anderson, 1st Lt. Wyman D.	6
Andrews, 1st Lt. Stanley O.	6
Baker, 1st Lt. Ellis C. Jr.	6
Baseler, Lt. Col. Robert L.	6
Bille, Maj. Henry S.	6
Blumer, Capt. Laurence E.	6
Brown, 1st Lt. Harley L.	6
Brown, Capt. Harry W.	6
Brown, Capt. Meade M.	6
Buck, Capt. George T. Jr.	6
Callaway, Maj. Raymond H.	6
Campbell, 1st Lt. Richard A.	6
Candelaria, 1st Lt. Richard G.	6
Care, Capt. Raymond C.	6
Carlson, Capt. Kendall E.	6
Carter, Capt. James R.	6
Chick, Lt. Col. Lewis W. Jr.	6
Coffey, Lt. Col. Robert L. Jr.	6
Collinsworth, Capt. J.D.	6
Cook, Capt. Walter V.	6

Col. James Howard (7)

1st Lt. Urban Drew (6)

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



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

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

Col. Clinton Vincent (6)

Wang, 1st Lt. Kuang Fu	5.5
Winks, 1st Lt. Robert P.	5.5
Biel, 1st Lt. Hipolitus T.	5.33
Vinson, Capt. Arnold E.	5.33
Dorris, Maj. Harry W.	5.25
Miller, 2nd Lt. Thomas F.	5.25
Thompson, 1st Lt. Robert D.	5.25
Duffy, Capt. James E. Jr.	5.2
Abernathy, Capt. Robert W.	5
Adams, 1st Lt. Robert H.	5
Ambort, 2nd Lt. Ernest J.	5
Ammon, 1st Lt. Robert H.	5
Andersen, 1st Lt. Leslie E.	5
Anderson, 1st Lt. Richard H.	5
Arasmith, 1st Lt. Lester L.	5
Archibald, 1st Lt. David B.	5
Aron, 1st Lt. William E.	5
Aust, Capt. Abner M. Jr.	5
Axtell, 1st Lt. Eugene D.	5
Baccus, Lt. Col. Donald A.	5
Bade, 1st Lt. Jack A.	5
Bank, 1st Lt. Raymond M.	5
Barber, 1st Lt. Rex T.	5
Barkey, 1st Lt. Robert M.	5
Barnes, 1st Lt. Truman S.	5
Baumler, Capt. Albert J.	5
Bearden, 2nd Lt. Aaron L.	5
Beavers, Capt. Edward H. Jr.	5
Benne, 1st Lt. Louis	5
Bolyard, Capt. John W.	5
Bonner, 1st Lt. Stephen J.	5
Bostrom, 1st Lt. Ernest O.	5
Bradley, Maj. John L.	5
Brown, Capt. Gerald	5
Byrne, 1st Lt. Robert J.	5
Byrnes, Capt. Robert C.	5
Castle, 2nd Lt. Nial K.	5
Chandler, Capt. George T.	5
Chandler, 1st Lt. Van E.	5
Cleaveland, 2nd Lt. Arthur B.	5
Clinger, Capt. Dallas A.	5
Cloud, Capt. Vivian A.	5
Cochran, 2nd Lt. Paul R.	5
Colman, 1st Lt. Philip E.	5
Comstock, Maj. Harold E.	5
Condon, Capt. Henry L. II	5
Coons, Capt. Merle M.	5
Cox, Capt. Ralph L.	5
Cranfill, Maj. Niven K.	5
Cullerton, 1st Lt. William J.	5
Curton, 1st Lt. Warden D.	5
Daniell, 1st Lt. J.S.	5
Daniel, Col. William A.	5
Davis, Capt. Clayton E.	5
Day, 1st Lt. William C. Jr.	5
Deakins, 1st Lt. Richard S.	5
Della, 1st Lt. George	5
Dick, Capt. Frederick E.	5
Dikovitsky, 1st Lt. Michael	5
Donaldson, 2nd Lt. I.B. Jack	5
Dregne, Lt. Col. Irwin H.	5
Dubisher, Maj. Francis E.	5
Dubois, 1st Lt. Charles H.	5
Duffy, 2nd Lt. Richard E.	5
Egan, 1st Lt. Joseph L. Jr.	5
Elder, Maj. Robert A.	5
Empey, 1st Lt. James W.	5

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Capt. Edwin Heller (5.5)

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

Lt. Col. Harrison Thyng (5)

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

USAF Aces of the Korean War

Capt. Joseph McConnell Jr. (16)

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

Maj. William Whisner Jr. (5.50)

USAF Aces of the Vietnam War

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

Capt. Jeffrey Feinstein (5)

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

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

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

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

Lt. Col. John Meyer (26)

Maj. George Davis Jr. (21)

Leading Air Service/AAF/USAF Aces of All Wars

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

Maj. George Preddy (26.83)

[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

*Living Medal of Honor recipient.

Names, Alphabetically by Wars, and Rank at Time of Action	Place of Birth	Date of Action	Place of Action
World War I			
Bleckley, 2nd Lt. Erwin R.	Wichita, Kan.	Oct. 6, 1918	Binarville, France
Goettler, 1st Lt. Harold E.	Chicago	Oct. 6, 1918	Binarville, France
Luke, 2nd Lt. Frank Jr.	Phoenix	Sept. 29, 1918	Murvaux, France
Rickenbacker, 1st Lt. Edward V.	Columbus, Ohio	Sept. 25, 1918	Billy, France
World War II			
Baker, Lt. Col. Addison E.	Chicago	Aug. 1, 1943	Ploesti, Romania
Bong, Maj. Richard I.	Superior, Wis.	Oct. 10-Nov. 15, 1944	Southwest Pacific
Carswell, Maj. Horace S. Jr.	Fort Worth, Tex.	Oct. 26, 1944	South China Sea
Castle, Brig. Gen. Frederick W.	Manila, Philippines	Dec. 24, 1944	Liège, Belgium
Cheli, Maj. Ralph	San Francisco	Aug. 18, 1943	Wewak, New Guinea
Craw, Col. Demas T.	Traverse City, Mich.	Nov. 8, 1942	Port Lyautey, French Morocco
Doolittle, Lt. Col. James H.	Alameda, Calif.	April 18, 1942	Tokyo
Erwin, SSgt. Henry E.	Adamsville, Ala.	April 12, 1945	Koriyama, Japan
Femoyer, 2nd Lt. Robert E.	Huntington, W.Va.	Nov. 2, 1944	Merseburg, Germany
Gott, 1st Lt. Donald J.	Arnett, Okla.	Nov. 9, 1944	Saarbrücken, Germany
Hamilton, Maj. Pierpont M.	Tuxedo Park, N.Y.	Nov. 8, 1942	Port Lyautey, French Morocco
Howard, Lt. Col. James H.	Canton, China	Jan. 11, 1944	Oschersleben, Germany
Hughes, 2nd Lt. Lloyd H.	Alexandria, La.	Aug. 1, 1943	Ploesti, Romania
Jerstad, Maj. John L.	Racine, Wis.	Aug. 1, 1943	Ploesti, Romania
Johnson, Col. Leon W.	Columbia, Mo.	Aug. 1, 1943	Ploesti, Romania
Kane, Col. John R.	McGregor, Tex.	Aug. 1, 1943	Ploesti, Romania
Kearby, Col. Neel E.	Wichita Falls, Tex.	Oct. 11, 1943	Wewak, New Guinea
Kingsley, 2nd Lt. David R.	Portland, Ore.	June 23, 1944	Ploesti, Romania
Knight, 1st Lt. Raymond L.	Houston	April 25, 1945	Po Valley, Italy
Lawley, 1st Lt. William R. Jr.	Leeds, Ala.	Feb. 20, 1944	Leipzig, Germany
Lindsey, Capt. Darrell R.	Jefferson, Iowa	Aug. 9, 1944	Pontoise, France
Mathies, Sgt. Archibald	Scotland	Feb. 20, 1944	Leipzig, Germany
Mathis, 1st Lt. Jack W.	San Angelo, Tex.	March 18, 1943	Vegesack, Germany
McGuire, Maj. Thomas B. Jr.	Ridgewood, N.J.	Dec. 25-26, 1944	Luzon, Philippines
Metzger, 2nd Lt. William E. Jr.	Lima, Ohio	Nov. 9, 1944	Saarbrücken, Germany
Michael, 1st Lt. Edward S.	Chicago	April 11, 1944	Brunswick, Germany
Morgan, 2nd Lt. John C.	Vernon, Tex.	July 28, 1943	Kiel, Germany
Pease, Capt. Harl Jr.	Plymouth, N.H.	Aug. 7, 1942	Rabaul, New Britain
Pucket, 1st Lt. Donald D.	Longmont, Colo.	July 9, 1944	Ploesti, Romania
Sarnoski, 2nd Lt. Joseph R.	Simpson, Pa.	June 16, 1943	Buka, Solomon Islands
Shomo, Maj. William A.	Jeannette, Pa.	Jan. 11, 1945	Luzon, Philippines
Smith, Sgt. Maynard H.	Caro, Mich.	May 1, 1943	St. Nazaire, France
Truemper, 2nd Lt. Walter E.	Aurora, Ill.	Feb. 20, 1944	Leipzig, Germany
Vance, Lt. Col. Leon R. Jr.	Enid, Okla.	June 5, 1944	Wimereaux, France
Vosler, TSgt. Forrest L.	Lyndonville, N.Y.	Dec. 20, 1943	Bremen, Germany
Walker, Brig. Gen. Kenneth N.	Cerrillos, N.M.	Jan. 5, 1943	Rabaul, New Britain
Wilkins, Maj. Raymond H.	Portsmouth, Va.	Nov. 2, 1943	Rabaul, New Britain
Zeamer, Maj. Jay Jr.*	Carlisle, Pa.	June 16, 1943	Buka, Solomon Islands
Korea			
Davis, Maj. George A. Jr.	Dublin, Tex.	Feb. 10, 1952	Sinuiju,Yalu River, N. Korea
Loring, Maj. Charles J. Jr.	Portland, Maine	Nov. 22, 1952	Sniper Ridge, N. Korea
Sebille, Maj. Louis J.	Harbor Beach, Mich.	Aug. 5, 1950	Hamch'ang, S. Korea
Walmsley, Capt. John S. Jr.	Baltimore	Sept. 14, 1951	Yangdok, N. Korea
Vietnam			
Bennett, Capt. Steven L.	Palestine, Tex.	June 29, 1972	Quang Tri, S. Vietnam
Day, Maj. George E.*	Sioux City, Iowa	Conspicuous gallantry while POW	
Dethlefsen, Maj. Merlyn H.	Greenville, Iowa	March 10, 1967	Thai Nguyen, N. Vietnam
Fisher, Maj. Bernard F.*	San Bernardino, Calif.	March 10, 1966	A Shau Valley, S. Vietnam
Fleming, 1st Lt. James P.*	Sedalia, Mo.	Nov. 26, 1968	Duc Co, S. Vietnam
Jackson, Lt. Col. Joe M.*	Newnan, Ga.	May 12, 1968	Kham Duc, S. Vietnam
Jones, Col. William A. III	Norfolk, Va.	Sept. 1, 1968	Dong Hoi, N. Vietnam
Levitow, A1C John L.	Hartford, Conn.	Feb. 24, 1969	Long Binh, S. Vietnam
Pitsenbarger, A1C William H.	Piqua, Ohio	April 11, 1966	Cam My, S. Vietnam
Sijan, Capt. Lance P.	Milwaukee	Conspicuous gallantry while POW	
Thorsness, Maj. Leo K.*	Walnut Grove, Minn.	April 19, 1967	N. Vietnam
Wilbanks, Capt. Hilliard A.	Cornelia, Ga.	Feb. 24, 1967	Dalat, S. Vietnam
Young, Capt. Gerald O.	Anacortes, Wash.	Nov. 9, 1967	Khesahn, S. Vietnam
Peacetime			
Lindbergh, Col. Charles A.	Detroit	May 20-21, 1927	New York City–Paris record flight
Mitchell, Maj. Gen. William	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: functional and geographical.

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, battle management, and command and control aircraft and intelligence and surveillance systems

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

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

COROLLARY MISSIONS

Monitor and intercept illegal drug traffic

Test new combat equipment

FORCE STRUCTURE

Three numbered air forces: **8th,** Barksdale AFB, La.; **9th,** Shaw AFB, S.C.; **12th,** Davis–Monthan AFB, Ariz.
Three primary subordinate units: Air and Space Expeditionary Force Center, Langley AFB, Va.; Air Intelligence Agency, Lackland AFB, Tex.; Air Warfare Center, Nellis AFB, Nev.
26 wings
Three groups

OPERATIONAL ACTIVITY

Flying hours: 32,425 per month

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

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

PERSONNEL

(as of Sept. 30, 2003)

Active duty		93,115
Officers	13,094	
Enlisted	80,021	
Reserve components		54,459
ANG	45,469	
AFRC	8,990	
Civilian		9,690
Total		**157,264**

USAF photo by MSgt. Michael R. Nixon

The B-2* Spirit of Pennsylvania *from the 509th Bomb Wing, Whiteman AFB, Mo., sits on the ramp at Nellis AFB, Nev. The bomber and personnel from Whiteman were at Nellis participating in a Red Flag exercise.


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AIR COMBAT COMMAND, LANGLEY AFB, VA.

EQUIPMENT
(Primary aircraft inventory as of Sept. 30, 2003)

Bombers	114	Recon/BM/C3I	106
Fighter/Attack	693	Tanker	13
Helicopter	36	Trainer	36

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-2R/S
20th Fighter Wing	Shaw AFB, S.C.	F-16C/CJ/D
23rd Fighter Group[a]	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.	F-117A, T-38B, German F-4F
53rd Wing	Eglin AFB, Fla.	F-15C/E, F-16C/D, HH-60, Predator, Global Hawk
53rd Weapons Evaluation Group[b]	Tyndall AFB, Fla.	BQM-34, MQM-107, QF-4
55th Electronic Combat Group	Davis–Monthan AFB, Ariz.	EC-130H
55th Wing	Offutt AFB, Neb.	E-4B, OC-135B, RC-135S/U/V/W, TC-135S/W
57th Wing	Nellis AFB, Nev.	A-10, F-15C/D/E, F-16C/D, F/A-22, HH-60, Predator
67th Information Operations Wing	Lackland AFB, Tex.	—
70th Intelligence Wing	Ft. Meade, Md.	—
98th Range Wing	Nellis AFB, Nev.	—
99th Air Base Wing	Nellis AFB, Nev. (support)	—
116th Air Control Wing[c]	Robins AFB, Ga.	E-8C
355th Wing	Davis–Monthan AFB, Ariz.	A/OA-10
366th Fighter Wing	Mountain Home AFB, Idaho	F-15C/D/E, F-16CJ/D
388th Fighter Wing	Hill AFB, Utah	F-16C/D
480th Intelligence Wing	Langley AFB, Va.	—
505th Command and Control Wing	Hurlburt Field, Fla.	—
509th Bomb Wing	Whiteman AFB, Mo.	B-2, T-38
552nd Air Control Wing	Tinker AFB, Okla.	E-3B/C

[a]Part of 4th Fighter Wing. [b]Part of 53rd Wing. [c]Blended wing with active duty and ANG personnel.

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USAF photo by SSgt. Aaron D. Allmon

An F-16CJ Fighting Falcon, 20th Fighter Wing, Shaw AFB, S.C., flies over New York City during a mission in support of Operation Noble Eagle, the homeland defense effort.

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

Commander
Lt. Gen. Bruce A. Carlson

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

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

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

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

55th Electronic Combat Group
Davis–Monthan AFB, Ariz.
(EC-130H)

67th Information Operations Wing
Lackland AFB, Tex.

70th Intelligence Wing
Ft. Meade, Md.

116th Air Control Wing
Robins AFB, Ga.
(E-8C)

480th Intelligence Wing
Langley AFB, Va.

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

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

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

Commander
Lt. Gen. Walter E. Buchanan III

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)

23rd Fighter Group
Pope AFB, N.C.
(A/OA-10)

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

Commander
Lt. Gen. Randall M. Schmidt

7th Bomb Wing
Dyess AFB, Tex.
(B-1B)

27th Fighter Wing
Cannon AFB, N.M.
(F-16C/D)

28th Bomb Wing
Ellsworth AFB, S.D.
(B-1B)

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

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

366th Fighter Wing
Mountain Home AFB, Idaho
(F-15C/D/E, F-16CJ/D)

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

AETC Air Education and Training Command

Headquarters Randolph AFB, Tex.

Established July 1, 1993

Commander Gen. 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

Three groups

One squadron

USAF photo by MSgt. Efrain Gonzalez

Basic trainees scramble to don chemical warfare suits as part of Warrior Week training at Lackland AFB, Tex. The seven-day session prepares airmen for worldwide deployment.

OPERATIONAL ACTIVITY

Flying hours: 48,181 per month

PERSONNEL
(as of Sept. 30, 2003)

Active duty		71,666
Officers	15,332	
Enlisted	56,334	
Reserve components		7,966
ANG	4,739	
AFRC	3,227	
Civilian		14,712
Total		**94,344**

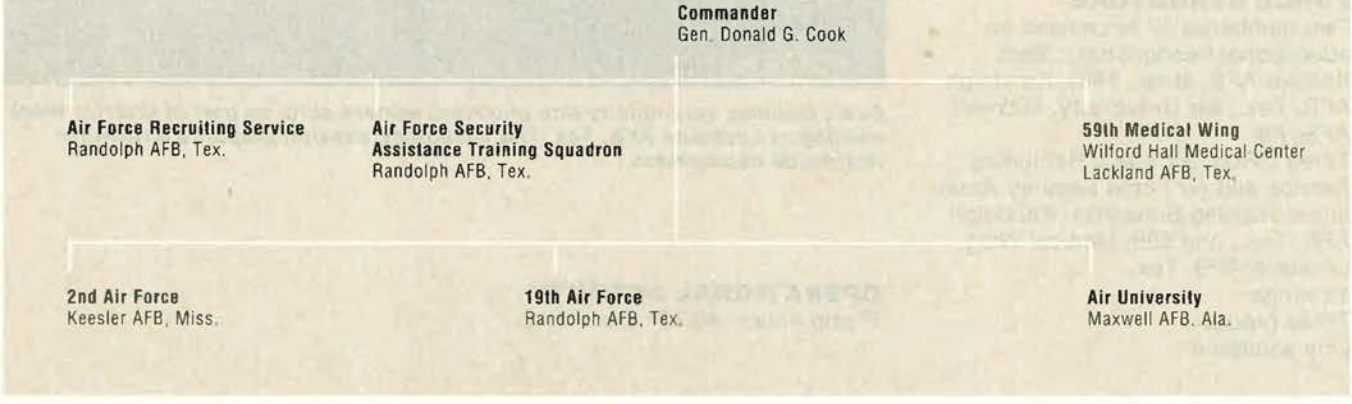
EQUIPMENT
(PAI as of Sept. 30, 2003)

Fighter/Attack	219
Helicopter	17
Special Operations Forces	17
Tanker	25
Trainer	914
Transport	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[a]	Keesler AFB, Miss.	C-21
47th Flying Training Wing	Laughlin AFB, Tex.	T-1, T-6, T-37, T-38
56th Fighter Wing	Luke AFB, Ariz.	F-16
58th Special Operations Wing	Kirtland AFB, N.M.	HC-130N/P, MC-130H, MC-130P, HH-60G, MH-53, UH-1
71st Flying Training Wing	Vance AFB, Okla.	T-1, T-37, T-38
80th Flying Training Wing	Sheppard AFB, Tex.	T-37, T-38
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, F/A-22
336th Training Group	Fairchild AFB, Wash.	UH-1
479th Flying Training Group	Moody AFB, Ga.	T-6, T-38C
Technical Training Units		
17th Training Wing	Goodfellow AFB, Tex.	
37th Training Wing	Lackland AFB, Tex.	
81st Training Wing	Keesler AFB, Miss.	
82nd Training Wing	Sheppard AFB, Tex.	
381st Training Group	Vandenberg AFB, Calif.	
Other Major Units		
Air University	Maxwell AFB, Ala.	
Air Force Recruiting Service	Randolph AFB, Tex.	
42nd Air Base Wing	Maxwell AFB, Ala.	
59th Medical Wing	Lackland AFB, Tex.	

[a]Part of 314th Airlift Wing.

AIR EDUCATION AND TRAINING COMMAND, RANDOLPH AFB, TEX.



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** — Vandenberg AFB, Calif.
- **81st Training Wing** — Keesler AFB, Miss.
- **82nd Training Wing** — Sheppard AFB, Tex.

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

Commander
Maj. Gen. 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-6, T-37, T-38)
- **56th Fighter Wing** — Luke AFB, Ariz. (F-16)
- **58th Special Operations Wing** — Kirtland AFB, N.M. (HC-130N/P, MC-130H, MC-130P, HH-60G, MH-53, UH-1)
- **71st Flying Training Wing** — Vance AFB, Okla. (T-1, T-37, T-38)
- **80th Flying Training Wing** — Sheppard AFB, Tex. (T-37, T-38)
- **97th Air Mobility Wing** — Altus AFB, Okla. (C-5, C-17, KC-135)
- **314th Airlift Wing** — Little Rock AFB, Ark. (C-130E)
  - **45th Airlift Squadron** — Keesler AFB, Miss. (C-21)
- **325th Fighter Wing** — Tyndall AFB, Fla. (F-15, F/A-22)
- **336th Training Group** — Fairchild AFB, Wash. (UH-1)
- **479th Flying Training Group** — Moody AFB, Ga. (T-6, T-38)

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.

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Air Force Materiel Command

Headquarters Wright–Patterson AFB, Ohio

Established July 1, 1992

Commander Gen. Gregory S. Martin

MISSIONS

Design, develop, and acquire advanced technology to achieve air superiority

Operate major product, logistics, and test centers and the Air Force Research Laboratory

Deliver war-winning expeditionary capabilities to the warfighter through technology, acquisition support, and sustainment

FORCE STRUCTURE

Three major product centers
Two test centers
Three air logistics centers
Three specialized centers
One laboratory,10 directorates, at various locations
10 wings
Two groups

OPERATIONAL ACTIVITY

Flying hours: 1,500 per month

PERSONNEL

(as of Sept. 30, 2003)

Active duty		23,377
Officers	7,222	
Enlisted	16,155	
Reserve components		5,316
ANG	2,099	
AFRC	3,217	
Civilian		56,497
Total		**85,190**

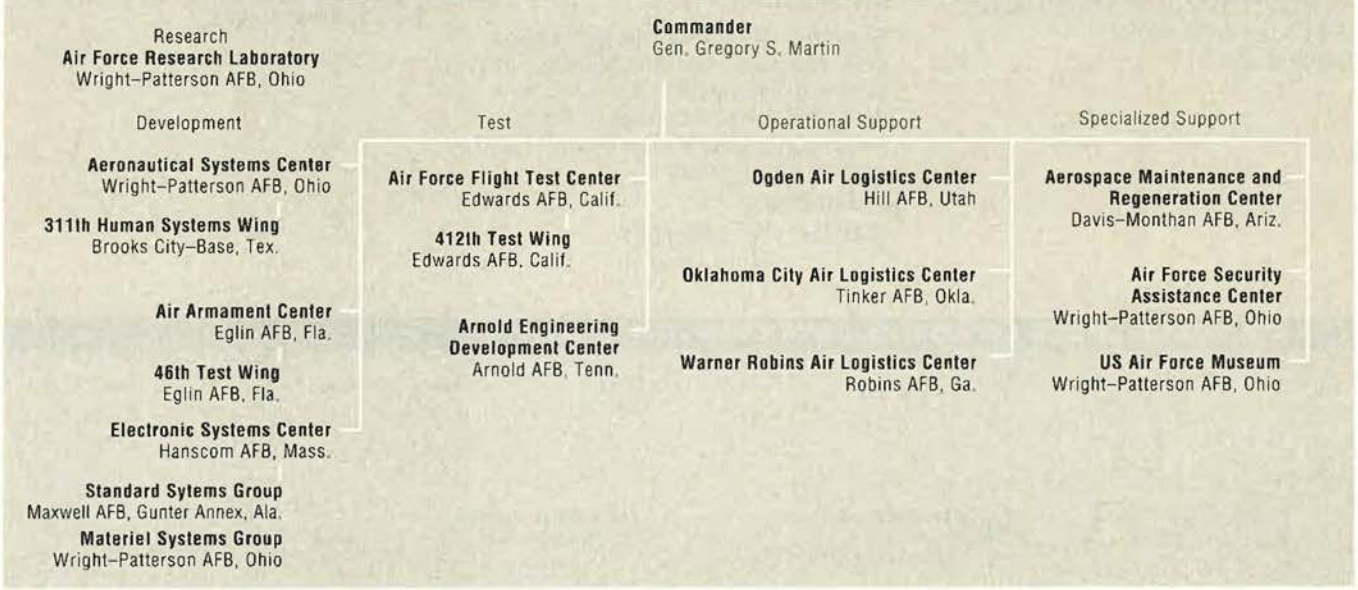
EQUIPMENT

(PAI as of Sept. 30, 2003)

Bomber	4	Helicopter	5
Fighter/Attack	53	Tanker	4
		Trainer	13
		Transport	22

UNIT	BASE
Aeronautical Systems Center	Wright–Patterson AFB, Ohio
Aerospace Maintenance & Regeneration Center	Davis–Monthan AFB, Ariz.
Air Armament Center	Eglin AFB, Fla.
Air Force Flight Test Center	Edwards AFB, Calif.
Air Force Research Laboratory	Wright–Patterson AFB, Ohio
Air Force Security Assistance Center	Wright–Patterson AFB, Ohio
Arnold Engineering Development Center	Arnold AFB, Tenn.
Electronic Systems Center	Hanscom AFB, Mass.
Materiel Systems Group	Wright–Patterson AFB, Ohio
Ogden Air Logistics Center	Hill AFB, Utah
Oklahoma City Air Logistics Center	Tinker AFB, Okla.
Standard Systems Group	Maxwell AFB, Gunter Annex, Ala.
US Air Force Museum	Wright–Patterson AFB, Ohio
Warner Robins Air Logistics Center	Robins AFB, Ga.
46th Test Wing	Edwards AFB, Calif.
66th Air Base Wing	Hanscom AFB, Mass.
72nd Air Base Wing	Tinker AFB, Okla.
75th Air Base Wing	Hill AFB, Utah
78th Air Base Wing	Robins AFB, Ga.
95th Air Base Wing	Edwards AFB, Calif.
96th Air Base Wing	Eglin AFB, Fla.
311th Human Systems Wing	Brooks City–Base, Tex.
377th Air Base Wing	Kirtland AFB, N.M.
412th Test Wing	Edwards AFB, Calif.

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 STRATCOM; space weather support to entire DOD
Produce and acquire advanced space systems

COROLLARY MISSIONS

Develop and integrate space support for the warfighter
Serve as lead command for all USAF UH-1 helicopter programs

OTHER RESPONSIBILITIES

Provide communications, computer, and base support to NORAD; technology safeguard monitors to support launches of US satellites on foreign launch vehicles
Supply range and launch facilities for military, civil, and commercial space launch

FORCE STRUCTURE

Two numbered air forces: **14th,** Vandenberg AFB, Calif.; **20th,** F.E. Warren AFB, Wyo.
One major product center: Space and Missile Systems Center, Los Angeles AFB, Calif.
One DRU: Space Warfare Center, Schriever AFB, Colo.
Eight wings

USAF photo by A1C Mike Meares

SrA. Nayibe Ramos runs through a checklist during GPS satellite operations at Schriever AFB, Colo. This operations center controls a constellation of satellites that provides navigation data to military and civilian users worldwide.

PERSONNEL

(as of Sept. 30, 2003)

Active duty		19,523
Officers	5,164	
Enlisted	14,359	
Reserve components		1,475
ANG	486	
AFRC	989	
Civilian		6,471
Total		**27,469**

EQUIPMENT

(as of Sept. 30, 2003)

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

Helicopters:		18
ICBMs:	Peacekeeper	23
	Minuteman III	500

Satellite command and control system: Air Force Satellite Control Network

Satellite systems (as of Jan. 1, 2003):

GPS: Block II/IIA/IIR	28
DMSP	5
DSCS III	13
Milstar	5
Interim Polar System	2

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

AIR FORCE SPACE COMMAND, PETERSON AFB, COLO.

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.

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

Commander
Maj. Gen. Michael A. Hamel

- **21st Space Wing** — Peterson AFB, Colo.
- **30th Space Wing** — Vandenberg AFB, Calif. (UH-1)
- **45th Space Wing** — Patrick AFB, Fla.
- **50th Space Wing** — Schriever AFB, Colo.
- **460th Air Base Wing** — Buckley AFB, Colo.

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

Commander
Maj. Gen. Frank G. Klotz

- **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/FUNCTIONS
21st Space Wing	Peterson AFB, Colo.	Missile warning and space surveillance
30th Space Wing	Vandenberg AFB, Calif.	Launches, range operations, support for space and ICBM test, UH-1
45th Space Wing	Patrick AFB, Fla.	Launch, range operations, support for shuttle program, and US Navy Trident test
50th Space Wing	Schriever AFB, Colo.	Satellite command and control
90th Space Wing	F.E. Warren AFB, Wyo.	Minuteman III 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
Space & Missile Systems Center	Los Angeles AFB, Calif.	R&D, purchase of military space systems

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

Provide forces for worldwide deployment and assignment to regional unified commands to conduct agile combat support, combat aviation advisory operations, information warfare, personnel recovery and rescue operations, precision aerospace fires, psychological operations, and specialized aerospace mobility and refueling

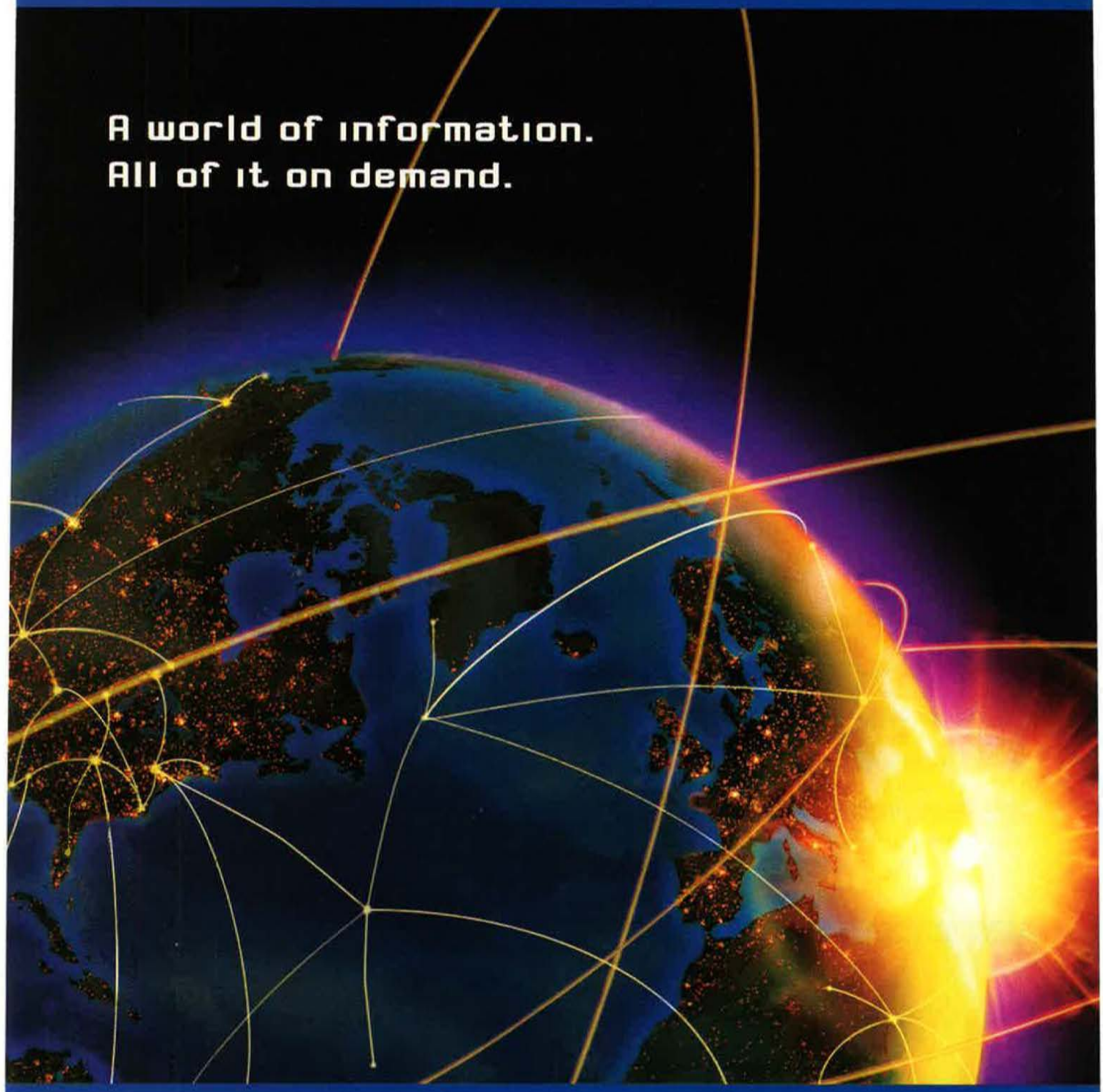
FORCE STRUCTURE

Two wings
Four groups
Two squadrons
Air Force Rescue Coordination Center
USAF Special Operations School

OPERATIONAL ACTIVITY

Flying hours: 3,800 per month

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



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PERSONNEL
(as of Sept. 30, 2003)

Active duty		9,407
Officers	1,614	
Enlisted	7,793	
Reserve components		5,272
ANG	2,971	
AFRC	2,301	
Civilian		743
Total		**15,422**

EQUIPMENT
(PAI as of Sept. 30, 2003)

Helicopter	2
SOF	71
Transport	2

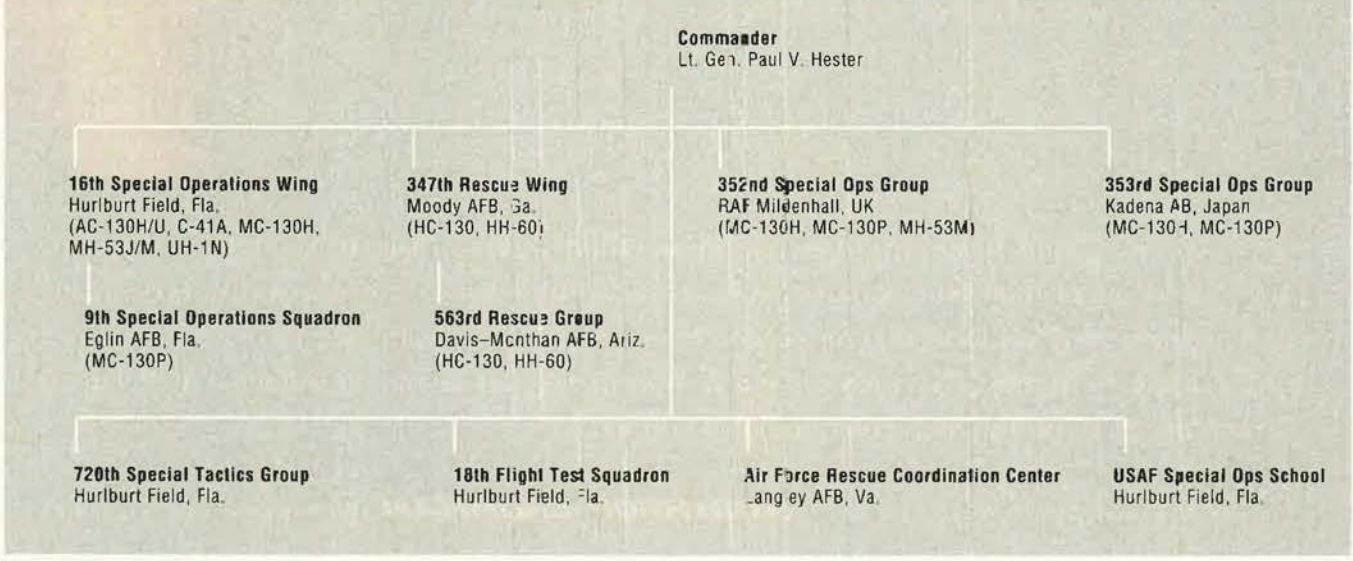
USAF photo by TSgt. Justin O. Pyle

SSgt. Carlos Clements, a loadmaster on an MC-130P Combat Shadow, RAF Mildenhall, UK, waits for takeoff prior to a refueling mission at the Lungi Airport in Sierra Leone on Aug. 6, 2003.

UNIT	BASE	WEAPONS
9th Special Operations Squadron[a]	Eglin AFB, Fla.	MC-130P
16th Special Operations Wing	Hurlburt Field, Fla.	AC-130H/U, C-41A, MC-130H, MH-53J/M, UH-1N
18th Flight Test Squadron	Hurlburt Field, Fla.	—
347th Rescue Wing	Moody AFB, Ga.	HC-130, HH-60
352nd Special Operations Group	RAF Mildenhall, UK	MC-130H, MC-130P, MH-53M
353rd Special Operations Group	Kadena AB, Japan	MC-130H, MC-130P
563rd Rescue Group[b]	Davis–Monthan AFB, Ariz.	HC-130, HH-60
720th Special Tactics Group	Hurlburt Field, Fla.	—
Air Force Rescue Coordination Center	Langley AFB, Va.	—
USAF Special Operations School	Hurlburt Field, Fla.	—

[a]Part of 16th SOW. [b]Part of 347th Rescue Wing.

AIR FORCE SPECIAL OPERATIONS COMMAND, HURLBURT FIELD, FLA.



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

One numbered air force: **18th,** Scott AFB, Ill.

Two expeditionary mobility task 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

Three groups

OPERATIONAL ACTIVITY

Flying hours: 41,272 per month

Major operations

Deep Freeze (Antarctic); Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Noble Eagle (US); Wildland Wildfire (US fire fighting)

Major training exercises

Cobra Gold; Determined Promise; Flintlock; Global Guardian; Internal Look; JTFEX; Joint Readiness Training Center Exercises; New Horizons; Reception Staging and Onward Integration; Red Flag; Terminal Fury; Ulchi Focus Lens

PERSONNEL

(as of Sept. 30, 2003)

Active duty		53,083
Officers	9,185	
Enlisted	43,898	
Reserve components		86,547
ANG	40,177	
AFRC	46,370	
Civilian		8,727
Total		**148,357**

USAF photo by SSgt. Lee A. Osberry Jr.

US Army photo by Sgt. 1st Class Joe Belcher

TSgt. Gabe Renteria (above), a loadmaster with the 745th Expeditionary Airlift Squadron, checks an engine before a supply mission at a forward operating base. At left, a C-17 from Charleston AFB, S.C., is on final approach at Bagram airfield, Afghanistan.

EQUIPMENT

(PAI as of Sept. 30, 2003)

Helicopter	15
Tanker	217
Transport	306

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
89th Airlift Wing	Andrews AFB, Md.	C-9, C-20, C-32, C-37, C-40, 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-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.

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

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Pacific Air Forces

Headquarters Hickam AFB, Hawaii

Established July 1, 1957

Commander Gen. William J. Begert

MISSIONS

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

FORCE STRUCTURE

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

OPERATIONAL ACTIVITY

Flying hours: 10,903 per month

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

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

USAF photo by SSgt Michael R. Holzworth

Capt. Todd Lafortune gets strapped into an F-16C by his crew chief, SSgt. Trent Fairchild, 80th Fighter Squadron, Kunsan AB, South Korea.

PERSONNEL

(as of Sept. 30, 2003)

Active duty		34,095
Officers	4,344	
Enlisted	29,751	
Reserve components		5,242
ANG	4,709	
AFRC	533	
Civilian		8,464
Total		**47,801**

UNIT	BASE	WEAPONS
3rd Wing	Elmendorf AFB, Alaska	C-12, C-130H, E-3B/C, F-15C/D, F-15E
8th Fighter Wing	Kunsan AB, South Korea	F-16C/D
15th Airlift Wing	Hickam AFB, Hawaii	C-37
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-21A, C-130E/H, UH-1N
497th Fighter Training Squadron	Paya Lebar Airfield, Singapore[a]	Rotational fighter aircraft

[a]Base owned by Singapore government.

PACIFIC AIR FORCES, HICKAM AFB, HAWAII

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

Commander
Lt. Gen. 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-21A, C-130E/H, UH-1N)

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

Commander
Lt. Gen. Garry R. Trexler

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. Carrol H. Chandler

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, 2003)

Fighter/Attack	263
Helicopter	11
Recon	3
Tanker	7
Transport	36

USAF photo by MSgt. Val Gempis

A1Cs Shaetel Makey (left) and Ashely Maddox, both members of the 374th Maintenance Group, Yokota AB, Japan, inspect the repainted cowling of a C-130 engine.

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

Commander
Maj. Gen. Dennis R. Larsen

36th Air Base Wing
Andersen AFB, Guam

497th Fighter Training Squadron
Paya Lebar Airfield, Singapore[a]
(Rotational fighter aircraft)

[a]Base owned by Singapore government.

US Air Forces in Europe

Headquarters Ramstein AB, Germany

Established Aug. 7, 1945

Commander Gen. Robert H. Foglesong

MISSIONS

Provide the joint force commander rapidly deployable expeditionary aerospace forces

COROLLARY MISSIONS

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

FORCE STRUCTURE

Two numbered air forces: **3rd,** RAF Mildenhall, UK; **16th,** Aviano AB, Italy
Eight wings
One group

OPERATIONAL ACTIVITY

Flying hours: 7,700 per month

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

USAF photo by SSgt. Lee A. Osberry Jr.

An F-15E Strike Eagle from the 494th Expeditionary Fighter Squadron patrols the skies over Baghdad during a combat air support mission. The 494th deployed from RAF Lakenheath, UK, for Operation Iraqi Freedom.

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

US AIR FORCES IN EUROPE, RAMSTEIN AB, GERMANY

Commander
Gen. Robert H. Foglesong

3rd Air Force
RAF Mildenhall, UK

16th Air Force
Aviano AB, Italy

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

Allied Command Operations (ACO)

Allied Forces South (AFSOUTH)
Naples, Italy

Allied Forces North (AFNORTH)
Brunssum, Netherlands

Allied Air Forces South (AIRSOUTH)
Naples, Italy

Allied Air Forces North (AIRNORTH)
Ramstein AB, Germany

5th Combined Air Operations Center
Vicenza, Italy

6th Combined Air Operations Center
Eskisehir, Turkey

Interim Deployable CAOC
Ramstein AB, Germany

Senior Commander Warfighting Seminar; Sentry White Eagle; Union Flash; Victory Strike

PERSONNEL
(as of Sept. 30, 2003)

Active duty		29,278
Officers	3,768	
Enlisted	25,510	
Reserve components		407
ANG	194	
AFRC	213	
Civilian		5,817
Total		**35,502**

EQUIPMENT
(PAI as of Sept. 30, 2003)

Fighter/Attack	174
Tanker	15
Transport	30

USAF photo by A1C Heather M. Forrest

From left, Capt. Jonathan Dowty, Maj. Lee Spechler, and Capts. Bryan Tash and Matt Glynn—52nd Fighter Wing, Spangdahlem AB, Germany—use GPS units and other gear to find a pickup zone during an exercise.

UNIT	BASE	WEAPONS
31st Fighter Wing	Aviano AB, Italy	F-16C/D
39th Air Base Wing	Incirlik AB, Turkey	Tactical range and contingency support, rotational aircraft
48th Fighter Wing	RAF Lakenheath, UK	F-15C, F-15E
52nd Fighter Wing	Spangdahlem AB, Germany	A/OA-10, F-16CJ
65th Air Base Wing	Lajes Field, the Azores	—
85th Group	Keflavik, Iceland	HH-60
86th Airlift Wing	Ramstein AB, Germany	C-9, C-21, C-130E
100th Air Refueling Wing	RAF Mildenhall, UK	KC-135R
435th Air Base Wing	Ramstein AB, Germany	—

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

Commander
Maj. Gen. Michael W. Wooley

- **48th Fighter Wing** — RAF Lakenheath, UK (F-15C, F-15E)
- **52nd Fighter Wing** — Spangdahlem AB, Germany (A/OA-10, F-16CJ)
- **65th Air Base Wing** — Lajes Field, the Azores
- **86th Airlift Wing** — Ramstein AB, Germany (C-9, C-21, C-130E)
- **100th Air Refueling Wing** — RAF Mildenhall, UK (KC-135R)
- **435th Air Base Wing** — Ramstein AB, Germany
- **85th Group** — Keflavik, Iceland (HH-60)

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

Commander
Lt. Gen. Glen W. Moorhead III

- **31st Fighter Wing** — Aviano AB, Italy (F-16C/D)
- **39th Air Base Wing** — Incirlik AB, Turkey (Tactical range and contingency support, rotational aircraft)

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 JRB Fort Worth, Tex.; **22nd,** Dobbins ARB, Ga.
36 wings
Four groups
One detachment

OPERATIONAL ACTIVITY

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

USAF photo by TSgt. Justin D. Pyle

TSgt. Terri Bernatzke, a loadmaster with the 301st Airlift Squadron, Travis AFB, Calif., supervises the forward kneeling process of a C-5 loaded with HH-60G Pavehawks in Lungi, Sierra Leone, in support of Operation Sheltering Sky.

PERSONNEL

(as of Sept. 30, 2003)

Total (selected reserve)*		74,754
Officers	16,805	
Enlisted	57,949	
Civilian (non-ART)		4,544
Total		**79,298**

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

EQUIPMENT

(PAI as of Sept. 30, 2003)

Bomber	8
Fighter/Attack	105
Helicopter	17
Recon/BM/C3I	10
SOF	12
Tanker	75
Transport	167

AIR FORCE RESERVE COMMAND, ROBINS AFB, GA.

Commander
Lt. Gen. James E. Sherrard III

- **4th Air Force**, March ARB, Calif.
- **10th Air Force**, NAS JRB Fort Worth, Tex.
- **22nd Air Force**, Dobbins ARB, Ga.
- **Air Reserve Personnel Center**, Col. James L. Playford, Denver

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

Commander
Maj. Gen. Robert E. Duignan

- **349th Air Mobility Wing**, Travis AFB, Calif. (C-5A/B, KC-10[a])
  - **452nd Air Mobility Wing**, March ARB, Calif. (C-141C, KC-135R)
- **433rd Airlift Wing**, Lackland AFB, Tex. (C-5A)
  - **459th Air Refueling Wing**, Andrews AFB, Md. (KC-135R)
- **434th Air Refueling Wing**, Grissom ARB, Ind. (KC-135R)
  - **507th Air Refueling Wing**, Tinker AFB, Okla. (KC-135R)
- **445th Airlift Wing**, Wright-Patterson AFB, Ohio (C-141C)
  - **916th Air Refueling Wing**, Seymour Johnson AFB, N.C. (KC-135R)
- **446th Airlift Wing**, McChord AFB, Wash. (C-17A[a])
  - **927th Air Refueling Wing**, Selfridge ANGB, Mich. (KC-135E)

- **932nd Airlift Wing**, Scott AFB, Ill. (C-9A[a])
- **939th Air Refueling Wing**, Portland Arpt., Ore. (KC-135R)
- **940th Air Refueling Wing**, Beale AFB, Calif. (KC-135E)
- **931st Air Refueling Group**, McConnell AFB, Kan. (KC-135R[a])

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

Commander
Maj. Gen. David E. Tanzi

- **301st Fighter Wing**, NAS JRB Fort Worth, Tex. (F-16C/D)
  - **919th Special Ops Wing**, Duke Field, Fla. (MC-130E[b]/P[a])
- **419th Fighter Wing**, Hill AFB, Utah (F-16C/D)
  - **920th Rescue Wing**, Patrick AFB, Fla. (HC-130P/N, HH-60G)
- **442nd Fighter Wing**, Whiteman AFB, Mo. (A/OA-10A)
  - **926th Fighter Wing**, NAS JRB New Orleans (A/OA-10A)
- **482nd Fighter Wing**, Homestead ARB, Fla. (F-16C/D)
  - **944th Fighter Wing**, Luke AFB, Ariz. (F-16C/D[c])
- **917th Wing**, Barksdale AFB, La. (B-52H, A/OA-10A)

- **310th Space Group**, Schriever AFB, Colo.
- **340th Flying Training Group**, Randolph AFB, Tex. (AT/T-38, T-1, T-6, T-37)[a]
- **513th Air Control Group**, Tinker AFB, Okla. (E-3[a])
- **Det. 1**, Shaw AFB, S.C. (F-16C/D)[a]

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

Commander
Maj. Gen. James D. Bankers

- **94th Airlift Wing**, Dobbins ARB, Ga. (C-130H)
  - **440th Airlift Wing**, General Mitchell Arpt./ARS, Wis. (C-130H)
- **302nd Airlift Wing**, Peterson AFB, Colo. (C-130H3)
  - **512th Airlift Wing**, Dover AFB, Del. (C-5A/B[a])
- **315th Airlift Wing**, Charleston AFB, S.C. (C-17[a])
  - **514th Air Mobility Wing**, McGuire AFB, N.J. (C-141B, KC-10A)[a]
- **403rd Wing**, Keesler AFB, Miss. (C-130J, WC-130H/J)
  - **908th Airlift Wing**, Maxwell AFB, Ala. (C-130H2)
- **439th Airlift Wing**, Westover ARB, Mass. (C-5A)
  - **910th Airlift Wing**, Youngstown-Warren Arpt./ARS, Ohio (C-130H2)

- **911th Airlift Wing**, Pittsburgh Arpt./ARS (C-130H2)
- **913th Airlift Wing**, NAS JRB Willow Grove, Pa. (C-130E)
- **914th Airlift Wing**, Niagara Falls Arpt./ARS, N.Y. (C-130H3)
- **934th Airlift Wing**, Minneapolis-St. Paul Arpt./ARS, Minn. (C-130E)

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

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

ANG Air National Guard

Headquarters Washington, D.C.

Established Sept. 18, 1947

Director Lt. Gen. Daniel James III

MISSIONS

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

FORCE STRUCTURE

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

OPERATIONAL ACTIVITY

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

PERSONNEL

(as of Sept. 30, 2003)

Total ANG military*		108,286
Officers	13,724	
Enlisted	94,562	
Civilian (non-ART)		1,249
Total		**109,535**

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

USAF photo by SSgt. Brett Ewald

An F-16 sits on the flight line at the Minnesota ANG's 148th Fighter Wing in Duluth. The 148th has been conducting increased night flying operations as part of its conversion from an air defense mission to general-purpose operations.

EQUIPMENT

(PAI as of Sept. 30, 2003)

Fighter/Attack	631
Helicopter	15
Recon/BM/C3I	5
SOF	4
Tanker	210
Transport	253

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

Commander
Maj. Gen. Craig R. McKinley

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, 2004)

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	NAS JRB Willow Grove, Pa.
124th Wing[a]	Boise Air Terminal, Idaho
175th Wing[a]	Martin State Arpt., Md.

C-130

156th Airlift Wing	Luis Munoz Marin Arpt., Puerto Rico

E-8C

116th Air Control Wing[b]	Robins AFB, Ga.

F-15

131st Fighter Wing	Lambert–St. Louis Arpt., Mo.
159th Fighter Wing	NAS JRB New Orleans, La.

F-15—air defense

102nd Fighter Wing	Otis ANGB, Mass.
125th Fighter Wing	Jacksonville Arpt., Fla.
142nd Fighter Wing	Portland Arpt., Ore.

F-16

113th Wing	Andrews AFB, Md.
114th Fighter Wing	Joe Foss Field, S.D.
115th Fighter Wing	Truax Field, Wis.
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.
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.

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 ANGB, 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 JRB Fort Worth, Tex.
137th Airlift Wing	Will Rogers World Arpt., Okla.
139th Airlift Wing	Rosecrans Memorial Arpt., Mo.
143rd Airlift Wing	Quonset State Arpt., R.I.
145th Airlift Wing	Charlotte/Douglas Arpt., N.C.
146th Airlift Wing	Channel Islands ANGS, Calif.
152nd Airlift Wing	Reno/Tahoe Arpt., Nev.
153rd Airlift Wing	Cheyenne Arpt., Wyo.
165th Airlift Wing	Savannah 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	Allen C. Thompson Field, 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 ANGB, 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
184th Air Refueling Wing	McConnell AFB, Kan.
185th Air Refueling Wing	Sioux Gateway Arpt., Iowa
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[c]	Kulis ANGB, Alaska

F-15

154th Wing[d] (199th FS)	Hickam AFB, Hawaii

HC-130/HH-60

176th Wing (210th RQS)	Kulis ANGB, Alaska

KC-135

154th Wing (203rd ARS)	Hickam AFB, Hawaii
168th Air Refueling Wing	Eielson AFB, Alaska

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

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 Hc. 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. David M. Votipka

MISSION, PURPOSE, OPERATIONS

Serve as lead for the Distributed Mission Operations initiative
Support Air Force modeling and simulation training, analysis, acquisition, and operations and corporate M&S planning and requirements generation
Promote Air Force M&S science and technology improvement and innovation and professional development and education for the Air Force M&S workforce
Operate and maintain Air Force M&S Information Service

STRUCTURE

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

PERSONNEL

Active duty		18
Officers	15	
Enlisted	3	
Civilians		16
Total		**34**

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

STRUCTURE

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

PERSONNEL

Civilians	817

The director of AFAA is the USAF auditor general.

Air Force Center for Environmental Excellence

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

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

10 directorates
Three regional environmental offices

PERSONNEL

Active duty		38
Officers	36	
Enlisted	2	
Reserve components		10
ANG	0	
AFRC	10	
Civilians		365
Total		**413**

Air Force Civil Engineer Support Agency

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

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Four directorates

PERSONNEL

Active duty		90
Officers	18	
Enlisted	72	
Reserve components		25
ANG	0	
AFRC	25	
Civilians		116
Total		**231**

Air Force Command and Control and Intelligence, Surveillance, and Reconnaissance Center

Hq.: Langley AFB, Va.
Estab.: Sept. 12, 1997
Cmdr.: Maj. Gen. Tommy F. Crawford

MISSION, PURPOSE, OPERATIONS

Develop the science of control to enable the art of command by influencing, integrating, and improving Air Force C4ISR capabilities
Represent all major commands and provide operational warfighter perspective to Air Force C4ISR spiral development and system acquisition commands and processes
Deliver interoperability and combat capability to the joint warfighter

STRUCTURE

Two major field units
14 subordinate organizations

PERSONNEL

Active duty		265
Officers	189	
Enlisted	76	
Reserve Components		18
ANG	0	
AFRC	18	
Civilians		54
Total		**337**

Air Force Communications Agency

Hq.: Scott AFB, Ill.
Estab.: June 13, 1996
Cmdr.: Col. David J. Kovach

MISSION, PURPOSE, OPERATIONS

Serve as center of excellence for C4 and information technology
Oversee ground, air, and space network
Deploy specialized strike teams and network assessment capabilities for assured USAF communications and information combat power
Develop architectures and standards, ensuring systems are integrated into the network rapidly, securely, and reliably
Bring competency and discipline to USAF network weapon system operators

STRUCTURE
Five functional areas

PERSONNEL

Active duty		235
Officers	100	
Enlisted	135	
Reserve Components		2
ANG	0	
AFRC	2	
Civilians		296
Total		**533**

Air Force Cost Analysis Agency

Hq.: Arlington, Va.
Estab.: Aug. 1, 1992
Exec. Dir.: Richard K. Hartley

MISSION, PURPOSE, OPERATIONS
Develop independent life-cycle cost estimates of major weapon and information systems; estimates and cost factors for modernization planning, long-range planning, divestiture, and flying hour program; cost-estimation tools, techniques, methodologies, and databases
Conduct special cost reviews for the Air Force Secretariat and for other organizations as directed
Research emerging changes in technologies, acquisition priorities, and industry

STRUCTURE
Five divisions

PERSONNEL

Active duty		23
Officers	21	
Enlisted	2	
Civilians		34
Total		**57**

Air Force Flight Standards Agency

Hq.: Andrews AFB, Md.
Estab.: Oct. 1, 1991
Cmdr.: Col. Thomas Arko

MISSION, PURPOSE, OPERATIONS
Develop, standardize, evaluate, and certify USAF policy, procedures, and equipment for flight operations and centrally manage USAF air traffic control and landing systems
Perform worldwide flight inspection of airfields and flight instrument/navigation systems
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		122
Officers	53	
Enlisted	69	
Reserve components		5
ANG	0	
AFRC	5	
Civilians		40
Total		**167**

Air Force Frequency Management Agency

Hq.: Alexandria, Va.
Estab.: Oct. 1, 1991
Cmdr.: Col. Louis G. Jakowatz III

MISSION, PURPOSE, OPERATIONS
Obtain spectrum access for Air Force and selected DOD activities in support of national policy objectives, systems development, and global operations
Coordinate Air Force spectrum policy and guidance. Responsible for USAF representation in spectrum negotiations with civil, military, national, and international regulatory organizations
Provide curriculum oversight for the Electromagnetic Spectrum Management Course and Joint Task Force Spectrum Management Course

STRUCTURE
Two directorates
Technical director

PERSONNEL

Active duty		10
Officers	3	
Enlisted	7	
Civilians		18
Total		**28**

Air Force Historical Research Agency

Hq.: Maxwell AFB, Ala.
Estab.: May 25, 1979
Cmdr.: Col. Carol S. Sikes

MISSION, PURPOSE, OPERATIONS
Collect, preserve, and manage historical document collection and oral history program
Research, write, and publish books and other studies on USAF history
Provide historical support to USAF, DOD, and other government agencies
Record and disseminate USAF history, including the role of airpower in national security
Operate research facilities and automated historical data system
Determine the lineage and honors of USAF units; maintain official emblem records
Verify Air Force aerial victory credits

STRUCTURE
Four divisions
One operating location in Washington, D.C.

PERSONNEL

Active duty		12
Officers	3	
Enlisted	9	
Reserve components		24
ANG	0	
AFRC	24	
Civilians		79
Total		**115**

USAF photo

A1C Joe Harvey, satellite communications Global Mobility Assessment Team member, 621st AMG, McGuire AFB, N.J., sets up an Inmarsat at Baghdad Airport on April 11, 2003, in support of Operation Iraqi Freedom.

Air Force Inspection Agency

Hq.: Kirtland AFB, N.M.
Estab.: Aug. 1, 1991
Cmdr.: Col. David E. Snodgrass

MISSION, PURPOSE, OPERATIONS

Provide USAF leadership with independent assessments to improve the Air Force
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
Conduct compliance inspections for FOAs and DRUs that do not have major command oversight
Publish *TIG Brief* magazine

STRUCTURE

Four directorates

PERSONNEL

Active duty		107
Officers	82	
Enlisted	25	
Reserve components		3
ANG	1	
AFRC	2	
Civilians		17
Total		**127**

Air Force Legal Services Agency

Hq.: Bolling AFB, D.C.
Estab.: Sept. 1, 1991
Cmdr.: Col. David G. Ehrhart

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		371
Officers	258	
Enlisted	113	
Reserve Components		1
ANG	0	
AFRC	1	
Civilians		111
Total		**483**

Air Force Logistics Management Agency

Hq.: Maxwell AFB, Gunter Annex, Ala.
Estab.: Sept. 30, 1975
Cmdr.: Col. Michael A. Morabito

MISSION, PURPOSE, OPERATIONS

Develop, analyze, test, evaluate, and recommend new or improved concepts, methods, systems, policies, and procedures to enhance logistics efficiency and effectiveness
Publish the *Air Force Journal of Logistics*

STRUCTURE

Six divisions

PERSONNEL

Active duty		57
Officers	34	
Enlisted	23	
Civilians		23
Total		**80**

Air Force Manpower Agency

Hq.: Randolph AFB, Tex.
Estab.: Sept. 1, 1999
Cmdr.: Col. William C. Bennett Jr.

MISSION, PURPOSE, OPERATIONS

Determine manpower requirements to support Air Force concepts of operations
Partner with Air Force CONOPS champions, capability lead agents, functional representatives, and commanders at all organizational levels to improve Air Force mission performance effectiveness and resource efficiency
Lead peformance management core competency
Develop manpower programming factors and conduct special studies and competitive sourcing studies
Provide oversight for manpower and organization's functional community needs

STRUCTURE

One squadron and four divisions

PERSONNEL

Active duty		121
Officers	40	
Enlisted	81	
Civilians		83
Total		**204**

Air Force Medical Operations Agency

Hq.: Pentagon
Estab.: July 1, 1992
Cmdr.: Lt. Col. Christian R. Benjamin

MISSION, PURPOSE, OPERATIONS

Support both the Air Force assistant surgeon general, health care operations, and the Air Force surgeon general in the planning and execution of operational policies
Coordinate and track worldwide Air Force Medical Service expeditionary operations working with the services, unified commands, and Joint Staff
Create and operate statistical tools to collect and analyze data to shape the delivery of health care
Directly support health care professionals at military treatment facilities and special duty assignments worldwide

STRUCTURE

Two divisions
Two offices

PERSONNEL

Active duty		102
Officers	80	
Enlisted	22	
Reserve Components		1
ANG	0	
AFRC	1	
Civilians		50
Total		**153**

Air Force Medical Support Agency

Hq.: Bolling AFB, D.C.
Estab.: July 1, 1978
Cmdr.: Col. Patricia C. Lewis

MISSION, PURPOSE, OPERATIONS

Oversee execution of Air Force surgeon general policies and programs in support of USAF global capability and national security strategies
Provide expert consultative leadership for entire Air Force Medical Service

STRUCTURE

Five directorates
28 divisions
Four offices

PERSONNEL

Active duty		91
Officers	80	
Enlisted	11	
Civilians		41
Total		**132**

Air Force National Security Emergency Preparedness Agency

Hq.: Atlanta
Estab.: Sept. 1, 1988
Cmdr.: Col. Larry Garrison

MISSION, PURPOSE, OPERATIONS

Facilitate Air Force support to civil authorities for natural or man-made disasters and emergencies

STRUCTURE

Two divisions (Regional Operations and Support)
Four operating locations at Ft. McPherson, Ga., Arlington, Va., Langley AFB, Va., and Tyndall AFB, Fla.
Reserve personnel assigned to various state, federal, and military agencies

PERSONNEL

Active duty		17
Officers	9	
Enlisted	8	
Reserve components		72
ANG	0	
AFRC	72	
Civilians		4
Total		**93**

Air Force News Agency

Hq.: San Antonio
Estab.: June 1, 1978
Cmdr.: Col. Anthony J. Epifano

MISSION, PURPOSE, OPERATIONS

Create, print, and broadcast Web-based products that support Air Force and DOD communication goals
Provide news, information, and entertainment programs through American Forces Radio and Television Service
Provide senior Air Force leaders with the means of communicating news and information to the Air Force community and the public
Organize, train, and equip AFNEWS to accomplish its mission
Create an IT environment that ensures the efficient and secure production and delivery of information

STRUCTURE

Air Force Broadcasting Service
Army and Air Force Hometown News Service
Air Force News Service
Command Resources and Readiness
Communications and Information Systems

PERSONNEL

Active duty		296
Officers	17	
Enlisted	279	
Reserve components		30
ANG	0	
AFRC	30	
Civilians		87
Total		**413**

Air Force Nuclear Weapons and Counterproliferation Agency

Hq.: Pentagon
Estab.: August 1998
Cmdr.: Lt. Col. Donald W. Robbins

MISSION, PURPOSE, OPERATIONS

Oversee nuclear stockpile stewardship programs, including planning, development, and sustainment of USAF nuclear weapons
Provide technical analysis on counterproliferation issues and lead all technical aspects of USAF arms control process
Provide technical advice to Air Staff, major commands, unified commands, and OSD on nuclear weapons, counterproliferation, and arms control issues

STRUCTURE

Four divisions
Two operating locations at Pentagon and Arlington, Va.

PERSONNEL

Active Duty		12
Officers	5	
Enlisted	7	
Civilians		15
Total		**27**

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
Identify and resolve crime impacting Air Force readiness or good order and discipline
Detect and provide early warning of worldwide threats to the Air Force
Combat threats to Air Force information systems and technologies
Defeat and deter fraud in the acquisition of Air Force prioritized weapons systems
Serve as DOD's executive agent for Defense Cyber Crime Center

STRUCTURE

Eight regional offices
Eight squadrons
180 detachments and operating locations
USAF Special Investigations Academy located at the Federal Law Enforcement Training Center

PERSONNEL

Active duty		1,516
Officers	412	
Enlisted	1,104	
Reserve components		404
ANG	0	
AFRC	404	
Civilians		558
Total		**2,478**

Air Force Operations Group

Hq.: Pentagon
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		87
Officers	42	
Enlisted	45	
Reserve components		5
ANG	0	
AFRC	5	
Civilians		5
Total		**97**

Air Force Pentagon Communications Agency

Hq.: Pentagon
Estab.: Oct. 1, 1984
Cmdr.: Col. Gerald F. Alexander Jr.

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		393
Officers	60	
Enlisted	333	
Reserve Components		1
ANG	0	
AFRC	1	
Civilians		207
Total		**601**

Air Force Personnel Center

Hq.: Randolph AFB, Tex.
Estab.: Oct. 1, 1995
Cmdr.: Maj. Gen. Thomas A. O'Riordan

MISSION, PURPOSE, OPERATIONS

Provide service in worldwide personnel operations to Air Force commanders, military members, civilian employees, families, retirees, and other customers
Manage programs for individual career development

STRUCTURE

10 directorates

PERSONNEL

Active duty		906
Officers	253	
Enlisted	653	
Reserve components		20
ANG	2	
AFRC	18	
Civilians		991
Total		**1,917**

AFPC was formerly the Air Force Military Personnel Center and the Air Force Civilian Personnel Management Center.

Air Force Personnel Operations Agency

Hq.: Pentagon
Estab.: Aug. 15, 1993
Dir.: William A. Kelly

MISSION, PURPOSE, OPERATIONS

Provide in-depth analytical insight across the personnel life cyle to DCS for Personnel decision-makers
Develop and operate officer, enlisted, and civilian models
Support DCS for Personnel

STRUCTURE

One division

PERSONNEL

Active duty		30
Officers	18	
Enlisted	12	
Civilians		4
Total		**34**

Air Force Program Executive Office

Hq.: Pentagon
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:
Lt. Gen. Charles L. Johnson II, Command & Control & Combat Support
Lt. Gen. William R. Looney III, Aircraft
Maj. Gen. Robert W. Chedister, Weapons
Maj. Gen. Richard B.H. Lewis, F/A-22
Timothy A. Beyland, Combat & Mission Support
Maj. Gen. John L. Hudson, Joint Strike Fighter

PERSONNEL

Active duty		30
Officers	28	
Enlisted	2	
Civilians		10
Total		**40**

Air Force Real Property Agency

Hq.: Arlington, Va.
Estab.: Nov. 1, 2002
Dir.: Albert F. Lowas Jr.

MISSION, PURPOSE, OPERATIONS

Execute Air Force acquisition and disposal of all Air Force-controlled real property worldwide and environmental programs and real and personal property disposal for major Air Force bases 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 safely and efficiently as possible

STRUCTURE

Regional divisions
Base-level operating locations

PERSONNEL

Active duty		0
Officers	0	
Enlisted	0	
Civilians		198
Total		**198**

Formerly Air Force Base Conversion Agency and Air Force Real Estate Division

Air Force Review Boards Agency

Hq.: Andrews AFB, Md.
Estab.: June 1, 1980
Dir.: Joe G. Lineberger

MISSION, PURPOSE, OPERATIONS

Manage military and civilian appellate processes for the Secretary of the Air Force
Develop overall policy of the organization and oversee the activities and operations of the agency

STRUCTURE

Air Force Board for Correction of Military Records
Air Force Civilian Appellate Review Office
Air Force Personnel Council
Review Boards Support Office, Randolph AFB, Tex.

PERSONNEL

Active duty		12
Officers	7	
Enlisted	5	
Reserve components		7
ANG	1	
AFRC	6	
Civilians		44
Total		**63**

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		63
Officers	45	
Enlisted	18	
Reserve components		1
ANG	0	
AFRC	1	
Civilians		48
Total		**112**

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. John T. Salley Jr.

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 taskings

STRUCTURE

Four divisions
Force Protection Battlelab
Three detachments at Ft. Leavenworth, Kan., NAS Miramar, Calif., and Charleston NWC, S.C.

PERSONNEL

Active duty		325
Officers	46	
Enlisted	279	
Reserve components		9
ANG	1	
AFRC	8	
Civilians		13
Total		**347**

Air Force Services Agency

Hq.: San Antonio
Estab.: Feb. 5, 1991
Cmdr.: Vacant

MISSION, PURPOSE, OPERATIONS

Provide combat support to commanders directly in support of the Air Force mission
Provide community service programs that enhance the quality of life for Air Force members and their families
Manage Air Force nonappropriated central funds and operate central systems such as banking, investments, purchasing, data flow, insurance, and benefit programs

STRUCTURE

Seven directorates

PERSONNEL

Active duty		91
Officers	35	
Enlisted	56	
Reserve components		10
ANG	3	
AFRC	7	
Civilians		172
Total		**273**

Air Force Technical Applications Center

Hq.: Patrick AFB, Fla.
Estab.: July 7, 1959
Cmdr.: Col. Craig V. Bendorf

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 worldwide

PERSONNEL

Active duty		543
Officers	120	
Enlisted	423	
Total		**543**

EQUIPMENT

Multiple seismic arrays and single-instrument locations consisting of seismometers and associated data acquisition systems and workstations
Several hydroacoustic recording locations
More than 100 sensors and 35 support satellites, with associated ground systems instrumentation and data-processing equipment
Ground-based equipment to collect nuclear event debris

Air Force Weather Agency

Hq.: Offutt AFB, Neb.
Estab.: Oct. 15, 1997
Cmdr.: Col. Charles L. Benson Jr.

MISSION, PURPOSE, OPERATIONS

Maximize our nation's aerospace and ground combat effectiveness by providing accurate, relevant, and timely air and space weather information to Department of Defense, coalition, and national users and by providing standardized training and equipment to Air Force weather

STRUCTURE

Air Force Combat Climatology Center, Asheville, N.C.
Air Force Combat Weather Center, Hurlburt Field, Fla.
Six solar observatories around the world
Nine operating locations worldwide

PERSONNEL

Active duty		555
Officers	114	
Enlisted	441	
Reserve components		5
ANG	0	
AFRC	5	
Civilians		200
Total		**760**

Formerly Air Weather Service, established July 1, 1937.

ANG Readiness Center

Hq.: Andrews AFB, Md.
Estab.: August 1997
Cmdr.: Brig. Gen. David A. Brubaker

MISSION, PURPOSE, OPERATIONS

Provide combat capability to the warfighter and security to the homeland

STRUCTURE

201st Mission Support Squadron
13 directorates

PERSONNEL

Active duty		129
Officers	76	
Enlisted	53	
Reserve Components		498
ANG	494	
AFRC	4	
Civilians		456
Total		**1,083**

USAF photo by TSgt. Andy Dunaway

SSgt. Rick Grider, with the 437th Security Forces Squadron, Charleston AFB, S.C., provides security while equipment is off-loaded from a C-130 Hercules at the Port-au-Prince airport in Haiti, March 14.

Direct Reporting Units

2004 USAF Almanac

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, space, and information operational doctrine
Develop basic and operational doctrine for USAF Total Force
Advocate doctrinally correct representation and execution at the operational level of war in service, joint, and multinational operations, exercises, and other events
Collect inputs from exercises and operations for lessons learned
Participate in the investigation of future operational concepts and strategies to capture emerging doctrine
Present USAF doctrine to Air Force, other service, and joint audiences

STRUCTURE

Det. 1, Langley AFB, Va.
Six operating locations
Joint and Air Staff Liaison, Pentagon

PERSONNEL

Active duty		69
Officers	63	
Enlisted	6	
Reserve components		11
ANG	0	
AFRC	11	
Civilians		17
Total		**97**

Air Force Operational Test and Evaluation Center

Hq.: Kirtland AFB, N.M.
Estab.: Jan. 1, 1974
Cmdr.: Maj. Gen. Felix Dupré

MISSION, PURPOSE, OPERATIONS

Assess the capability of new systems to meet warfighter needs by planning, executing, and reporting independent operational evaluations
Provide effectiveness, suitability, and operational impact expertise in the battlespace environment

STRUCTURE

Six detachments at Edwards AFB, Calif., Eglin AFB, Fla., Peterson AFB, Colo., and Kirtland AFB, N.M.
More than 20 operating locations

PERSONNEL

Active duty		549
Officers	371	
Enlisted	178	
Civilians		206
Total		**755**

Air Force Studies and Analyses Agency

Hq.: Pentagon
Estab.: May 1, 2001
Dir.: Jacqueline R. Henningsen

MISSION, PURPOSE, OPERATIONS

Provide independent, timely, and objective analyses of key USAF programs and critical operational issues in direct support of senior USAF decision-makers
Ensure USAF defense review, modernization, warfighting, and resource allocation studies set the standard for DOD analysis
Highlight USAF role in emerging DOD issues
Protect USAF capability and investment positions
Enhance USAF analytic capabilities including combat analyst career development

STRUCTURE

USAF Analytic Community Steering Group
Senior Analysis Review Group
Four directorates

PERSONNEL

Active duty		69
Officers	61	
Enlisted	8	
Civilians		25
Total		**94**

US Air Force Academy

Hq.: Colorado Springs, Colo.
Estab.: April 1, 1954
Supt.: Lt. Gen. John W. Rosa Jr.

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		2,686
Officers	1,251	
Enlisted	1,435	
Reserve components		38
ANG	2	
AFRC	36	
Civilians		1,387
Total		**4,111**

EQUIPMENT

73 aircraft

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. Duane A. Jones

MISSION, PURPOSE, OPERATIONS

Provide comprehensive base-operating and logistical support to USAF personnel in the National Capital Region
Supply personnel, programming, and comptroller support and UCMJ authority for Hq. USAF elements across the US and in 150 countries
Direct USAF Band and Honor Guard for joint ceremonial activities
Produce ceremonial and musical events worldwide
Execute military funeral mission around the country
Maintain daily operations at Bolling for DOD, Navy, and Coast Guard tenant units

STRUCTURE

Objective wing

PERSONNEL

Active duty		1,780
Officers	211	
Enlisted	1,569	
Reserve components		44
ANG	13	
AFRC	31	
Civilians		806
Total		**2,630**

Guide to Air Force Installations Worldwide

2004 USAF Almanac

Major Active Duty Installations

Altus AFB, Okla. 73523-5000; 120 mi. SW of Oklahoma City. **Phone:** 580-482-8100; DSN 866-1110. **Majcom:** AETC. **Host:** 97th Air Mobility Wing. **Mission:** trains aircrew members for C-5, C-17, and KC-135 aircraft. **History:** activated January 1943; inactivated May 1945; reactivated January 1953. **Area:** 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, 1,700; DOD civilians, 1,582. **Housing:** single family, officer, 230, enlisted, 735; unaccompanied, UAQ/UEQ, 478; visiting, VOQ, 310, VAQ/VEQ, 42, TLF, 32. **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 Gp. (AMC); 734th Air Mobility Sq. (AMC); Helicopter Combat Support Sq. 5 (US Navy). **History:** activated 1945. Named for Gen. James Roy Andersen, who was chief of staff, Hq. AAF, Pacific Ocean Areas, and lost at sea in February 1945. **Area:** 20,270 acres. **Runways:** 11,182 ft. and 10,555 ft. **Altitude:** 612 ft. **Personnel:** permanent party military, 2,108; DOD civilians, 1,561. **Housing:** single family, officer, 236, enlisted, 1,153; unaccompanied, UOQ, 74, UAQ/UEQ, 1,018; visiting, VOQ, 74, VAQ/VEQ, 204, TLF, 18. **Clinic.**

Andrews AFB, Md. 20762-5000; 10 mi. SE of Washington, D.C. **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 ARW (AFRC), KC-135; Naval Air Facility; Marine Aircraft Gp. 49, Det. A; Air Force Review Boards Agency. **History:** activated May 1943. Named for Lt. Gen. Frank M. Andrews, military air pioneer and WWII commander of the European Theater, killed in aircraft accident May 3, 1943, in Iceland. **Area:** 6,853 acres. **Runways:** 9,755 ft. and 9,300 ft. **Altitude:** 281 ft. **Personnel:** permanent party military, 5,656; DOD civilians, 3,247. **Housing:** single family, officer, 383 (including 96 govt.-leased), enlisted, 1,667 (including 318 govt.-leased); unaccompanied, UAQ/UEQ, 923; visiting, VAQ, 66, VOQ, 136, TLF, 68. **Hospital.**

Arnold AFB, Tenn. 37389; approx. 7 mi. SE of Manchester. **Phone:** 931-454-3000; DSN 340-3000. **Majcom:** AFMC. **Host:** Arnold Engineering Development Center. **Mission:** supports acquisition and sustainment of 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, 177. **Housing:** single family, officer, 14, enlisted, 25; unaccompanied, visiting, VQ, 38. **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, and 603rd Air Control Sq. **Major tenants:** 16th Air Force (USAFE); Hq. 401st Air Expeditionary Wing. **Geographically Separated Units:** Det. 2, 401st AEW Pristina (Kosovo) Serbia; Det. 1, 401st AEW, Sarajevo, Bosnia; 774th Expeditionary Air Base Gp., Istres AB, France; Det. 3, 401st AEW, 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., RAF Akrotiri, Cyprus; 496th Air Base Sq., Morón AB, Spain. **History:** one of the oldest Italian air bases, dating to 1911. USAF began operations 1954. **Area:** 1,467 acres. **Runway:** 8,596 ft. **Altitude:** 413 ft. **Personnel:** permanent party military, 3,500; DOD civilians, 260. **Housing:** 681 govt.-leased (189 officer, 592 enlisted); unaccompanied, UAQ/UEQ, 812; visiting, VOQ/VAQ, 74; DV, 6. **Clinic** (contracted with local hospital).

Barksdale AFB, La. 71110-5000; in Bossier City. **Phone:** 318-456-1110; DSN 781-1110. **Majcom:** ACC. **Host:** 2nd Bomb Wing. **Mission:** B-52H operations and training. **Major tenants:** 8th Air Force (ACC); 917th Wing (AFRC), A-10, B-52H; 8th Air Force Museum. **History:** activated Feb. 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, 6,935; DOD civilians, 1,835. **Housing:** single family, officer, 135, enlisted, 594; unaccompanied, 876; visiting, VOQ, 140, VAQ/VEQ, 102, TLF, 24. **Superclinic.**

Beale AFB, Calif. 95903-5000; 13 mi. E of Marysville. **Phone:** 530-634-3000; DSN 368-1110. **Majcom:** ACC. **Host:** 9th Reconnaissance Wing. **Mission:** U-2, KC-135, and Global Hawk missions. **Major tenants:** 940th ARW (AFRC), KC-135; 7th Space Warning Sq. (AFSPC), PAVE PAWS; 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, 3,782; DOD civilians, 923. **Housing:** single family, officer, 159, enlisted, 1,294; unaccompanied, 545; visiting, VOQ, 53, VAQ/VEQ, 125, TLF, 46. **Clinic.**

Bolling AFB, D.C. 20032-5000; 3 mi. S of US Capitol. **Phone:** 703-545-6700; DSN 227-0101. **Host:** 11th Wing, which includes the USAF Band and USAF Honor Guard. **Mission:** 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 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. **Personnel:** permanent party military, 2,331; DOD civilians, 990. **Housing:** single family, officer, 285, enlisted, 860; unaccompanied, UAQ/UEQ, 331; visiting, VOQ, 56, VAQ/VEQ, 67, TLF, 100. **Clinic.**

Brooks City–Base, 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. On July 22, 2002, the base's land, facilities, and utilities were officially conveyed to the Brooks Development Agency and the name changed to Brooks City–Base. USAF now leases land and facilities from BDA. **Area:** 1,310 acres. **Runway:** none. **Altitude:** 600 ft. **Personnel:** permanent party military, 951; DOD civilians, 2,083. **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 ABW. **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; Air Reserve Personnel Center; Army Aviation Support Facility; Defense Finance and Accounting Center–Denver. **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, 6,719; DOD civilians, 836. **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:** 3,789 acres, excluding range. **Runways:** 10,000 ft. and 8,200 ft. **Altitude:** 4,295 ft. **Personnel:** permanent party military, 3,503; DOD civilians, 607. **Housing:** single family, officer, 101, enlisted, 1,543; unaccompanied, 834; visiting, VOQ, 6, VAQ, 18, VQ, 39. TLF, 36. **Ambulatory care clinic.**

Charleston AFB, S.C. 29404-5000; 10 mi. from downtown Charleston. **Phone:** 843-963-2100; DSN 673-2100. **Majcom:** AMC. **Host:** 437th AW. **Mission:** C-17 operations. **Major tenant:** 315th AW (AFRC Assoc.), C-17. **History:** activated October 1942; inactivated March 1946; reactivated August 1953. **Area:** 6,033 acres (including auxiliary airfield). **Runway:** 9,000 ft.; joint-use airfield. **Altitude:** 46 ft. **Personnel:** permanent party military, 3,814; DOD civilians, 1,210. **Housing:** single family, officer, 148, enlisted, 1,178; unaccompanied, UAQ/UEQ, 587; visiting, VOQ, 156, VAQ/VEQ, 40, TLF, 40. **Clinic.**

Columbus AFB, Miss. 39710-1000; 7.5 mi. NW of Columbus. **Phone:** 662-434-7322; DSN 742-1110. **Majcom:** AETC. **Host:** 14th Flying Training Wing. **Mission:** Specialized Undergraduate Pilot Training (T-1, T-37). **History:** activated 1941 for pilot training. **Area:** 5,325 acres. **Runways:** 12,000 ft., 8,000 ft., and 6,300 ft. **Altitude:** 219 ft. **Personnel:** permanent party military, 1,355; DOD civilians, 1,314. **Housing:** single family, officer, 276, enlisted, 228; unaccompanied, UOQ, 180, UAQ/UEQ, 166; visiting, VQ, 53, TLF, 20. **Clinic.**

Davis–Monthan AFB, Ariz. 85707-5000; within Tucson. **Phone:** 520-228-1110; DSN 228-1110. **Majcom:** ACC. **Host:** 355th Wing. **Mission:** A-10 combat crew training; OA-10 and FAC HC-130 training and operations; EC-130H; MH-60 Pavehawk; and CSAR operations. **Major tenants:** 12th Air Force (ACC); Aerospace Maintenance and Regeneration Center (AFMC), storage location for excess DOD aerospace vehicles; 305th Rescue Sq. (AFRC), MH-60; 55th ECG (ACC); 563rd RQG (AFSOC); 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, 6,900; DOD civilians, 1,312. **Housing:** single family, officer, 125, enlisted, 1,129; unaccompanied, 756; visiting, VOQ, 20, VAQ, 61, VQ, 165, 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, 3,870; DOD civilians, 970. **Housing:** single family, officer, 122, enlisted, 1,186; unaccompanied, UAQ/UEQ, 725; visiting, VOQ, 211, VAQ/VEQ, 34, TLF, 19. **Clinic.**

Dyess AFB, Tex. 79607-1980; WSW border of Abilene. **Phone:** 915-696-1110; DSN 461-1110. **Majcom:** ACC. **Host:** 7th BW. **Mission:** B-1 operations. **Major tenant:** 317th Airlift Gp. (AMC), C-130. **History:** activated April 1942; deactivated December 1945; reactivated as Abilene AFB September 1955. In December 1956, renamed for Lt. Col. William E. Dyess, WWII fighter pilot who escaped from a Japanese prison camp, killed in P-38 crash in December 1943. **Area:** 6,342 acres (including offbase sites). **Runway:** 13,500 ft. **Altitude:** 1,789 ft. **Personnel:** permanent party military, 5,160; DOD civilians, 526. **Housing:** single family, officer, 166, enlisted, 1,228; unaccompanied, 808; visiting, VOQ, 77, VAQ/VEQ, 96, TLF, 39. **Clinic.**

Edwards AFB, Calif. 93524; adjacent to Rosamond. **Phone:** 661-277-1110; DSN 527-3510. **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, 3,116; DOD civilians, 3,080. **Housing:** single family, officer, 310, enlisted, 1,360; unaccompanied, UOQ, 60, UAQ/UEQ, 86; visiting, VOQ, 67, VAQ/VEQ, 82, 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); 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, 4,302; DOD civilians, 3,012 (excluding Hurlburt Field). **Housing:** single family, officer, 218, enlisted, 2,116; unaccompanied, UAQ/UEQ, 1,212; visiting, VOQ, 169, VAQ/VEQ, 154, TLF, 87. **Hospital.**

Eielson AFB, Alaska 99702-5000; 26 mi. SE of Fairbanks. **Phone:** 907-377-1110; DSN 317-377-1110. **Majcom:** PACAF. **Host:** 354th FW. **Mission:** F-16C/D and A/OA-10 operations. **Major tenants:** Arctic Survival School (AETC); 168th Air Refueling Wing (ANG), KC-135; 353rd Combat Training Sq. **History:** activated October 1944. Named for Carl Ben Eielson, Arctic aviation pioneer who died in an Arctic rescue mission in November 1929. **Area:** 19,790 acres (including 16 remote sites, 63,195 acres). **Runway:** 14,500 ft. **Altitude:** 534 ft. **Personnel:** permanent party military, 2,901; DOD civilians, 771. **Housing:** single family, officer, 181, enlisted, 1,243; unaccompanied, UOQ, 8, UAQ, 522, UEQ, 16; visiting, VOQ, 206, VAQ/VEQ, 328, TLF, 40. **Outpatient clinic.**

Ellsworth AFB, S.D. 57706-5000; 12 mi. ENE of Rapid City. **Phone:** 605-385-5056; DSN 675-5056. **Majcom:** ACC. **Host:** 28th BW. **Mission:** B-1 operations. **Major tenants:** Det. 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, 3,305; DOD civilians, 609. **Housing:** single family, officer, 407, enlisted, 1,427; unaccompanied, 742; visiting, VQ, 88, TLF, 30. **Clinic.**

Elmendorf AFB, Alaska 99506-5000; bordering Anchorage. **Phone:** 907-552-1110; DSN 317-552-1110. **Majcom:** PACAF. **Host:** 3rd Wing. **Mission:** C-12, C-130, E-3 Airborne Warning and Control System, F-15C/D, and F-15E operations. Hub for air traffic to and from Far East. **Major tenants:** Alaskan Command; 11th Air Force (PACAF); Alaskan NORAD Region. **History:** activated July 1940. Named for Capt. Hugh Elmendorf, killed Jan. 13, 1933. **Area:** 13,100 acres. **Runways:** 10,000 ft. and

Air Force Installations

Major Installations	FY99	FY00	FY01	FY02	FY03	FY04
US and possessions	74	74	74	72	72	72
Foreign	13	13	13	13	13	13
Worldwide	87	87	87	85	85	85
Minor Installations						
US and possessions	81	80	80	80	80	80
Foreign	3	3	2	2	2	2
Worldwide	84	83	82	82	82	82

Includes Air National Guard and Air Force Reserve Command.

7,500 ft. **Altitude:** 213 ft. **Personnel:** permanent party military, 7,123; DOD civilians, 1,006. **Housing:** single family, officer, 172, enlisted, 1,640; unaccompanied, UAQ/UEQ, 1,044; visiting, VOQ, 196, VAQ/VEQ, 203, TLF, 86. **Hospital.**

Fairchild AFB, Wash. 99011-5000; 12 mi. WSW of Spokane. **Phone:** 509-247-1110; DSN 657-1110. **Majcom:** AMC. **Host:** 92nd Air Refueling Wing. **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, 3,490; DOD civilians, 377. **Housing:** single family, officer, 150, enlisted, 1,179; unaccompanied, UAQ/UEQ, 787; visiting, VOQ, 89, VAQ/VEQ, 213, 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 fewer than 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, 3,514; DOD civilians, 937. **Housing:** single family, officer, 114, enlisted, 717; unaccompanied, UAQ/UEQ, 776; visiting, VQ, 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:** 1,133 acres. **Runway:** none. **Altitude:** 1,900 ft. **Personnel:** permanent party military, 1,922; DOD civilians, 811. **Housing:** single family, officer, 2, enlisted, 306; unaccompanied, UOQ, 144, UAQ/UEQ, 1,298; visiting, VOQ, 117, VAQ/VEQ, 349, 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, 2,750; DOD civilians, 367. **Housing:** single family, officer, 288, enlisted, 1,020; UAQ/UEQ, 613; visiting, VOQ, 31, VAQ/VEQ, 17, TLF, 27. **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, 1,478; DOD civilians, 1,371. **Housing:** single family, officer, 359, enlisted, 491; unaccompanied, UOQ, 17, UAQ/UEQ, 220; visiting, VOQ 25, VAQ/VEQ, 93, TLF, 39. **Clinic.**

Hickam AFB, Hawaii 96853-5000; 9 mi. W of Honolulu. **Phone:** 808-449-7110 (Oahu military operator); DSN 315-449-7110. **Majcom:** PACAF. **Host:** 15th AW. **Mission:** provides base and logistical support for 140 associate and tenant units in Hawaii and other Pacific-region locations; airlift for commander, US 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-135R; Joint POW/MIA Accounting Command. **History:** activated September 1938. Named for Lt. Col. Horace M. Hickam, aviation pioneer killed in crash Nov. 5, 1934. **Area:** 2,761 acres. **Runways:** Four joint-use runways shared with Honolulu Arpt.: 12,357 ft., 12,000 ft., 9,000 ft., and 6,952 ft.; Johnson Atoll runway, 9,000 ft. **Altitude:** 13 ft. **Personnel:** permanent party military, 4,816; DOD civilians, 1,293. **Housing:** single family, officer, 606, enlisted, 2,052; unaccompanied, UOQ, 8, UAQ/UEQ, 766; visiting, VOQ, 268, VAQ/VEQ, 115, 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 C3I programs; overhauls and repairs landing gear for all USAF (and 70 percent of DOD) aircraft; leading provider of rocket motors, small missiles, air munitions and guided bombs, photonics imaging and reconnaissance equipment, simulators and training devices, avionics, hydraulics and pneudraulics instruments, and software. **Major tenants:** 388th FW (ACC); 419th FW (AFRC), F-16; Area Command Ogden; Hill Aerospace Museum; Defense Enterprise Computing Center (DISA); Defense Reutilization and Marketing Service (DLA); 372nd Recruiting Gp. (USAF). **History:** activated 1940. Named for Maj. Ployer P. Hill, killed Oct. 30, 1935, while test flying the first B-17. **Area:** 6,698 acres; manages 962,076 acres (Utah Test and Training Range). **Runway:** 13,500 ft. **Altitude:** 4,788 ft. **Personnel:** permanent party military, 2,151; DOD civilians, 10,377. **Housing:** single family, officer, 179, enlisted, 962; unaccompanied, UAQ/UEQ, 628; visiting, VOQ, 5, VAQ/VEQ, 169, TLF, 61. **Clinic.**

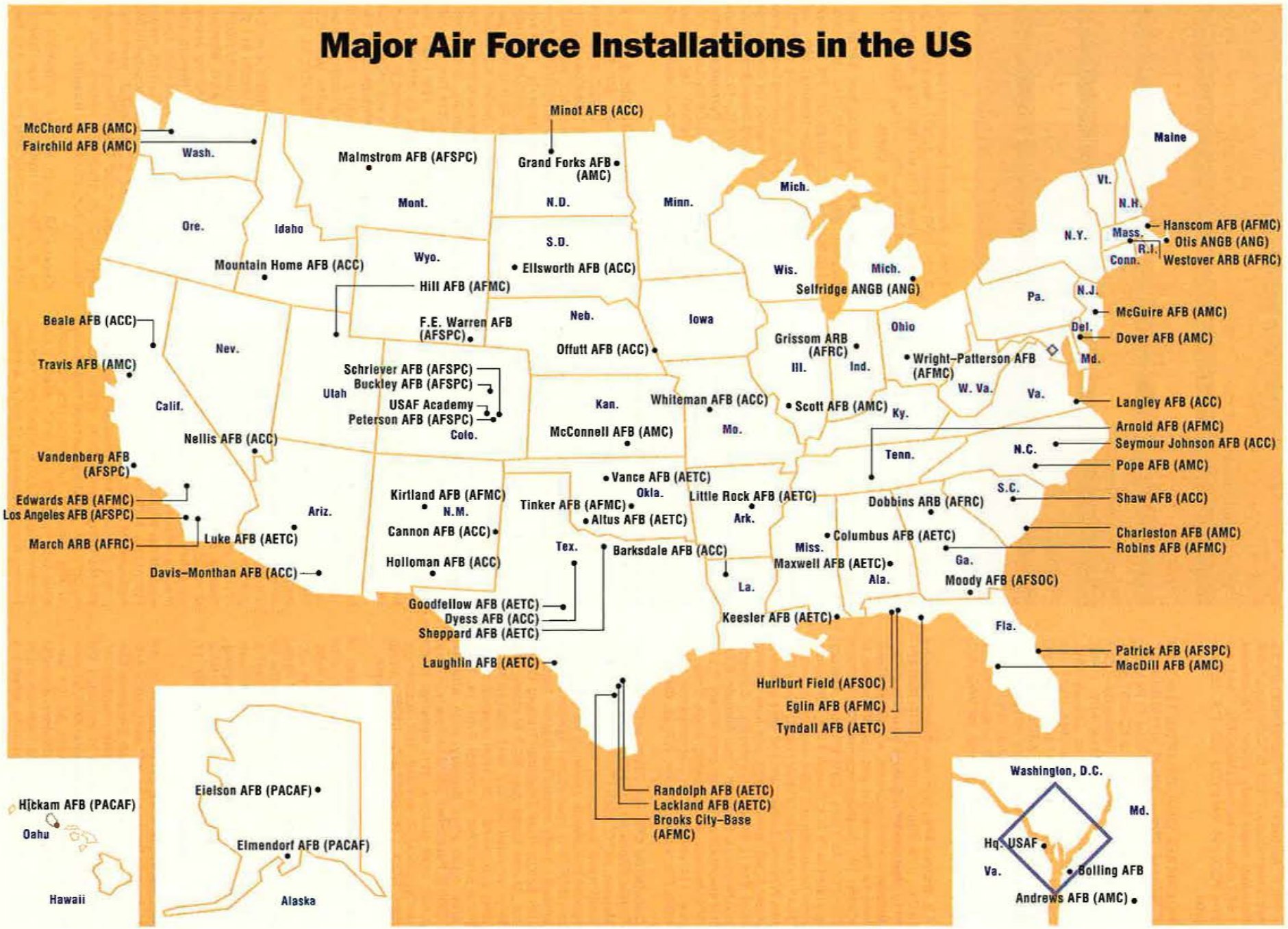
Holloman AFB, N.M. 88310; 8 mi. SW of Alamogordo. **Phone:** 505-572-1110; DSN 572-1110. **Majcom:** ACC. **Host:** 49th FW. **Mission:** F-117 operations. **Major tenants:** 46th Test Gp. (AFMC); 4th Space Control Sq. (AFSPC); German Air Force Flying Training Center. **History:** activated 1942. Named 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, 4,616; DOD civilians, 1,102. **Housing:** single family, officer, 190, enlisted, 1,250; unaccompanied, 1,047; visiting, VQ, 194,TLF, 50. **Clinic.**

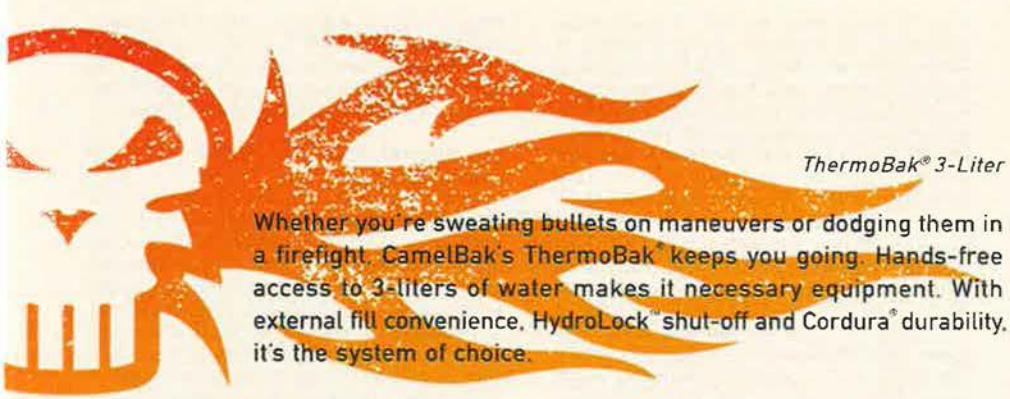
Hurlburt Field, Fla. 32544-5000; 5 mi. W of Fort Walton Beach. **Phone:** 850-884-7464; DSN 579-7464. **Majcom:** AFSOC. **Host:** 16th Special Operations Wing. **Mission:** specialized airpower, equipped with AC-130H/U, MC-130H, MC-130P, MH-53J/M (located at Eglin AFB), and UH-1. **Major tenants:** Air Force Special Operations Command; USAF C2 Training Innovation Gp.; 823rd RED HORSE Sq.; USAF Combat Weather Center; C2 Warrior School; USAF Special Operations School; Joint Special Operations University; 505th Command and Control Wing; 605th Test Sq.; 25th Information Operations Sq.; 18th Flight Test Sq.; Det. 1, 334th Training Sq. **History:** activated 1943. Named for Lt. Donald W. Hurlburt, WWII pilot killed Oct. 1, 1943. **Area:** 6,600 acres. **Runway:** 6,900 ft. **Altitude:** 38 ft. **Personnel:** permanent party military, 7,798; DOD civilians, 655. **Housing:** single family, officer, 52, enlisted, 628; unaccompanied, UAQ/UEQ, 1,103; visiting, VOQ, 165, VAQ/VEQ, 53, TLF, 24. **Clinic.**

Incirlik AB, Turkey, APO AE 09824; 6 mi. E of Adana. **Phone:** (cmcl, from CONUS) 011-90-322-316-6060; DSN (from CONUS) 676-6060. **Majcom:** USAFE. **Host:** 39th ABW. **Mission:** supports rotational weapons training deployments and contingency actions. **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, 1,560; DOD civilians, 65; **Housing:** UOQ,120, UEQ, 672; visiting, VOQ, 91, VAQ, 255, TLF, 80, DV, 16. **Hospital.**

Kadena AB, Japan, APO AP 96368-5000; 15 mi. N of Naha. **Phone:** (cmcl, from CONUS) 011-81-6117-34-1110; DSN 315-634-1110. **Maj-**

Major Air Force Installations in the US





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com: PACAF. **Host:** 18th Wing. **Mission:** E-3, F-15C/D, KC-135R, and HH-60 operations. **Major tenants:** 353rd Special Operations Gp. (AFSOC), 390th Intelligence Sq.; 82nd Reconnaissance Sq. (ACC); 733rd Air Mobility Support Sq. (AMC); Commander, Fleet Activities Okinawa (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, 8,000; DOD civilians, 1,300. **Housing:** single family, officer, 1,677, enlisted, 5,800; unaccompanied, UOQ, 47, UAQ/UEQ, 2,080; visiting, VOQ, 226, VAQ/VEQ, 222, TLF, 122. **Clinic.**

Keesler AFB, Miss. 39534-5000; located in Biloxi. **Phone:** 228-377-1110; DSN 597-1110. **Majcom:** AETC. **Host:** 81st TW. **Mission:** conducts Air Force, joint service, and international training for avionics, communications, electronics, radar systems, computer and C2 systems, weather precision equipment, physician residencies, specialized nursing, and medical technicians. **Major tenants:** 2nd Air Force (AETC); 45th Airlift Sq. (AETC), C-21; 403rd Wing (AFRC), C-130, WC-130. **History:** activated June 12, 1941. Named for 2nd Lt. Samuel R. Keesler Jr., a native of Mississippi and WWI aerial observer killed in action Oct. 9, 1918. **Area:** 1,450 acres, excluding off-base housing. **Runway:** 6,600 ft. **Altitude:** 33 ft. **Personnel:** permanent party military, 4,308; DOD civilians, 1,922. **Housing:** single family, officer, 280, enlisted, 1,553; unaccompanied, UAQ/UEQ, 907; visiting, VQ, 1,306, TLF, 79. **Keesler Medical Center.**

Kirtland AFB, N.M. 87117-5606; SE quadrant of Albuquerque. **Phone:** 505-846-0011; DSN 246-0011. **Majcom:** AFMC. **Host:** 377th ABW. **Mission:** provides munitions maintenance; worldwide training; research, development, and testing; base operating support. **Major tenants:** 58th SOW (AETC), HC-130, MC-130, HH-60, 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; 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, 1,521; DOD civilians, 1,331. **Housing:** single family, officer, 280, enlisted, 1,503; unaccompanied, UAQ/UEQ, 751; visiting, VOQ, 189, VAQ/VEQ, 169, TLF, 38. **Air Force–VA joint medical center.**

Kunsan AB, South Korea, APO AP 96264-5000; 8 mi. SW of Kunsan City. **Phone:** (cmcl, from CONUS) 011-82-63-470-1110; DSN 782-1110. **Majcom:** PACAF. **Host:** 8th FW. **Mission:** F-16C/D operations; home of the "Wolf Pack" and the first active overseas F-16 wing (September 1981). **Major tenants:** US Army's Echo and Foxtrot Batteries, 1st Battalion, 43rd 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 TW. **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 Gp. **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, 3,662; DOD civilians, 879. **Housing:** single family, officer, 151, enlisted, 1,084; unaccompanied, UAQ/UEQ, 1,230; visiting, VOQ, 904, VAQ/VEQ, 1,763, 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:** USAFE. **Host:** 65th ABW. **Mission:** provides support to US and allied aircraft and personnel transiting the Atlantic, through US military and host-nation coordination. **Major tenants:** US Forces Azores; 729th AMS (AMC). **History:** US operations began at Lajes Field 1946. **Area:** 1,192 acres. **Runway:** 10,865 ft. **Altitude:** 180 ft. **Personnel:** permanent party military, 1,000; DOD civilians, 177. **Housing:** single family, officer, 80, enlisted, 336; unaccompanied, UOQ, 20, UAQ/UEQ, 269; visiting, VOQ, 180, VAQ/VEQ, 178, 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 C2ISR Center; USAF Heritage of America Band; 12th Airlift Flight (AMC); 480th Intelligence Wg. (ACC); Air and Space Expeditionary Force Center (ACC). **History:** activated Dec. 30, 1916. Langley is the first military base in the US purchased and built specifically for military aviation. Named for aviation pioneer and scientist Samuel Pierpont Langley, who died in 1906. **Area:** 2,900 acres. **Runway:** 10,000 ft. **Altitude:** 11 ft. **Personnel:** permanent party military, 9,320; DOD civilians, 2,016. **Housing:** single family, officer, 380, enlisted, 1,132; unaccompanied, 861; visiting, VOQ, 101, 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 (T-6, T-37, T-38). **History:** activated July 1942. Named for 1st Lt. Jack Thomas Laughlin, Del Rio native, B-17 pilot, killed Jan. 29, 1942. **Area:** 5,212 acres. **Runways:** 8,858 ft., 8,310 ft., and 6,246 ft. **Altitude:** 1,081 ft. **Personnel:** permanent party military, 937; DOD civilians, 875. **Housing:** single family, officer, 320, enlisted, 238; unaccompanied, UOQ, 284, UAQ/UEQ, 264; visiting, VQ, 96, 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 Airlift Gp. (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, 4,843; DOD civilians, 406. **Housing:** single family, officer, 185, enlisted, 1,350; unaccompanied, UAQ/UEQ, 764; visiting, VOQ, 184, VAQ/VEQ, 140. **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, 1,517; DOD civilians, 1,419. **Housing:** single family, officer, 357, enlisted, 287; unaccompanied, UAQ/UEQ, 52; visiting, VQ, 28, TLF, 25. **Clinic.**

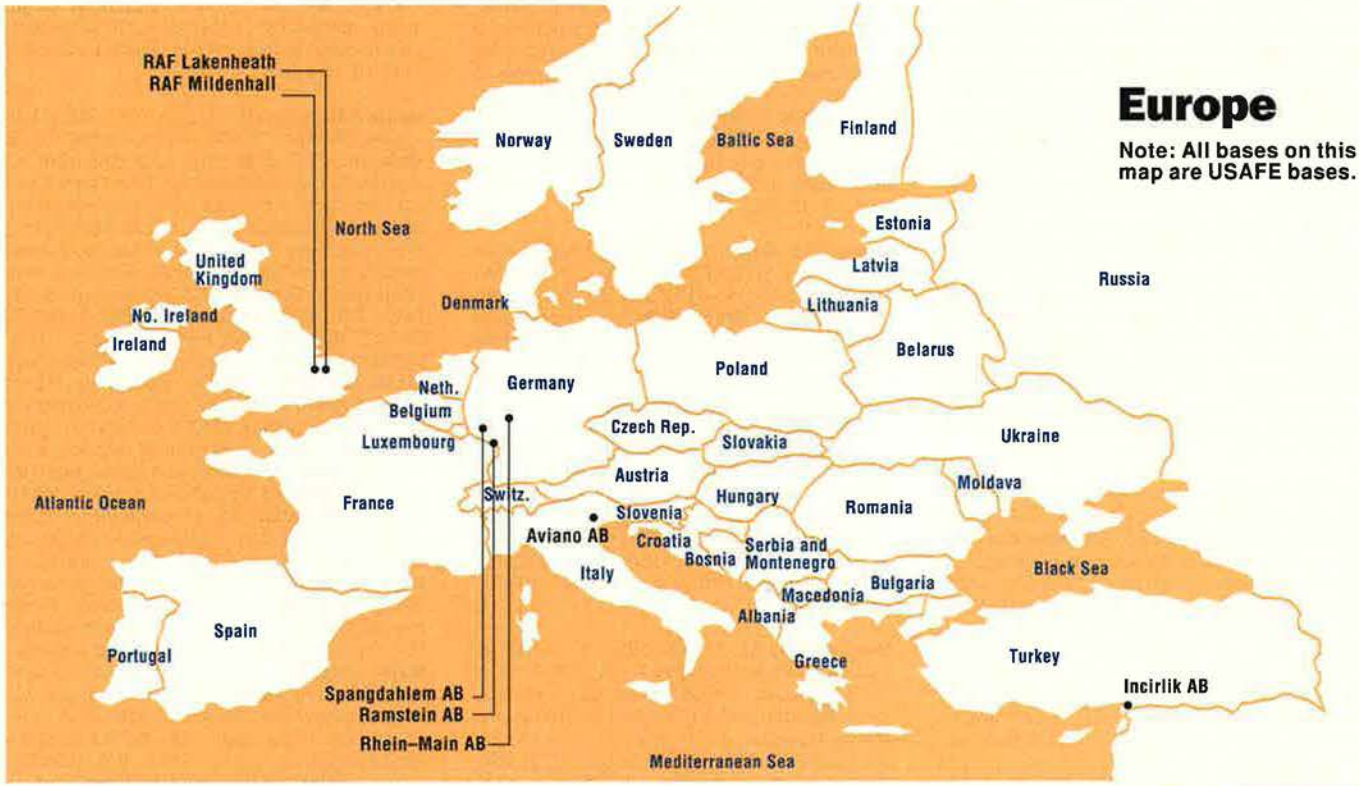
Luke AFB, Ariz. 85309-5000; 20 mi. WNW of downtown Phoenix. **Phone:** 602-856-7411; DSN 896-1110. **Majcom:** AETC. **Host:** 56th FW. **Mission:** F-16 operations; conducts USAF and allied F-16 aircrew training. **Major tenant:** 944th FW (AFRC), F-16. **History:** activated 1941. Named for 2nd Lt. 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 1.9-million-acre Barry M. Goldwater Range. **Runways:** 10,000 ft. and 9,910 ft. **Altitude:** 1,090 ft. **Personnel:** permanent party military, 5,566; DOD civilians, 1,704. **Housing:** single family, 735; unaccompanied, UAQ/UEQ, 730; visiting, VOQ, 174, VAQ/VEQ, 64, TLF, 39. **Hospital.**

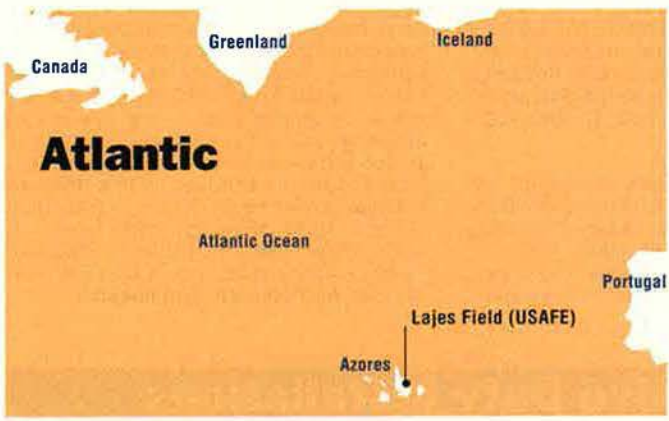
MacDill AFB, Fla. 33621-5000; on the Interbay Peninsula in southern Tampa. **Phone:** 813-828-1110; DSN 968-1110. **Majcom:** AMC. **Host:** 6th AMW. **Mission:** KC-135 operations; provides worldwide air refueling and combatant commander support. **Major tenants:** US Special Operations Command; US 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, 3,816; DOD civilians, 1,271. **Housing:** single family, officer, 45, enlisted, 629; unaccompanied, UAQ/UEQ, 610; visiting, VOQ, 112, VAQ/VEQ, 130, TLF, 5. **Hospital.**

Malmstrom AFB, Mont. 59402-5000; 1.5 mi. E of Great Falls. **Phone:** 406-731-1110; DSN 632-1110. **Majcom:** AFSPC. **Host:** 341st SW. **Mission:** Minuteman III ICBM operations, UH-1N. **Major tenant:** 819th RED HORSE Sq. (ACC). **History:** activated Dec. 15, 1942. Named for Col. Einar A. Malmstrom, WWII fighter commander killed in air accident Aug. 21, 1954. Site of SAC's first Minuteman wing. **Area:** 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, 1,136; unaccompanied, UAQ/UEQ, 882; visiting, VQ, 53, TLF, 30. **Clinic.**

Maxwell AFB, Ala. 36112-5000; 1 mi. WNW of Montgomery. **Phone:** 334-953-1110; DSN 493-1110. **Majcom:** AETC. **Host:** 42nd ABW. **Mission:** Air University conducts professional military, graduate, and professional continuing edu-

Major Air Force Installations Overseas





Bases in Gulf Cooperation Council nations do not meet criteria for major installations; however, thousands of USAF personnel are deployed in these locations.

cation 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:** 4,221 acres (includes Gunter Annex). **Runway:** 8,000 ft. **Altitude:** 172 ft. **Personnel:** permanent party military, 1,872; DOD civilians, 3,236. **Housing:** single family, officer, 372, enlisted, 422; unaccompanied, UAQ/UEQ, 329; visiting, VOQ, 1,291, VAQ/VEQ, 495, TLF, 34. **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 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, 3,975; DOD civilians, 975. **Housing:** single family, officer, 115, enlisted, 868; unaccompanied, UOQ, 2, UAQ/UEQ, 752; visiting, VOQ, 68, VAQ/VEQ, 232, 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 Air Refueling Wg. (ANG); 931st Air Refueling Gp. (AFRC Assoc.). **History:** activated June 5, 1951. Named for the three McConnell brothers, WWII B-24 pilots from Wichita—Lt. Col. Edwin M. McConnell (died Sept. 1, 1997), Capt. Fred J. McConnell (died in a private airplane crash Oct. 25, 1945), and 2nd Lt. Thomas L. McConnell (killed July 10, 1943). **Area:** 3,113 acres. **Runways:** two, 12,000 ft. each. **Altitude:** 1,371 ft. **Personnel:** permanent party military, 2,667; DOD civilians, 397. **Housing:** single family, officer, 83, enlisted, 506; unaccompanied, UAQ/UEQ, 615; visiting, VOQ, 20, VAQ/VEQ, 74, 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 Expeditionary Mobility Task 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, 5,238, DOD civilians, 1,072. **Housing:** single family, officer, 223, enlisted, 1,658; unaccompanied, UAQ/UEQ, 1,162; visiting, VOQ, 33, VAQ/VEQ, 385, TLF, 55. **Clinic.**

Minot AFB, N.D. 58705-5000; 13 mi. N of Minot. **Phone:** 701-723-1110; DSN 453-1110. **Majcom:** ACC. **Host:** 5th BW. **Mission:** B-52 operations. **Major tenant:** 91st SW (AFSPC), Minuteman III, UH-1N. **History:** activated January 1957. Named after the city of Minot, whose citizens donated $50,000 toward purchase of the land for USAF. **Area:** 4,732 acres, plus additional 330 acres for missile sites spread over 8,500 sq. miles. **Runway:** 13,200 ft. **Altitude:** 1,668 ft. **Personnel:** permanent party military, 4,551; DOD civilians, 506. **Housing:** single family, officer, 402, enlisted, 1,365; unaccompanied, 957; visiting, VQ, 27, VAQ, 28, TLF, 14. **Clinic.**

Misawa AB, Japan, APO AP 96319-5000; within Misawa city limits. **Phone:** (cmcl, from CONUS) 011-81-176-53-5181 ext. 226-3075; DSN 315-226-5181. **Majcom:** PACAF. **Host:** 35th FW. **Mission:** F-16C/D operations. **Major tenants:** 301st Intelligence Sq. (ACC); Naval Air Facility; Naval Security Gp. Activity; 750th Military Intelligence Det. (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, 4,564; DOD civilians, 122. **Housing:** single family, officer, 298, enlisted, 1,810; unaccompanied, UOQ, 40, UAQ/UEQ, 951; visiting, VOQ, 82, VAQ/VEQ, 44, TLF, 40. **Hospital.**

Moody AFB, Ga. 31699-5000; 10 mi. NNE of Valdosta. **Phone:** 229-257-1110; DSN 460-1110. **Majcom:** AFSOC. **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, 3,714; DOD civilians, 659. **Housing:** single family, officer, 57, enlisted, 549; unaccompanied, 694; visiting, VOQ, 37, VAQ/VEQ, 19, TLF, 16. **Clinic.**

Mountain Home AFB, Idaho 83648-5000; 50 mi. SE of Boise. **Phone:** 208-828-6800; DSN 728-1110. **Majcom:** ACC. **Host:** 366th FW. **Mission:** USAF's air expeditionary wing and F-15C/D, F-15E, and F-16CJ/D 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, 4,312; DOD civilians, 524. **Housing:** single family, officer, 181; enlisted, 1,260; unaccompanied, 800; visiting, VOQ, 45, VAQ/VEQ, 54, 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 ABW. **Mission:** Air Warfare Center manages advanced pilot training and tactics development and integrates test and evaluation programs; its 98th Range Wing oversees Tonopah Test Range, several 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, F/A-22, 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), 66th RQS (AFSOC), 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 1948. Named for 1st Lt. William H. Nellis, WWII P-47 fighter pilot, killed Dec. 27, 1944. **Area:** Main base is 14,000 acres. NRC occupies 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, 7,798; DOD civilians, 1,380. **Housing:** single family, officer, 183, enlisted, 1,115; unaccompanied, 1,190; visiting, VOQ, 340, VAQ/VEQ, 354, TLF, 60. **Air Force-VA joint hospital.**

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. 02561-0428 (AFSPC)	DSN 557-2235
Cavalier AFS, N.D. 58220-9314 (AFSPC)	DSN 330-3695
Cheyenne Mountain AFS, Colo. 80914-6066 (AFSPC)	DSN 268-1110
Clear AFS, Alaska, APO AP 99704-0013 (AFSPC)	DSN 317-585-6110
Indian Springs AFAF, Nev. 89018-1230 (ACC)	DSN 682-1110
Onizuka AFS, Calif. 94088-3430 (AFSPC)	DSN 561-3000
Thule AB, Greenland, APO AE 09704-5000 (AFSPC) (ask for Thule operator)	DSN 268-3840

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, C2, and combat support to warfighting commanders and national leadership. **Major tenants:** US 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, 7,870; DOD civilians, 1,667. **Housing:** single family, officer, 343, enlisted, 211; unaccompanied, 966; visiting, VQ, 176, TLF, 60. **Hospital.**

Osan AB, South Korea, APO AP 96278-5000; 38 mi. S of Seoul. **Phone:** (cmcl, from CONUS) 011-82-31-661-1110; DSN 315-784-1110. **Majcom:** PACAF. **Host:** 51st FW. **Mission:** A/OA-10, C-12, and F-16C/D operations. **Major tenants:** 7th Air Force (PACAF); 5th RS (ACC); 31st SOS (AFSOC); 33rd Rescue Sq. (PACAF); 303rd Intelligence Sq. (AIA); 731st Air Mobility Sq. (AMC); Charlie and Delta Batteries, 1st Battalion, 43rd ADA (Army). **History:** originally designated K-55; runway opened December 1952. Renamed Osan AB in 1956 for nearby town that was the scene of first fighting between US and North Korean forces in July 1950. **Area:** 1,674 acres. **Runway:** 9,000 ft. **Altitude:** 38 ft. **Personnel:** permanent party military, 6,300; DOD civilians, 235. **Housing:** single family, 211; unaccompanied, UOQ, 457, UAQ/UEQ, 3,615; visiting, VQ, 350, VOQ, 57, VAQ/VEQ, 20, TLF, 15. **Hospital.**

Patrick AFB, Fla. 32925-3237; 2 mi. S of Cocoa Beach. **Phone:** 321-494-1110; DSN 854-1110. **Majcom:** AFSPC. **Host:** 45th SW. **Mission:** supports DOD, NASA, 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 Wing (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, 2,200; DOD civilians, 1,550. **Housing:** single family, enlisted, 834; unaccompanied, UAQ/UEQ, 268; visiting, VOQ, 52, VAQ/VEQ, 102, TLF, 71. **Clinic.**

Peterson AFB, Colo. 80914-5000; at eastern edge of Colorado Springs. **Phone:** 719-556-7321; DSN 834-7321. **Majcom:** AFSPC. **Host:** 21st SW. **Mission:** provides missile warning and space control; detects, tracks, and catalogs objects in space. **Major tenants:** NORAD; Air Force Space Command; US Northern 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, 5,542; DOD civilians, 4,427. **Housing:** single family, officer, 103, enlisted, 384; unaccompanied, UAQ/UEQ, 704; visiting, VQ, 100, VAQ/VEQ, 54, TLF, 68. **Clinic.**

Pope AFB, N.C. 28308-2391; 12 mi. NNW of Fayetteville. **Phone:** 910-394-1110; DSN 424-1110. **Majcom:** AMC. **Host:** 43rd AW. **Mission:** C-130 operations. Adjoins Army's Ft. Bragg and provides intratheater combat airlift and close air support for airborne forces and other personnel, equipment, and supplies. **Major tenants:** 23rd Fighter Gp. (ACC), A/OA-10; 18th Air Support Operations Gp. (ACC); 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, 4,427; DOD civilians, 527. **Housing:** single family, officer, 84, enlisted, 543; unaccompanied, UAQ/UEQ, 600; visiting, VOQ, 6, VAQ/VEQ, 160, TLF, 22. **Clinic.**

RAF Lakenheath, UK, 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:** 2,290 acres. **Runway:** 9,000 ft. **Altitude:** 32 ft. **Personnel:** permanent party military, 4,800; DOD civilians, 260; **Housing:** single family, officer, 354, enlisted, 1,967; unaccompanied, UAQ/UEQ, 984; visiting, VOQ, 88, VAQ/VEQ, 46, TLF, 33. **Regional medical center.**

RAF Mildenhall, UK, APO AE 09459-5000; 20 mi. NE of Cambridge. **Phone:** (cmcl, from CONUS) 011-44-1638-54-3000; DSN 238-3000. **Majcom:** USAFE. **Host:** 100th ARW. **Mission:** KC-135R operations. **Major tenants:** 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, 5,000; DOD civilians, 240. **Housing:** single family, officer, 64, enlisted, 137; unaccompanied, UAQ/UEQ, 783; visiting, VQ, 328, TLF, 36.

Ramstein AB, Germany, APO AE 09094-0385; adjacent to the city of Ramstein, 10 mi. W of Kaiserslautern. **Phone:** (cmcl, from CONUS) 011-49-6371-47-1110; DSN 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. 435th ABW commander also serves as commander of the Kaiserslautern Military Community. **Major tenant:** USAFE. **History:** activated and US presence began 1953. **Area:** 3,212 acres. **Runway:** 8,015 ft. **Altitude:** 782 ft. **Personnel:** permanent party military, 14,300; DOD civilians, 6,700. **Housing:** single family, officer, 473, enlisted, 4,588; unaccompanied, UOQ, 32, UAQ/UEQ, 1,795; visiting, VOQ/VEQ, 547, TLF, 70. **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 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:** 8,350 ft. and 8,350 ft. **Altitude:** 761 ft. **Personnel:** permanent party military, 4,962; DOD civilians, 3,659. **Housing:** single family, officer, 218, enlisted, 548; unaccompanied, UOQ, 202, UAQ/UEQ, 316; visiting, VOQ, 353, VAQ/VEQ, 179, 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:** 533 acres. **Runways:** three, each 13,123 ft. **Altitude:** 365 ft. **Personnel:** permanent party military, 534; DOD civilians, 273. **Housing:** single family, officer, 61, enlisted, 235; visiting, VOQ, 72, VAQ/VEQ, 83, TLF, 12. **Clinic.**

Robins AFB, Ga. 31098; 15 mi. SSE of Macon at Warner Robins. **Phone:** 478-926-1110; DSN 468-1001. **Majcom:** AFMC. **Host:** Warner Robins Air Logistics Center. **Mission:** provides worldwide logistics management for the C-5, C-130, 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; 116th Air Control Wing (ACC), E-8; 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, 2,190; DOD civilians, 10,977. **Housing:** single family, officer, 243, enlisted, 1,226; unaccompanied, 676; visiting, VOQ, 137, 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 SW. **Mission:** Command and control of DOD satellites. **Major tenants:** Joint National Integration Center; 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, 2,107; DOD civilians, 475. **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:** US Transportation Command; Air Mobility Command; 18th Air Force; 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, 5,185; DOD civilians,

3,245. **Housing:** single family, officer, 298, enlisted, 1,122; unaccompanied, UAQ/UEQ, 569; visiting, VOQ, 268, VAQ/VEQ, 169, TLF, 60. **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, 6,449; DOD civilians, 1,123. **Housing:** single family, officer, 148, enlisted, 1,539; unaccompanied, 627; visiting, VOQ, 63, VAQ/VEQ, 40, TLF, 69, DV, 10. **Clinic.**

Shaw AFB, S.C. 29152-5000; 8 mi. WNW of Sumter. **Phone:** 803-895-1110; DSN 965-1110. **Majcom:** ACC. **Host:** 20th FW. **Mission:** F-16CJ operations. **Major tenants:** 9th Air Force (ACC); US 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, 5,600; DOD civilians, 692. **Housing:** single family, officer, 164, enlisted, 1,538; unaccompanied, 1,112; visiting, VQ, 97, 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 TW. **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:** 13,101 ft., 10,003 ft., 7,021 ft., and 6,000 ft. **Altitude:** 1,019 ft. **Personnel:** permanent party military, 4,088; DOD civilians, 901. **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, 5,500; DOD civilians, 314. **Housing:** single family, officer, 130, enlisted, 1,838; unaccompanied, UAQ/UEQ, 887, UOQ, 4; visiting, VOQ/VEQ/VAQ, 114, 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, 4,446; DOD civilians, 13,340. **Housing:** single family, officer, 107, enlisted, 623; unaccompanied, UAQ/UEQ, 932; visiting, VOQ, 109, VAQ/VEQ, 50, TLF, 40. **Clinic.**

Travis AFB, Calif. 94535-5000; 50 mi. NE of San Francisco at Fairfield. **Phone:** 707-424-1110; DSN 837-1110. **Majcom:** AMC. **Host:** 60th AMW. **Mission:** C-5 and KC-10 operations. **Major tenants:** 15th Expeditionary Mobility Task Force (AMC); 349th AMW (AFRC Assoc.); USAF Band of the Golden West; Air Museum. **History:** activated May 17, 1943. Named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950. **Area:** 6,383 acres. **Runways:** two, each approx. 11,000 ft. **Altitude:** 62 ft. **Personnel:** permanent party military, 7,869; DOD civilians, 3,612. **Housing:** single family, officer, 343, enlisted, 2,384; unaccompanied, UAQ/UEQ, 1,627; visiting, VOQ, 260, VAQ/VEQ, 212, 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 and F/A-22 operations; trains USAF F-15 and F/A-22 pilots. **Major tenants:** 1st Air Force (ANG); Southeast Air Defense Sector (ANG); 53rd Weapons Evaluation Gp. (ACC); Air Force Civil Engineer Support Agency. **History:** activated Dec. 7, 1941. Named for 1st Lt. Frank B. Tyndall, WWI fighter pilot killed July 15, 1930. **Area:** 29,102 acres. **Runways:** 10,000 ft., 8,075 ft., and 7,000 ft. **Altitude:** 18 ft. **Personnel:** permanent party military, 4,292; DOD civilians, 678. **Housing:** single family, officer, 123, enlisted, 934; 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:** 719-333-1110; DSN 333-1110. **Host:** USAFA. **Mission:** inspires and develops outstanding young men and women to become Air Force officers with knowledge, character, and discipline. **History:** established April 1, 1954. Moved to permanent location August 1958. **Area:** 18,325 acres. **Runways:** 4,500 ft., 3,500 ft., and 2,300 ft. **Altitude:** 7,200 ft. **Personnel:** permanent party military, 1,960; DOD civilians, 1,295. **Housing:** single family, officer, 393, enlisted, 848; unaccompanied, 164; visiting, VQ, 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:** 9,200 ft., 9,200 ft., and 5,001 ft. **Altitude:** 1,307 ft. **Personnel:** permanent party military, 676; DOD civilians, 148. **Housing:** single family, officer, 112, enlisted, 113, unaccompanied, UOQ, 202, UAQ/UEQ, 108; visiting, VQ, 61, TLF, 10. **Clinic.**

Vandenberg AFB, Calif. 93437-5000; 8 mi. NNW of Lompoc. **Phone:** 805-606-1110; DSN 276-1110. **Majcom:** AFSPC. **Host:** 30th SW. **Mission:** conducts polar-orbiting space launches and supports R&D tests and launch range operations for DOD, USAF, and NASA space, ballistic missile, and aeronautical systems and commercial space launches; provides test support for DOD space and ICBM systems; furnishes facilities and essential services to more than 36 aerospace contractors. **Major tenants:** 14th Air Force (AFSPC); 381st Training Gp. (AETC); 576th Flight Test Sq. (Space Warfare Center). **History:** originally Army's Camp Cooke. Activated October 1941; taken over by USAF June 7, 1957. Renamed for Gen. Hoyt S. Vandenberg, USAF's second Chief of Staff. **Area:** 98,400 acres. **Runway:** 15,000 ft. **Altitude:** 367 ft. **Personnel:** permanent party military, 3,400; DOD civilians, 1,400. **Housing:** single family, officer, 403, enlisted, 1,566; unaccompanied, dorm rooms, 670; UOQ, 43; UAQ/UEQ, 59; visiting, VQ, 111; DVQ, 18; VAQ, 124; TLF, 26. **Clinic.**

Whiteman AFB, Mo. 65305-5000; 2 mi. S of Knob Noster. **Phone:** 660-687-1110; DSN 975-1110. **Majcom:** ACC. **Host:** 509th BW. **Mission:** B-2 operations. **Major tenants:** 442nd FW (AFRC), A/OA-10; 1st Battalion, 135th Aviation Regiment (ARNG); Mobile Inshore Undersea Warfare Unit 114 (Navy Reserve); Joint Fires Network Unit 1 (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, 3,334; DOD civilians, 1,702. **Housing:** single family, officer, 102, enlisted, 1,027; unaccompanied, 674; visiting, VOQ, 52, VAQ, 35, TLF, 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; Materiel System Gp.; 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, 4,087; DOD civilians, 8,483. **Housing:** single family, officer, 545, enlisted, 1,603; unaccompanied, UAQ/UEQ, 364; visiting, VQ, 422, 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-21, C-130, and UH-1N operations. Primary aerial port in Japan. **Major tenants:** US Forces, Japan; 5th Air Force (PACAF); 730th AMS (AMC); Det. 1, Air Force Band of the Pacific–Asia; American Forces Network Tokyo; DFAS-Japan. **History:** opened as Tama AAF by the Japanese in 1939. **Area:** 1,750 acres. **Runway:** 11,000 ft. **Altitude:** 457 ft. **Personnel:** permanent party military, 3,414; DOD civilians, 199. **Housing:** single family, officer, 683, enlisted, 1,956; unaccompanied, UOQ, 184, UAQ/UEQ, 896; visiting, VOQ, 202, VAQ/VEQ, 23, TLF, 189. **Hospital.**

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.

Allen C. Thompson Field, Miss. 39232-8881; 6 mi. E of Jackson. **Phone:** 601-936-8370; DSN 731-9370. **Unit:** 172nd Airlift Wing (ANG). **Area:** 140 acres. **Runway:** 8,500 ft. **Altitude:** 346 ft. **Full-time personnel:** 279.

Alpena County Arpt., Mich. 49707; 5 mi W of Alpena. **Phone:** 989-354-6210; DSN 741-3210. **Unit:** Combat Readiness Training Center (ANG). **Area:** 610 acres. **Runways:** 9,000 ft. and 5,030 ft. **Altitude:** 682 ft. **Full-time personnel:** 83.

Atlantic City Arpt., N.J. 08234-9500; 9 mi. NW of Atlantic City. **Phone:** 609-645-6000; DSN 455-6000. **Unit:** 177th Fighter Wing (ANG). **Area:** 296 acres. **Runways:** 10,000 ft. and 6,144 ft. **Altitude:** 71 ft. **Full-time personnel:** 272.

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

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:** 306. Commissary; exchange.

Barnes Arpt., Mass. 01085-1482; 3 mi. N of downtown Westfield. **Phone:** 413-568-9151; DSN 636-9210. **Unit:** 104th Fighter Wing (ANG). **Area:** 186 acres. **Runway:** 9,000 ft. **Altitude:** 271 ft. **Full-time personnel:** 263.

Birmingham Arpt., Ala. 35217-3545, 7 mi. E of Birmingham. **Phone:** 205-714-2000; DSN 778-2210. **Unit:** 117th Air Refueling Wing (ANG). **Area:** 145 acres. **Runway:** 10,000 ft. **Altitude:** 644 ft. **Full-time personnel:** 240.

Boise Air Terminal (Gowen Field), Idaho 83705-8006; 1 mi. S of Boise. **Phone:** 208-422-5322; DSN 422-5322. **Units:** 124th Wing (ANG). Also host for the Army National Guard (ARNG); Army Reserve; Army Research Institute; Navy/Marine Corps Reserves; and Civil Air Patrol. **History:** named for Lt. Paul R. Gowen, killed in B-10 crash in Panama July 11, 1938. **Area:** 576 acres. **Runway:** 9,800 ft. **Altitude:** 2,836 ft. **Full-time personnel:** 457. Limited transient facilities available during ARNG camps.

Bradley Arpt., Conn. 06026-9309; 15 mi. N of Hartford. **Phone:** 860-292-2526; DSN 636-8310. **Units:** 103rd Fighter Wing (ANG); ARNG aviation battalion. **History:** named for Lt. Eugene M. Bradley, killed in P-40 crash August 1941. **Area:** 148 acres. **Runway:** 9,600 ft. **Altitude:** 172 ft. **Full-time personnel:** 278.

Burlington Arpt., Vt. 05403-5872; 1 mi. E of Burlington. **Phone:** 802-660-5215; DSN 220-5215. **Unit:** 158th Fighter Wing (ANG). **Area:** 230 acres. **Runway:** 7,800 ft. **Altitude:** 355 ft. **Full-time personnel:** 297.

Capital Arpt., Ill. 62707-5001; 4 mi. NW of Springfield. **Phone:** 217-757-1219; DSN 892-8219. **Unit:** 183rd Fighter Wing (ANG). **Area:** 91 acres. **Runways:** 8,000 ft., 7,000 ft., and 5,300 ft. **Altitude:** 588 ft. **Full-time personnel:** 304.

Channel Islands ANGS, Calif. 93041-4002, 3 mi. SE of Oxnard. **Phone:** 805-986-8000; DSN 893-7000. **Unit:** 146th Airlift Wing (ANG). **Area:** 206 acres. **Runway:** 11,100 ft. **Altitude:** 12 ft. **Full-time personnel:** 290.

Charlotte/Douglas Arpt., N.C. 28208, 6 mi. W of downtown Charlotte. **Phone:** 704-391-4100; DSN 583-9129. **Unit:** 145th Airlift Wing (ANG). **Area:** 79 acres. **Runway:** 10,000 ft. **Altitude:** 745 ft. **Full-time personnel:** 285.

Cheyenne Arpt., Wyo. 82009. **Phone:** 307-772-6110; DSN 943-6110. **Unit:** 153rd Airlift Wing (ANG). **Area:** 77 acres. **Runway:** 9,400 ft. **Altitude:** 6,250 ft. **Full-time personnel:** 252.

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:** 268.

Des Moines Arpt., Iowa 50321-2799; within Des Moines. **Phone:** 515-256-8210; DSN 946-8210. **Unit:** 132nd Fighter Wing (ANG). **Area:** 162 acres. **Runway:** 9,000 ft. **Altitude:** 942 ft. **Full-time personnel:** 304.

Dobbins ARB, Ga. 30069-5010; 16 mi. NW of Atlanta. **Phone:** 678-655-5000; DSN 625-1110. **Units:** Hq. 22nd Air Force (AFRC); 94th Airlift Wing (AFRC); Hq. Ga. ANG; Army Aviation Group (Ga. ARNG); US Army Reserve Center; 283rd Combat Communications Sq.; and Marine Corps Reserve Center Atlanta. **History:** activated 1943. Named for Capt. Charles Dobbins, pilot killed in WWII. **Area:** 1,660 acres. NAS Atlanta and Lockheed Martin Aeronautical Systems Co./Air Force Plant 6 adjoin Dobbins ARB and use airfield facilities. **Runway:** 10,000 ft. **Altitude:** 193 ft. **Full-time personnel:** AFRC, 385, ANG, 29.

Duke Field, Fla. 32542-6644; 6 mi. S of Crestview. **Phone:** 850-883-6347; DSN 875-6347. **Unit:** 919th Special Operations Wing (AFRC). **History:** Named for Lt. Robert L. Duke, pilot killed Dec. 29, 1943, in test flight. **Area:** 1,348 acres. **Runway:** 8,000 ft. **Altitude:** 193 ft. **Full-time personnel:** active duty, 300; ARTs, 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:** 282.

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:** 278.

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:** 272.

Forbes Field, Kan. 66619-5370; 6 mi. S of Topeka. **Phone:** 785-861-4210; DSN 720-4210. **Unit:** 190th Air Refueling Wing (ANG). **History:** named for Maj. Daniel H. Forbes Jr., pilot killed June 5, 1948, test-flying the Northrop YB-49 "Flying Wing." **Area:** 193 acres. **Runway:** 12,819 ft. **Altitude:** 1,079 ft. **Full-time personnel:** 253.

Fort Smith Arpt., Ark. 72903; within Fort Smith. **Phone:** 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:** 277.

Francis S. Gabreski Arpt., N.Y. 11978-1201; 1 mi. N of Westhampton Beach. **Phone:** 631-288-7335; DSN 456-7335. **Unit:** 106th Rescue Wing (ANG). **History:** named for Col. Francis S. Gabreski, WWII and Korean War ace. **Area:** 88

acres. **Runways:** 9,000 ft., 5,000 ft., and 3,000 ft. **Altitude:** 68 ft. **Full-time personnel:** 245.

Fresno Yosemite Arpt., Calif. 93727-2199; within Fresno. **Phone:** 559-454-5100; DSN 949-9100. **Unit:** 144th Fighter Wing (ANG). **Area:** 111 acres. **Runway:** 9,222 ft. **Altitude:** 332 ft. **Full-time personnel:** 278.

General Mitchell Arpt./ARS, Wis. 53207-6299; SW corner of Milwaukee. **AFRC phone:** 414-482-5000; 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, 173; ANG, 267.

Greater Peoria Arpt., Ill. 61607-5023; 5 mi. SW of Peoria. **Phone:** 309-633-5210; DSN 724-5210. **Unit:** 182nd Airlift Wing (ANG). **Area:** 339 acres. **Runways:** 10,000 ft. and 8,006 ft. **Altitude:** 656 ft. **Full-time personnel:** 289.

Great Falls Arpt., Mont. 59404-5570; 5 mi. SW of Great Falls. **Phone:** 406-791-6285; DSN 279-2285. **Unit:** 120th Fighter Wing (ANG). **Area:** 141 acres. **Runways:** 10,502 ft. and 6,357 ft. **Altitude:** 3,679 ft. **Full-time personnel:** 290.

Grissom ARB, Ind. 46971-5000; 15 mi. N of Kokomo. **Phone:** 765-688-5211; 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:** 327.

Gulfport–Biloxi Arpt., Miss. 39507; within Gulfport. **Phone:** 228-214-6002; DSN 363-6002. **Units:** Combat Readiness Training Center; 255th Air Control Sq. (ANG); 209th Civil Engineering Sq. An air-to-ground gunnery range is located 70 mi. N of site. **History:** established as a Permanent Field Training Site in 1954 and redesignated as a CRTC in 1990. **Area:** 224 acres. **Runway:** 9,000 ft. **Altitude:** 26 ft. **Full-time personnel:** 119.

Hancock Field, N.Y. 13211-7099; 4 mi. NE of Syracuse. **Phone:** 315-454-6100; 1-800-982-3696; DSN 489-9100. **Units:** 174th Fighter Wing (ANG); 152nd Air Operations Gp.; 274th Air Support Operations Sq. (N.Y. ARNG). **Area:** 356 acres. **Runways:** 9,300 ft. and 7,500 ft. **Altitude:** 410 ft. **Full-time personnel:** 325.

Harrisburg Arpt., Pa. 17057; 6 mi. SE of Harrisburg. **Phone:** 717-948-2200; DSN 423-2200. **Unit:** 193rd Special Operations Wing (ANG). **Area:** 39 acres. **Runway:** 9,501 ft. **Altitude:** 355 ft. **Full-time personnel:** 297.

Hector Arpt., Fargo, N.D. 58102. **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:** 302.

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, 280; 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:** 274.

Jacksonville Arpt., Fla. 32218-7933; within Jacksonville. **Phone:** 904-741-7100; DSN 641-7100. **Unit:** 125th Fighter Wing (ANG). **Area:** 332 acres. **Runway:** 10,000 ft. **Altitude:** 25 ft. **Full-time personnel:** 359.

Joe Foss Field, S.D. 57104-0264; N side of Sioux Falls. **Phone:** 605-988-5700; DSN 798-7700. **Unit:** 114th Fighter Wing (ANG). **History:** named for Brig. Gen. Joseph J. Foss, WWII ace, former governor, former AFA national president, and founder of the S.D. ANG. **Area:** 214 acres. **Runways:** 9,000 ft. and 5,070 ft. **Altitude:** 1,420 ft. **Full-time personnel:** 280.

Kelly Field, Tex. 78236-0112; 5 mi. SW of San Antonio. **Phone:** 210-671-1110; DSN 473-1110. **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. **Full-time personnel:** 323.

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:** 304.

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:** 415.

Kulis ANGB, Alaska 99502-1988. **Phone:** 907-249-1176; DSN 317-626-1176. **Units:** 176th Wing (ANG); 144th Airlift Sq. (ANG); 210th Rescue Sq. (ANG). **History:** named for Lt. Albert Kulis, killed in training flight in 1954. **Area:** 129 acres. **Runway:** 10,897 ft. **Altitude:** 94 ft. **Full-time personnel:** 433.

Lambert–St. Louis Arpt., Mo. 63044-2371; 20 mi. NW of downtown St. Louis. **Phone:** 314-263-6222; DSN 693-6222. **Unit:** 131st Fighter Wing (ANG). **Area:** 48 acres. **Runway:** 11,000 ft. **Altitude:** 604 ft. **Full-time personnel:** 368.

Lincoln Arpt., Neb. 68524-1880; 4 mi. NW of downtown Lincoln. **Phone:** 402-458-1234; DSN 946-1234. **Units:** 155th Air Refueling Wing (ANG); ARNG unit. **Area:** 179 acres. **Runways:** 13,500 ft. and 8,620 ft. **Altitude:** 1,050 ft. **Full-time personnel:** 280.

Louisville Arpt./AGS (Standiford Field), Ky. 40213; 5 mi. S of downtown Louisville. **Phone:** 502-364-9400; DSN 989-4400. **Units:** 123rd Airlift Wing (ANG); 223rd Communications Sq. (ANG). **Area:** 81 acres. **Runways:** 10,000 ft. and 7,800 ft. **Altitude:** 500 ft. **Full-time personnel:** 318.

Luis Munoz Marin Arpt., Puerto Rico 00979-1502; E of San Juan. **Phone:** 787-253-5101; DSN 860-9101. **Units:** 156th Airlift Wing (ANG); 612th ASOS Det. Coronet Oak. **Area:** 95 acres. **Runway:** 10,000 ft. **Altitude:** 6 ft. **Full-time personnel:** 305.

Mansfield Lahm Arpt., Ohio 44903-0179; 3 mi. N of Mansfield. **Phone:** 419-520-6100; DSN 696-6100. **Unit:** 179th Airlift Wing (ANG). **History:** named for nearby city and aviation pioneer Brig. Gen. Frank P. Lahm in 1948. **Area:** 67 acres. **Runways:** 9,000 ft. and 6,795 ft. **Altitude:** 1,299 ft. **Full-time personnel:** 230.

March ARB, Calif. 92518-9888; 9 mi. SE of downtown Riverside. **Phone:** 909-655-1110; DSN 447-1110. **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, 669; ANG, 262. **Housing:** VOQ, 138, VAQ, 302.

Martin State Arpt., Md. 21220-2899; 8 mi. NE of Baltimore. **Phone:** 410-918-6210; DSN 243-6210. **Unit:** 175th Wing (ANG). **Area:** 175 acres. **Runway:** 8,100 ft. **Altitude:** 21 ft. **Full-time personnel:** 383.

McEntire ANGS, S.C. 29044; 15 mi. E of Columbia. **Phone:** 803-647-8300; DSN 583-8201. **Units:** 169th Fighter Wing (ANG); 240th Combat Communications Sq. (ANG); 245th Air Traffic Control Sq. (ANG); Combined Support Maintenance Shop (ARNG); 1/151st Aviation Battalion (ARNG). **History:** named for ANG Brig. Gen. B.B. McEntire Jr., killed in 1961 F-104 accident. **Area:** 2,301 acres. **Runway:** 9,000 ft. **Altitude:** 252 ft. **Full-time personnel:** 330.

McGhee Tyson 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:** 332.

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:** 278. Fitness center and mini-exchange.

Minneapolis–St. Paul Arpt./ARS, Minn. 55450-2000; 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, 179; ANG, 267. 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:** 271.

NAS JRB Fort Worth, Tex. 76127-6200, 7 mi. NW of Fort Worth. **Navy hosted switchboard:** 817-782-5000; DSN 739-5000. **ANG Phone:** 817-852-3202; DSN 874-3202. **Units:** 10th Air Force and 301st Fighter Wing (AFRC); 136th Airlift Wing (ANG). **Area:** Navy hosted base is 1,805 acres; ANG, 81 acres. **Runway:** 12,000 ft. **Altitude:** 650 ft. **Full-time personnel:** AFRC, 402; ANG, 91.

NAS JRB New Orleans, La. 70143-0050, 15 mi. S of New Orleans. **ANG Phone:** 504-391-8600; DSN 457-8600. **AFRC Phone:** 504-678-9673; DSN 678-9673. **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, 324; AFRC, 214.

NAS JRB Willow Grove, Pa. 19090-5203; 14 mi. N of Philadelphia. **AFRC phone:** 215-443-1000; DSN 991-1000. **ANG phone:** 215-443-1500; DSN 991-1500. **Units:** 913th Airlift Wing (AFRC); 111th Fighter Wing (ANG). **History:** activated August 1958. **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, 33; ANG, 273.

Nashville Arpt., Tenn. 37217-2538; 6 mi. SE of downtown Nashville. **Phone:** 615-399-5410; DSN 788-6210. **Unit:** 118th Airlift Wing (ANG). **Area:** 88 acres. **Runway:** 11,150 ft. **Altitude:** 570 ft. **Full-time personnel:** 297.

New Castle County Arpt., Del. 19720; 5 mi. S of Wilmington. **Phone:** 302-323-3500; DSN 445-7500. **Unit:** 166th Airlift Wing (ANG). **Area:** 79 acres. **Runways:** 7,170 ft. and 7,000 ft. **Altitude:** 80 ft. **Full-time personnel:** 240.

Niagara Falls Arpt./ARS, N.Y. 14304-5001; 6 mi. E of Niagara Falls. **Phone:** 716-236-2000; DSN 238-2000. **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, 178; ANG, 253. Lodging, exchange, and consolidated club.

Otis ANGB, Mass. 02542-1330; 7 mi. NNE of Falmouth. **Phone:** 508-968-4667; DSN 557-4667. **Units:** 102nd Fighter Wing (ANG), F-15A/B; 101st Fighter Sq. (ANG). **Tenant Units:** 202nd Weather Flt. (ANG); 253rd CCG (ANG); 267th CCS (ANG). **History:** named for 1st Lt. Frank J. Otis, Mass. ARNG flight surgeon and pilot killed in 1937 crash. **Area:** 4,069 acres. **Runways:** 9,500 ft. and 8,000 ft. **Altitude:** 103 ft. **Full-time personnel:** 374.

Pease Intl. Tradeport ANGS, Portsmouth, N.H. 03803-0157. **Phone:** 603-430-2453; DSN 852-2453. **Unit:** 157th Air Refueling Wing (ANG). **Area:** 218 acres. **Runway:** 11,318 ft. **Altitude:** 101 ft. **Full-time personnel:** 320.

Pittsburgh Arpt./ARS, Pa. 15108-4403; 12 mi. NW of Pittsburgh. **AFRC phone:** 412-474-8000; 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, 184; ANG, 376. **Housing:** VOQ, 24, VEQ, 230. No on-base housing. Limited exchange.

Portland Arpt., Portland, Ore. 97218-2797. **Phone:** 503-335-4000; DSN 638-4000. **Units:** 142nd Fighter Wing (ANG); 244th Combat Communications Sq. (ANG); 272nd Combat Communications Sq. (ANG); Oregon Wing, CAP; 939th Air Refueling Wing (AFRC); Ore. ARNG. **Area:** 246 acres. **Runways:** 11,000 ft., 8,000 ft., and 7,000 ft. **Altitude:** 18 ft. **Full-time personnel:** ANG, 405; AFRC, 287.

Quonset State Arpt., R.I. 02852; 20 mi. S of Providence. **Phone:** 401-886-1210; DSN 476-3210. **Unit:** 143rd Airlift Wing (ANG). **Area:** 94 acres. **Runway:** 7,800 ft. **Altitude:** 19 ft. **Full-time personnel:** 230.

Reno/Tahoe Arpt. (May Field), Nev. 89502; 5 mi. SE of downtown Reno at 1776 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:** 280.

Richmond Arpt. (Byrd Field), Va. 23150; 7 mi. SE of downtown Richmond. **Phone:** 804-236-6000; DSN 864-6000. **Unit:** 192nd Fighter Wing (ANG). **History:** named for Adm. Richard E. Byrd, Arctic and Antarctic explorer. **Area:** 143 acres. **Runway:** 9,000 ft. **Altitude:** 168 ft. **Full-time personnel:** 293.

Rickenbacker ANGB, Ohio 43217-5931; 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:** 357.

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:** 302.

Salt Lake City Arpt., Utah 84116; 3 mi. W of downtown Salt Lake City. **Phone:** 801-245-2200; DSN 245-2200. **Units:** 151st Air Refueling Wing (ANG); 169th 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:** 356.

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:** 319.

Schenectady County Arpt. (Stratton ANGB), N.Y. 12302-9752; 2 mi. N of Schenectady. **Phone:** 518-344-2300; DSN 974-9300. **Unit:** 109th Airlift Wing (ANG), 14 C-130s, 10 with skis for Antarctic and Greenland missions. **Area:** 122 acres. **Runway:** 7,000 ft. **Altitude:** 328 ft. **Full-time personnel:** 474.

Selfridge ANGB, Mich. 48045-5046; 3 mi. NE of Mount Clemens. **Phone:** 586-307-4011; DSN 273-4011. **Units:** 127th Wing (ANG); 927th Air Refueling Wing (AFRC); Air Force, Army, Navy, and Marine Corps Reserve units; ARNG; 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, 454; AFRC, 247.

Sioux Gateway Arpt., Iowa 51111-1300; 7 mi. S of downtown Sioux City. **Phone:** 712-233-0210; DSN 585-0210. **Unit:** 185th Air Refueling Wing (ANG). **Area:** 288 acres. **Runway:** 9,000 ft. **Altitude:** 1,089 ft. **Full-time personnel:** 281.

Sky Harbor Arpt., Phoenix, Ariz. 85034. **Phone:** 602-302-9000; DSN 853-9000. **Unit:** 161st Air Refueling Wing (ANG). **Area:** 60 acres. **Runway:** 12,000 ft. **Altitude:** 1,000 ft. **Full-time personnel:** 256.

Springfield–Beckley Arpt., Ohio 45502-8783; 5 mi. S of Springfield. **Phone:** 937-327-2100; DSN 346-2100. **Units:** 178th Fighter Wing (ANG); 251st Combat Communications Gp. (ANG); 269th Combat Communications Sq. (ANG). **Area:** 114 acres. **Runway:** 8,999 ft. **Altitude:** 1,053 ft. **Full-time personnel:** 385.

Stewart ANGB, N.Y. 12550-5042; 15 mi. N of US Military Academy (West Point). **Phone:** 914-563-2001; DSN 636-2001. **Units:** 105th Airlift Wing (ANG). **History:** Stewart AFB until 1969; acquired by state of New York in 1970. **Area:** ANG, 267 acres. **Runway:** 12,000 ft. **Altitude:** 491 ft. **Full-time personnel:** 605 (ANG). Most military services available through West Point or subpost.

Toledo Express Arpt., Ohio 43558; 14 mi. W of Toledo. **Phone:** 419-868-4180; 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:** 272.

Truax Field, Wis. 53704-2591; at Dane County Arpt. 2 mi. N of downtown Madison. **Phone:** 608-245-4300; DSN 724-8300. **Unit:** 115th Fighter Wing (ANG). **History:** activated June 1942 as AAF base; taken over by Wis. ANG April 1968. Named for Lt. T.L. Truax, killed in P-40 training accident in 1941. **Area:** 130 acres. **Runway:** 12,000 ft. **Altitude:** 800 ft. **Full-time personnel:** 289.

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:** 929.

Tulsa Arpt., Okla. 74115-1699; 6 mi. NE of downtown Tulsa. **Phone:** 918-833-7370; DSN 894-7370. **Units:** 138th Fighter Wing (ANG); 219th Engineering Installation Sq. **Area:** 81 acres. **Runway:** 10,000 ft. **Altitude:** 677 ft. **Full-time personnel:** 298.

Volk Field ANGB, Wis. 54618-5001; 87 mi. NW of Madison. **Phone:** 608-427-1210; DSN 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:** 117.

W.K. Kellogg Arpt., Mich. 49015-5512; 1 mi. W of Battle Creek. **Phone:** 616-969-3400; DSN 580-3210. **Unit:** 110th Fighter Wing (ANG). **Area:** 320 acres. **Runway:** 10,003 ft. **Altitude:** 929 ft. **Full-time personnel:** 267.

Westover ARB, Mass. 01022-1654; 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:** 471. **Housing:** VOQ, 41, VAQ, 142 beds.

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:** 263.

Yeager Arpt., W.Va. 25311; 4 mi. NE of downtown Charleston. **Phone:** 304-341-6126; DSN 366-6210. **Unit:** 130th Airlift Wing (ANG). **History:** named for Brig. Gen. Charles E. "Chuck" Yeager. **Area:** 109 acres. **Runway:** 6,300 ft. **Altitude:** 982 ft. **Full-time personnel:** 242.

Youngstown–Warren Arpt./ARS, Ohio 44473-5910; 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:** 274. **Lodging:** 142 beds. Limited exchange.

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Records and Trophies

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Absolute Aviation World Records

The desirability of a standard procedure to certify air records was recognized early in the history of powered flight. In 1905, representatives of Belgium, France, Germany, Great Britain, Italy, Spain, Switzerland, and the US met in Paris to form the Federation Aeronautique Internationale, the world body of national aeronautic sporting interests. The FAI today comprises the national aero clubs of some 100 nations and certifies national records as world records. Since 1922, the National Aeronautic Association, based in Arlington, Va., has been the US representative to the FAI. The NAA supervises all attempts at world and world-class records in the United States. Absolute world records are the supreme achievements of all the records open to flying machines.

Speed around the world, nonstop, nonrefueled: 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 B-52 mothership, X-15 test pilot Maj. Robert 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.
1958 **Clarence L. Johnson,** airframe design; **Neil Burgess, Gerhard Neumann,** J79 turbojet engines; **Maj. Howard C. Johnson,** landplane altitude record; **Capt. Walter W. Irwin,** straightaway speed record.
1959 **USAF, General Dynamics–Convair, Space Technology Laboratories.** Atlas ICBM.
1960 **Vice Adm. William F. Raborn.** Polaris ballistic missile.
1961 **A. Scott Crossfield, Cmdr. Forrest Petersen, Joseph A. Walker, Maj. Robert M. White.** X-15 test flights.
1962 **Lt. Col. John H. Glenn Jr. (USMC), Cmdr. Walter M. Schirra Jr., Cmdr. Alan B. Shepard Jr., Lt. Cmdr. M. Scott Carpenter, Maj. L. Gordon Cooper, Maj. Virgil I. Grissom, Maj. Donald K. Slayton.** Pioneering US manned spaceflight.
1963 **Clarence L. Johnson.** A-11 (A-12) Mach 3 aircraft.
1964 **Gen. Curtis E. LeMay.** Expanding frontiers of American aeronautics and astronautics.
1965 **James E. Webb, Hugh L. Dryden.** Gemini spaceflight program.
1966 **James S. McDonnell.** F-4 Phantom and Gemini space vehicles.
1967 **Lawrence A. Hyland, Hughes Aircraft 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.*

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.
2001 **Pratt & Whitney, Rolls Royce, Lockheed Martin Corp., Northrop Grumman Corp., BAE Systems, JSF Program Office.** Integrated lift fan propulsion system.
2002 **Sikorsky Aircraft Corp. and the S-92 industry team.** S-92 helicopter.

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.

The Mackay Trophy, continued

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.
2001 Crew of Knife 04, 20th SOS, Hurlburt Field, Fla.
2002 Crew of Grim 31, 16th SOS, Hurlburt Field, Fla.

Gen. Thomas Power (right), commander in chief of Strategic Air Command, greets the B-58 Hustler crew that set three speed records and was later awarded the 1962 Mackay Trophy. From left are Maj. Robert Sowers and Capts. Robert MacDonald and John Walton. For their record-setting flight, the crew flew roundtrip between New York and Los Angeles in four hours, 42 minutes.

The Gen. Thomas D. White USAF Space Award

The Gen. Thomas D. White USAF Space Award is named for the fourth Air Force Chief of Staff, a longtime champion of USAF's role in space. The Air Force selects the recipients among USAF individuals or organizations that made the year's outstanding progress in the field of aerospace. It was established in 1961 and, until 1996, sponsored by the National Geographic Society. It is now an AFA national award sponsored by the Gen. B.A. Schriever Los Angeles Chapter.

1961 Capt. Virgil I. Grissom.
1962 Maj. Robert M. White.
1963 Maj. L. Gordon Cooper.
1964 Air Force Systems Command.
1965 Lt. Col. Edward H. White II.
1966 Alexander H. Flax.
1967 Gen. John P. McConnell.
1968 Col. Frank Borman, Capt. James A. Lovell Jr. (USN), Lt. Col. William A. Anders.
1969 Col. Edwin E. Aldrin Jr., Neil A. Armstrong, Col. Michael Collins.
1970 Brig. Gen. Robert A. Duffy.
1971 Lt. Gen. Samuel C. Phillips.
1972 Hon. Robert C. Seamans Jr.
1973 Lt. Col. Henry Hartsfield Jr.
1974 No award.
1975 Maj. Gen. Thomas P. Stafford.
1976 Gen. William J. Evans.
1977 Lt. Col. Charles G. Fullerton, Fred W. Haise Jr.
1978 No award.
1979 Maj. Gen. John E. Kulpa Jr.
1980 Gen. Lew Allen Jr.
1981 Col. Joe Engle, Capt. Richard H. Truly (USN).
1982 Lt. Gen. Richard C. Henry.
1983 Gen. James V. Hartinger.
1984 Lt. Gen. Forrest S. McCartney.
1985 Maj. Gen. Donald W. Henderson.
1986 Gen. Donald J. Kutyna.
1987 Col. Victor W. Whitehead.
1988 Robert R. Barthelemy.
1989 Launch Systems Directorate, Space Systems Division.
1990 Gen. John L. Piotrowski, USAF (Ret.), Lt. Gen. Donald L. Cromer.
1991 Lt. Gen. Thomas S. Moorman Jr.
1992 Maj. Gen. Nathan J. Lindsay, USAF (Ret.).
1993 Gen. Merrill A. McPeak.
1994 Gen. Charles A. Horner.
1995 Gen. Joseph W. Ashy.
1996 No award.
1997 Lt. Gen. Patrick P. Caruana.
1998 Gen. Howell M. Estes III.
1999 Lt. Gen. Lance W. Lord.
2000 Gen. Richard B. Myers.
2001 Gen. Ralph E. Eberhart.
2002 Lt. Gen. Roger G. DeKok, USAF (Ret.).

The Raytheon Hughes Achievement Award

The Raytheon Hughes Achievement Award (formerly the Hughes Trophy) is presented annually to the top Air Force squadron with an air defense/air superiority mission.

Year	Unit, Base	Aircraft
1953	58th FIS, Otis AFB, Mass.	F-94C
1954	96th FIS, New Castle County Airport, Del.	F-94C
1955	496th FIS, Landstuhl AB, West Germany	F-86D
1956	317th FIS, McChord AFB, Wash.	F-86D/F-102A
1957	512th FIS, RAF Bentwaters, UK	F-86D
1958	31st FIS, Elmendorf AFB, Alaska	F-102A
1959	54th FIS, Ellsworth AFB, S.D.	F-89J
1960	460th FIS, Portland Arpt., Ore.	F-102A
1961	83rd FIS, Hamilton AFB, Calif.	F-101B
1962	444th FIS, Charleston AFB, S.C.	F-101B
1963	497th FIS, Torrejon AB, Spain	F-102A
1964	329th FIS, George AFB, Calif.	F-106A/B
1965	317th FIS, Elmendorf AFB, Alaska	F-102A
1966	32nd FIS, Soesterberg AB, Netherlands	F-102A
1967	317th FIS, Elmendorf AFB, Alaska	F-106A/B
1968	64th FIS, Clark AB, Philippines	F-102A
1969	71st FIS, Malmstrom AFB, Mont.	F-106A/B
1970	57th FIS, NAS Keflavik, Iceland	F-102A
1971	48th FIS, Langley AFB, Va.	F-106A/B
1972	43rd TFS, Elmendorf AFB, Alaska	F-4E
1973	555th TFS, Udorn RTAB, Thailand	F-4D
1974	119th FIG (ANG), Hector Field, N.D.	F-101B
1975	318th FIS, McChord AFB, Wash.	F-106A/B
1976	57th FIS, NAS Keflavik, Iceland	F-4C
1977	43rd TFS, Elmendorf AFB, Alaska	F-4E
1978	49th FIS, Griffiss AFB, N.Y.	F-106A/B
1979	32nd TFS, Soesterberg AB, Netherlands	F-15A/B
1980	32nd TFS, Soesterberg AB, Netherlands	F-15A/B
1981	12th TFS, Kadena AB, Japan	F-15C/D
1982	44th TFS, Kadena AB, Japan	F-15C/D
1983	67th TFS, Kadena AB, Japan	F-15C/D
1984	318th FIS, McChord AFB, Wash.	F-15A/B
1985	120th FIG (ANG), Great Falls Arpt., Mont.	F-106A/B
1986	67th TFS, Kadena AB, Japan	F-15C/D
1987	57th FIS, NAS Keflavik, Iceland	F-15C/D
1988	22nd TFS, Bitburg AB, West Germany	F-15C/D
1989	67th TFS, Kadena AB, Japan	F-15C/D
1990	58th TFS, Eglin AFB, Fla.	F-15C/D
1991	58th TFS, Eglin AFB, Fla.	F-15C/D
1992	59th FS, Eglin AFB, Fla.	F-15C/D
1993	71st FS, Langley AFB, Va.	F-15C
1994	178th FS (ANG), Hector Arpt., N.D.	F-16A/B
1995	27th FS, Langley AFB, Va.	F-15C/D
1996	60th FS, Eglin AFB, Fla.	F-15C/D
1997	493rd FS, RAF Lakenheath, UK	F-15C
1998	71st FS, Langley AFB, Va.	F-15C/D
1999	493rd FS, RAF Lakenheath, UK	F-15C
2000	19th FS, Elmendorf AFB, Alaska	F-15C/D
2001	71st FS, Langley AFB, Va.	F-15C/D
2002	27th FS, Langley AFB, Va.	F-15C/D

McPeak on Desert Storm

"My private conviction is that this is the first time in history that a field army has been defeated by airpower." So stated Gen. Merrill A. McPeak, the Air Force Chief of Staff, in the most-quoted part of a famous briefing on Desert Storm.

The venue was a DOD news conference. Reporters wanted to know more about the air campaign, and McPeak laid it out in detail. Toward the end of a long session, and in response to a question, McPeak uttered the 21 words quoted above.

Though McPeak had taken pains to praise the other services and allies, press reaction was generally negative. The Washington Post, *for example, reported McPeak had moved to "claim the lion's share of credit for the rout of Iraqi forces in Kuwait." It is clear from the context, however, that he had been more cautious than that.*

"Operation Desert Storm"

Gen. Merrill A. McPeak, USAF
DOD News Conference,
Washington, D.C.
March 15, 1991

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

I am delighted to be here today to tell an American success story. A great victory was achieved against a strong enemy and with little loss on our part. ... It is largely a story about airpower, a success story for US and coalition air forces, but I need to remind myself and everybody that we were only part of a larger air, land, and sea campaign ... in which all of the services made a very important contribution, and, of course, all of our allies as well.

I hope you'll forgive me now, if I talk mostly about the air campaign for the rest of this time, since that's my piece of the thing to talk about. You can bring me back from time to time and remind me that everybody else played an important part. ...

The coalition air forces put up about 110,000 sorties. ... The US Air Force flew nearly 60 percent of that total. We dropped about 88,500 tons of ordnance. Again, the US Air Force contribution was major. ... In my judgment, it was the precision munitions that did the most important work. ... The US Air Force did about 90 percent of that. ...

After we had cut off the field-deployed Iraqi Army, we went to work on major categories of equipment. ... I believe strongly that we were very conservative in our claims [about the destruction of Iraqi tanks and other weapons]. Once we actually did push in on the ground, it was obvious that we had achieved destruction rates well above something like 50 percent we may have been claiming in all classes of major equipment. ... I think we achieved very large levels of destruction prior to G-Day, and I'm convinced that made the job a lot easier for our ground forces. ...

The US Air Force can go anywhere in the world very quickly, and it has tremendous destructive effect when ordered to do that by the President. It is important that we had one concept of operations ... for the air, land, and sea campaign. It was very important they all marched to the same set of orders. Air superiority once again proved its importance. Our flexibility to improvise, make up tactics, and so forth, was very important. Stealth, in combination with precision guided munitions, I think, has certainly the potential to revolutionize warfare. Probably the most important lesson [is] we have quality people that are well-trained, that are very confident, and they proved it. ...

I want to say a word or two about the Iraqi Air Force. I think they did rather well, under the circumstances. ... They happened to be the second best air force in the fracas. Having the second best air force is like having the second best poker hand—it's often the best strategy to fold early. ... The lesson for us is we do not want to enter combat with the second best air force. ...

[US Navy aviation] made a tremendous contribution. It was not redundant. They were tremendously effective in everything they did. ... The RAF did a first-class job on everything they tried to do. It was an honor to be involved with them in this effort. ...

I projected, in the deliberations leading up to the decision, that we might lose as many as four or five aircraft a day. My private hunch ... was less than that, but, you know, airpower advocates over the years have gotten themselves in trouble bragging too much about what we're going to do, so I tried to nudge that and add a little fudge factor in there, but I certainly, even in my most optimistic, wildest dreams, would not have said we would lose one aircraft every three days. ...

I can't offer any explanation for that. We do have the world's only operational stealth airplane, and since it wasn't scratched, it tended to skew the results in our favor. But all of the services did extraordinarily well—the Marines, the Navy, the allied air forces. This was first-class operation.

Having said that, am I proud of the performance turned in by the United States Air Force? You bet. ...

My private conviction is that this is the first time in history that a field army has been defeated by airpower. It's a remarkable performance by the coalition air forces, but there are some things airpower can do and does very well, and some things it can't do, and we should never expect it to do very well—that is, move in on the terrain and dictate terms to the enemy. Our ground forces did that. I think, by the way, again, they did a remarkable job. ... I think they did a magnificent job. ■

Gallery of USAF Weapons

2004 USAF Almanac

By Susan H.H. Young

Note: Inventory numbers are total active inventory figures as of Sept. 30, 2003.

***B-1B** Lancer* (Steve Zapka)

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, AFMC.

First Flight: Dec. 23, 1974 (B-1A); Oct. 18, 1984 (B-1B).

Delivered: June 1985–May 1988.

IOC: Oct. 1, 1986, Dyess AFB, Tex. (B-1B).

Production: 104.

Inventory: 67.

Unit Location: Dyess AFB, Tex., Ellsworth AFB, S.D., Edwards AFB, Calif.

Contractor: Boeing; AIL Systems; General Electric.

Power Plant: four General Electric F101-GE-102 turbofans, each 30,780 lb thrust.

Accommodation: four, pilot, copilot, and two systems officers (offensive and defensive), on zero/zero ejection seats.

Dimensions: span spread 137 ft, swept aft 79 ft, length 146 ft, height 34 ft.

Weights: empty equipped 192,000 lb, max operating weight 477,000 lb.

Ceiling: more than 30,000 ft.

Performance: max speed at low level high subsonic; 900+ mph (Mach 1.2 at S/L); range intercontinental.

Armament: three internal weapons bays capable of accommodating a wide range of weapons incl up to 84 Mk 82 (500-lb) bombs or Mk 62 naval mines; up to 30 CBU-87/89 cluster munitions and CBU-97/105 Sensor Fuzed Weapons (SFWs)/SFWs fitted with Wind-Corrected Munitions Dispenser (WCMD) kits, and up to 24 GBU-31 (2,000 lb) Joint Direct Attack Munitions (JDAMs); 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 provice 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 (TFR), 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. Initiated in 1981, the first production model of the improved variant B-1 flew in October 1984. 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. A planned reduction of the B-1B inventory from 93 to 60 aircraft began in August 2002, with fleet consolidation at Dyess AFB, Tex., and Ellsworth AFB, N.D. However, under the 2004 defense authorization bill, Congress directed USAF to return to service 23 of the retired B-1Bs. As of early spring, USAF was working with Congress to change that to just eight bombers.

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.

The ongoing conventional mission upgrade program (CMUP) is significantly enhancing B-1B lethality and survivability. Completed Block D upgrades include GPS receivers, a MIL-STD-1760 weapon interface, secure interoperable radios, and improved computers to support precision weapons, initially the GBU-31 JDAM. Block E includes follow-on computer and software upgrades permitting simultaneous carriage of mixed guided and unguided weapons (now in production), and WCMD/JSOW/JASSM integration. Officials are continuing to assess options for future improvements to the B-1B's defensive system. In addition, planning is under way for a network centric upgrade program aimed at improving B-1B avionics and sensors, with cockpit upgrades to enhance crew communications and situational awareness. An effort to provide a fully integrated data link capability, including Link 16 and Joint Range Extension along with upgraded displays at the rear crew stations, is slated for FY04.

B-2 Spirit

Brief: Stealthy, long-range multirole bomber that can deliver conventional and nuclear munitions anywhere on the globe by flying through previously impenetrable defenses.

Function: Long-range heavy bomber.

Operator: ACC.

First Flight: July 17, 1989.

Delivered: Dec. 11, 1993–2002.

IOC: April 1997, Whiteman AFB, Mo.

Production: 21.

Inventory: 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: 16 GBU-31 (2,000-lb) JDAMs, or a penetration version of a BLU-109, or 16 Mk 84 2,000-lb bombs; 16 JSOWs, 16 JASSMs, up to eight 4,700-lb GBU-37 (GAM-113) near-precision guided weapons, or EGBU-28s. WCMD to follow.

COMMENTARY

The B-2 bomber is a unique, highly advanced system, combining sophisticated technologies, notably low observable (LO) stealth design, with high aerodynamic efficiency, enabling it to attack heavily defended targets and neutralize enemy defenses.

Based on the flying wing concept, the B-2 has no vertical tail surfaces. The smoothly blended "fuselage" section accommodates two flight crew and two large weapons bays side by side in the lower centerbody. These bays contain rotary launchers or bomb rack assemblies capable of carrying up to 40,000 lb of weapons.

Four nonafterburning turbofan engines are mounted in pairs within the wing structure, with scalloped over-wing intake ducts and shielded over-wing trailing-edge nozzles. The aircraft has a quadruple-redundant fly-by-wire digital flight-control system, actuating moving surfaces at the wing trailing edges that combine aileron, elevator, and rudder functions. A landing gear track of 40 ft enables the B-2 to use any runway that can handle a Boeing 727 airliner.

B-2A. B-2 production represents three successive blocks of capability. Block 10 aircraft carried B83 nuclear bombs or 16 Mk 84 2,000-lb conventional munitions. Block 20 aircraft additionally carried B61/7 and B61/11 nuclear bombs, as well as GPS–aided munitions (GAMs), and GBU-36B, on two rotary launcher assemblies, providing an interim, near-precision strike capability. All Block 10 and 20 aircraft have been upgraded

B-2 Spirit (Bobbi Garcia)

to Block 30. (The last original Block 20 B-2, used as a test aircraft at Edwards AFB, Calif., was refurbished as an operational bomber and entered operational service in September 2002.)

Block 30 configuration 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, 16 JASSMs, or eight GAM-113s or EGBU-28s. 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 (500-lb) JDAMs in late 2004. 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).

Beyond Block 30, USAF plans to add UHF/EHF satellite communications systems and Link 16 digital data sharing capability and to replace the current mechanically scanned phased-array antenna with an active electronically scanned array.

The first use of B-2s in combat took place March 24, 1999, against Serb targets in Allied Force, with two aircraft each dropping 16 JDAMs. In October 2001, B-2s flew the longest combat sorties during Enduring Freedom, flying 44-hour sorties from Whiteman AFB, Mo., striking targets in Afghanistan, then landing in Diego Garcia for an engine running crew change, the second crew flying a 29-hour sortie back to Whiteman. In March 2003 for Iraqi Freedom, B-2s were deployed for the first time to a forward operating location, Diego Garcia.

B-52 Stratofortress

Brief: A long-range, heavy multirole bomber that can carry nuclear or conventional ordnance or Air Launched Cruise Missiles (ALCMs), with worldwide precision navigation capability.

Function: Long-range heavy bomber.

Operator: ACC, AFMC, AFRC.

First Flight: April 15, 1952 (YB-52 prototype).

Delivered: November 1955–October 1962.

IOC: June 19, 1955.

Production: 744.

Inventory: 94.

Unit Location: Barksdale AFB, La. (ACC, AFRC), Edwards AFB, Calif. (AFMC), Minot AFB, N.D.

Contractor: Boeing.

Power Plant: eight Pratt & Whitney TF33-P-3 turbofans, each 17,000 lb thrust.

Accommodation: two pilots, side by side, plus navigator, radar navigator, and electronic warfare officer.

Dimensions: span 185 ft, length 159.3 ft, height 40.7 ft.

Weight: empty approx 188,000 lb, gross 488,000 lb.

Ceiling: 50,000 ft.

Performance (approx): max level speed 449 mph, range more than 10,000 miles.

Armament: 12 AGM-86B 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, JASSMs, and on some aircraft eight AGM-84 Harpoons in under-wing clusters.

COMMENTARY

The B-52'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. USAF plans include using some B-52s as electronic warfare platforms whilst retaining all weapons carriage capability.

Equipment includes GPS, ARC-210 radios, Have Quick II antijam radio, KY-100 secure radio, an electro-opt cal (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. B-52s now support a MIL-STD-1760 interface resulting in an improved weapons capability including naval mines, precision guided weapons, and advanced weapons such as JDAM, JSOW, JASSM, and WCMD. The B-52's ECM suite uses a combination of electronic detection, jamming, and infrared (IR) countermeasures to protect against hostile air defense systems. 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 mic–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.

Primary role of the B-52 is still that of cruise missile carrier with, typically, multiple cruise missile launches at high altitude, often followed by B-52 penetration to attack additional targets using GPS/INS guided 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- to mid-threat environments supplemented by a standoff attack capability. Iraqi Freedom saw B-52s delivering laser guided bombs for the first time using newly installed Litening targeting pods. Modification of heavy stores adapter beams will enable aircraft to carry all B-52–certified munitions. Avionics improvements include the avionics midlife improvement (AMI) program, which replaces the current system processors and data transfer cartridges. Electronic attack improvements include the ECM improvement upgrade to the ALQ-172 set. The Combat Network Communications Technology (CONECT) improvement will provide an in-flight beyond line of sight (BLOS) retargeting system, BLOS data transmission capability, and Link 16 intratheater data link.

Current plans encompass a force of 76 aircraft.

B-52H Stratofortress (MSgt. Val Gempis)

Fighter and Attack Aircraft

A-10 Thunderbolt II

Brief: A simple, effective, and survivable twin-engine aircraft specifically designed for close air support (CAS) of ground forces and which can be used against all ground targets, including tanks and other armored vehicles.

Function: Attack aircraft.

Operator: ACC, AFMC, PACAF, USAFE, ANG, AFRC.

First Flight: Feb. 15, 1975 (preproduction).

Delivered: November 1975–March 1984.

IOC: October 1977.

Production: 713.

Inventory: 359.

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 JRB New Orleans, La., Whiteman AFB, Mo.

Contractor: Fairchild Republic; now Lockheed Martin.

Power Plant: two General Electric TF34-GE-100 turbofans, each 9,065 lb thrust.

Accommodation: pilot only, on zero-height/518 mph–zero-speed ejection seat.

Dimensions: span 57.5 ft, length 53.3 ft, height 14.7 ft.

Weight: empty 28,000 lb, max gross 51,000 lb.
Ceiling: 37,000 ft.
Performance: speed 518 mph, combat range with 9,500 lb of weapons and 1.7 hr loiter, 20 min reserve, 288 miles.
Armament: one 30 mm, seven-barrel GAU-8 Gatling gun; eight under-wing 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 IR-directed threats. Future weapons include JDAM and WCMD. The centerline pylon and the two flanking fuselage pylons cannot be occupied simultaneously.
COMMENTARY
Supporting the CAS mission, the A-10 combines large weapons payload, 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 with a standard payload and remain on station (loiter) for two hours. The 30 mm GAU-8 gun provides a cost-effective weapon with which to defeat a wide 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 in Desert Storm and more recently in Enduring Freedom in Afghanistan and Iraqi Freedom, the A-10 is projected to serve well into the 2020s.
A-10A equipment includes an enhanced GPS/INS (EGI), 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. USAF plans to retire some A-10s to help fund a service life extension for the remainder of the fleet. Some aircraft may receive new engines in addition to upgrades to avionics and targeting pods. A precision engagement upgrade will provide the A-10 with new cockpit displays, a digital stores management system, a Joint Tactical Radio System (JTRS) data link and integration of the JDAM and WCMD. Upcoming upgrades will give A-10s full targeting pod integration. 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 2008.
OA-10A. Primarily 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, while not restricted, are reduced to canisters of white phosphorous rockets to allow for target marking and longer loiter time over targets. 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); 1996 (AC-130U).
Production: 39; conversion of four additional C-130s to AC-130 standard recently contracted.
Inventory: 8 (AC-130H); 13 (AC-130U).
Unit Location: Hurlburt Field, Fla.
Contractor: Lockheed Martin (airframe); Boeing (AC-130H); Rockwell, now Boeing (AC-130U).
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: AC-130H crew of 14; AC-130U crew of 13.
Dimensions: span 132.6 ft, length 99 ft, height 38.5 ft.
Weight: gross 155,000 lb.
Ceiling: 25,000 ft.
Performance: speed 289 mph, range 1,500 miles, with air refueling unlimited.
Armament: two 20 mm Vulcan cannons with 3,000 rd (AC-130H); one 25 mm Gatling gun (AC-130U); one 40 mm Bofors cannon with 256 rd, and one 105 mm Howitzer with 100 rd.
COMMENTARY
The AC-130 is a C-130 modified with gun systems, electronic and EO sensors, fire-control systems, enhanced navigation systems, sophisticated communications, defensive systems, and in-flight refueling capability. These systems give the gunship crew the capability to acquire and identify targets day or night, coordinate with ground forces and command and control (C2) agencies, and deliver surgical firepower in support of both conventional and special operations missions. During operations in Afghanistan and Iraq, the AC-130 gunships worked in conjunction with the MQ-1 Predator, the latter providing live video and target referencing information.
AC-130A was the initial version, deployed in Vietnam 1968–69. Eighteen produced.
AC-130E, an improved version, of which eight were built. Converted to H standard after service in Vietnam.
AC-130H Spectres serve with the 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. In addition, USAF is to evaluate wingtip tanks as replacements for the existing underwing tanks as a means of improving performance.
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. Four additional aircraft are being converted by Boeing to U standard. These AC-130Us have greater altitude capability and combine increased firepower, reliability, and superior accuracy with the latest methods of target location. All weapons can be subordinated to the APQ-180 digital fire-control radar, FLIR, or all-light-level television (ALLTV) for adverse weather attack operations.
Although the AC-130H Spectre and AC-130U Spooky gunships use dissimilar avionics and other systems, fire support to troops on the ground is generally comparable. The AC-130U will not be required for most fire support missions but provides benefits under certain circumstances (weather, dual target attack, and defensive avionics).

***A-10A** Thunderbolt II* (MSgt. Blake R. Borsic)

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: 515.
Unit Location: Active: Eglin AFB, Fla., Elmendorf AFB, Alaska, Kadena AB, Japan, Langley AFB, Va., Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath, UK, Robins AFB, Ga., Tyndall AFB, Fla. ANG: Hickam AFB, Hawaii, Jacksonville Arpt., Fla., Klamath Falls Arpt., Ore., Lambert–St. Louis Arpt., Mo., NAS JRB New Orleans, La., Otis ANGB, Mass., Portland Arpt., Ore.
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. Deliveries of AIM-9X commenced November 2003 at Elmendorf AFB, Alaska.
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 34 of the 37 USAF air-to-air victories, and in Iraqi Freedom F-15Cs led coalition aircraft in establishing aerial dominance.
F-15A (single-seat) and **F-15B** (two-seat) fighters became USAF's front-line fighter immediately upon introduction in the mid–1970s. A multimission avionics system includes APG-63 pulse–Doppler radar for long-range detection and tracking of small high-speed objects down to treetop level and effective weapons delivery, a HUD for close-in combat, identification, friend or foe (IFF), and INS. F-15A/Bs now serve with ANG.
F-15C (single-seat) and **F-15D** (two-seat) models followed in June 1979. Improvements included 2,000 lb of additional internal fuel and provision for carrying conformal fuel tanks (CFTs), reducing in-flight refueling requirements and increasing time in the combat zone. From 1983 through 1997, tactical capabilities were enhanced extensively through the multistaged improvement program (MSIP), a program of installation of new or modification of existing avionics equipment, which allows for the carriage of more advanced weapons, and increased self-protection. The last 43 aircraft included improved APG-70 radar, and F-15C/Ds are now receiving an APG-63 upgrade, the APG-63(V)1. One squadron in Alaska has received the later APG-63(V)2, featuring an active electronically steered antenna (AESA), permitting the aircraft to track multiple targets and to guide air-to-air missiles against them. F-15C/D aircraft are also to be modified with the Joint Helmet Mounted Cueing System (JHMCS), a "look and shoot" head-mounted system that, along with the AIM-9X, significantly enhances lethality in close-range aerial combat. Other modifications include improved engines, GPS equipment, and the Link 16 fighter 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: 236 scheduled.
Inventory: 219.
Unit Location: Eglin AFB, Fla., Elmendorf AFB, Alaska, Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath, UK, Robins AFB, Ga., Seymour Johnson AFB, N.C.
Contractor: McDonnell Douglas (now Boeing); Raytheon.
Power Plant: two Pratt & Whitney F100-PW-220, each 25,000 lb thrust; or F100-PW-229 turbofans, each 29,000 lb thrust with max afterburner.
Accommodation: crew of two, on zero/zero ejection seats.
Dimensions: span 42.8 ft, length 63.8 ft, height 18.5 ft.

***F-15A** Eagle* (Guy Aceto)

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; JSOW, JDAM, and WCMD, and nuclear weapons.
COMMENTARY
F-15E has a strengthened airframe for increased gross weight at takeoff and maneuver at nine Gs throughout the flight envelope. Cockpit controls and displays are improved, and a wide-field-of-view (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 radar which provides a high-resolution synthetic aperture radar (SAR) map and LANTIRN (Low-Altitude Navigation and Targeting Infrared for Night) pods, with wide-field FLIR. The APG-70 gives the F-15E, with its AMRAAM, AIM-7, and AIM-9 load, a true multirole capability with the inherent air-to-air capability of the F-15C. The triple-redundant digital flight-control system, in combination with the LANTIRN navigation pod and the WFOV HUD, permits automatic terrain following. Other improvements include an EGI and Link 16 data link. JSOW, JDAM, and WCMD capability was added in 2003. In addition, USAF has equipped some F-15E aircraft with Litening ER targeting pods for improved precision attack capability. External CFTs are fitted to increase combat range while carrying ordnance.

During Desert Storm, 48 USAF F-15Es were deployed to the Persian Gulf where they operated mainly at night, hunting Scud missile launchers and artillery sites using the LANTIRN system; the ability to operate in conjunction with E-8 Joint STARS aircraft both then and in Iraqi Freedom proved critical to success.

Congress authorized 10 additional aircraft with deliveries in FY02 through FY04. These new F-15Es include an upgrade to the programmable armament control set (PACS), software for delivery of JDAM, JSOW, and WCMD, and an enhanced night vision capability.

***F-15E** Strike Eagle* (Guy Aceto)

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: circa 1,361.
Unit Location: 13 active wings, 27 ANG, and five AFRC units (one Associate).
Contractor: Lockheed Martin; Northrop Grumman.
Power Plant: one augmented turbofan. General Electric F110-GE-100 (27,600 lb thrust) and Pratt & Whitney F100-PW-220 (23,450 lb thrust) are alternative standard engines. Increased performance engines (IPEs) in aircraft delivered from late 1991: Block 50: F110-GE-129 (29,000 lb thrust); Block 52: F100-PW-229 (29,100 lb thrust).
Accommodation: pilot only, on zero/zero ejection seat.
Dimensions: wingspan with missiles 32.7 ft, length overall 49.4 ft, height 16.7 ft.
Weight: (F-16C) empty (F100-PW-229) 18,591 lb, (F110-GE-129) 18,917 lb; gross, with external load (Block 40/42) 42,000 lb.
Ceiling: 50,000 ft.
Performance: max speed Mach 2, radius of action: Block 40 with two 2,000-lb bombs, two AIM-9 missiles, and external fuel, hi-lo-lo-hi 852 miles; combat range 575 miles.
Armament: one M61A1 20 mm multibarrel cannon, with 511 rd, mounted in fuselage; wingtip-mounted missiles; seven other external stores stations for fuel tanks and a range of air-to-air and air-to-surface munitions.
COMMENTARY
The F-16 is the workhorse of the USAF fighter fleet, constituting more than 50 percent of its strength through at least 2010. The 200+ USAF F-16 multimission fighters deployed to the Persian Gulf Theater flew more sorties than any other type during Desert Storm, with 13,500 missions. In Iraqi Freedom, the F-16 flew hundreds of missions helping to destroy the unit cohesion of the Republican Guard.

F-16A (single-seat) and **F-16B** (two-seat) versions, which entered service with the 388th TFW, Hill AFB, Utah, incorporated advanced technologies from the start, making these aircraft two of the most maneuverable fighters built. Equipment includes a multimode radar with a clutter-free look-down capability, advanced RWR, HUD, internal chaff/flare dispensers, and a 500-rd 20 mm internal gun.

Production of the F-16A and B for USAF ended in 1985. Most now belong to ANG. A midlife update program, undertaken cooperatively by USAF and NATO operators, includes improvement to the radar, fire-control computer, stores-management computer, and avionics software, giving F-16A/Bs the ability to use next generation air-to-air and air-to-surface weapons.

Reliability and maintainability improvements include a ring-laser gyro INS and installation of the upgraded F100-PW-220E turbofan.

The Multinational Staged Improvement Program, implemented in 1980, ensured the aircraft could accept systems under development, thereby minimizing retrofit costs. All F-16s delivered since November 1981 have had built-in structural and wiring provisions and systems architecture that expand the single-seater's multirole flexibility to perform precision strike, night attack, and beyond-visual-range intercept missions.

F-16C (single-seat) and **F-16D** (two-seat) aircraft were introduced at production Block 25 with MSIP II improvements in the cockpit, airframe, and core avionics and an increased-range APG-68 radar. Block 30 and 40 aircraft incorporate the General Electric F110-GE-100 engine. Deliveries began in 1984. With the exception of AFMC, all of the active and many of the Guard and Reserve units have since converted to F-16C/Ds.

Block 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

***F-16CJ** Fighting Falcon* (Guy Aceto)

***X-35A** Lockheed Martin Joint Strike Fighter concept demonstrator* (Tom Reynolds)

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 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 include color displays, Sniper XR targeting pod, JHMCS, AIM-9X, Link 16 data link, and improved weapons capabilities. First delivery made January 2002. The Block 50/52 aircraft will have dual/alternate carriage of High-speed Anti-Radiation Missile (HARM) targeting system (HTS)/smart targeting and identification via networked geolocation (STING) and advanced targeting pods (ATP) in FY07.

F-16CG designated aircraft are equipped with LANTIRN for precision day or night attack.

F-16CJ designated Block 50 aircraft are equipped with the HTS for suppression of enemy air defenses (SEAD). Block 50/52 F-16CJs have MSIP Stage III improvements, which also show up in selected retrofits of earlier F-16 blocks. These aircraft incorporate the General Electric F110 and Pratt & Whitney F100 increased performance engines (IPEs), the latest cockpit control and display technology, including a wide-angle HUD. Weapons improvements include multishot AMRAAM compatibility, 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 EGI, situation awareness data link (SADL), and an ECM management system; advanced IFF is also being retrofitted.

A number of F-16s slated for upgrade have been withdrawn from active service to release funds for new data links and weapons capability for the remainder of the fleet.

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: 2011 (USAF).

Production: planned: 1,763 F-35A (USAF), 480 F-35B (USMC), 609 F-35C (USN), 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 724.5 miles calibrated airspeed for the F-35C carrier variant (CV) and F-35B short takeoff and vertical landing (STOVL) aircraft, Mach 1 for the F-35A conventional takeoff and landing (CTOL) variant, combat radius more than 590 miles for CTOL variant, 600 miles for CV, and 450 miles for STOVL.

***F-117** Nighthawk* (SSgt. Derrick C. Goode)

Armament: (main weapons bay): CTOL: one internal gun, two AMRAAMs, and two 2,000-lb JDAMs. CV: two AMRAAMs and two 2,000-lb JDAMs. STOVL: 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 F-35 Joint Strike Fighter is a multinational cooperative development program aimed at developing and fielding an affordable, highly common family of next generation strike fighters. USAF is developing the F-35 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 stealth design, the F-35 incorporates maneuverability, long range, and highly advanced avionics to accomplish the bulk of USAF missions. Its fully integrated avionics and weapons systems will permit simultaneous engagement of multiple targets in enemy airspace. USAF now also intends to buy a number of **F-35B** STOVL variants.

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. Flight testing is projected to begin in August 2005. The F-35 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 competitive 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 (52 F-117A; 3 YF-117).

Unit Location: Eglin AFB, Fla., Holloman AFB, N.M.

Contractor: Lockheed Martin; Raytheon.

Power Plant: two General Electric F404-GE-F1D2 nonafterburning turbojets, each 9,040 lb thrust.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: span 43.3 ft, length 65.9 ft, height 12.4 ft.

Weight: empty (estimated) 29,500 lb, max gross 52,500 lb.

Ceiling: 35,000 ft.

Performance: high subsonic, top speed 646 mph (0.9 Mach), mission radius, unrefueled (5,000-lb weapons load) 656 miles.

Armament: full internal carriage of a variety of tactical weapons, incl laser- and GPS-guided 2,000-lb munitions, unguided general-purpose bombs, and cluster munitions.

COMMENTARY

F-117 is the Air Force's primary strategic attack aircraft for penetrating high-threat target areas with precision weapons. Its small radar signature, LO technologies, and advanced targeting system allow the aircraft to penetrate dense threat environments and to deliver precision weapons against heavily defended, high-value targets with pinpoint accuracy. Primary missions include 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.

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., where operations were restricted mainly to night flying to maintain secrecy. In 1992, they were transferred to the 49th Fighter Wing at Holloman AFB, N.M.

To achieve the aircraft's minimal radar signature, the skin panels of the arrowhead-shaped airframe are divided into many small, perfectly flat surfaces (facets), which deflect at a variety of angles all signals from probing hostile ground or airborne radars. In addition, much of the aircraft's external surface is made of composites and radar-absorbent materials. The F-117A's dull black finish reflects little light, and the engine air intakes and exhaust nozzles are above the wings and rear fuselage, respectively, to shield them from IR seekers below. The two nonafterburning turbofans give the aircraft low noise signature and high subsonic performance.

Key features include a state-of-the-art digital avionics suite integrating sophisticated navigation and attack systems, complemented by a specially developed automated mission-planning system. A high-precision INS coupled to GPS is installed. An upgraded dual-turret IR targeting system, combined with boresight laser designators and autotracker, ensures precision attack.

Other improvements since 1989 have included upgraded cockpit display and instrumentation and adverse weather capability via advanced weapons. Current and ongoing modifications provide a single, fleet-wide, optimum LO configuration, integration of new weapons for all-weather strike capability, and replacement of obsolete components to sustain the fleet through its service life. The F-117 is expected to remain in USAF service into the 2020s. USAF plans to retire 10 in Fiscal 2004.

F/A-22 Raptor

Brief: High-technology follow-on for the F-15C. An all-weather, multirole fighter that combines an extremely maneuverable airframe with stealth technologies, supercruise, and integrated avionics to help it penetrate through advanced anti-air threats and achieve air dominance.

Function: Fighter.

Operator: ACC, AETC, AFMC.

First Flight: Sept. 7, 1997.

Delivery: 2001 (first production representative aircraft)–2013 (planned).

IOC: December 2005.

Production: 381, as a stated requirement.

Inventory: 17.

Unit Location: Langley AFB, Va. (to be first operational location), Edwards AFB, Calif., Nellis AFB, Nev., Tyndall AFB, Fla. (fighter training unit).

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; approx eight SDBs internally; for ground attack, two 1,000-lb JDAMs replace four AMRAAMs internally.

COMMENTARY

The redesignation from F-22 to F/A-22 reflects an increased emphasis on this advanced system's ground attack capability, in addition to its air dominance role.

The F/A-22's unparalleled combination of stealth, supercruise (ability to cruise at supersonic speed without using its afterburners), maneuverability, and integrated avionics allows it to counter multiple anti-access threats. Integrated avionics and in-flight data link permit simultaneous engagement of multiple targets. The combination of flight controls, structural strength, and high performance engines with thrust vectoring nozzles results in exceptional maneuverability. The F/A-22 will lead the USAF's "kick down the door force" day and night across the spectrum of missions.

The F/A-22 entered engineering and manufacturing development (EMD) in August 1991. During this period nine aircraft were built, three without avionics to explore flight characteristics, flutter, loads, propulsion, envelope expansion, and weapons separation. The first aircraft is no longer flying and was used for live fire testing after completion of its flight characteristics work. The remaining six were built with avionics to complete integration work, refine the pilot vehicle interface, and fly guided weapons launch tests. In addition, one static and one fatigue test airframe were built.

Operational test and evaluation (OT&E) phase 1 began in October 2003, and initial operational test and evaluation (IOT&E) is expected to start this spring. IOT&E aircraft have received a number of minor modifications to make them production representative. Four aircraft have been dedicated to IOT&E with one other EMD aircraft identified as backup.

The F/A-22 is in low-rate initial production (Lots 1-5) with a full-rate production decision planned before the end of 2004. Production aircraft are currently being delivered to Tyndall AFB, Fla., to train F/A-22 pilots.

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 and electronic attack mission. The system may be stored in "smart boxes" until required, then reassembled and made mission-ready within a very short period. The UCAV may also be made air refuelable for self-deployment.

Function: Concept demonstrator UCAV for the SEAD and electronic attack mission.

First Flight: May 22, 2002.

Contractor: Boeing.

Inventory: two.

Power Plant: X-45A: Honeywell F124 turbofan.

Dimensions: span: X-45A around 34 ft, X-45C around 48 ft; length: X-45A: 26 ft, X-45C 36 ft.

Weight: X-45C: around 35,000 lb.

COMMENTARY

Under the Joint Unmanned Combat Air System (J-UCAS) program, the Defense Advanced Research Projects Agency (DARPA) is developing carrier-capable UCAV technology for the Navy (X-47) and a USAF system, the X-45, for the SEAD and electronic attack mission.

X-45A. The initial version, this Y-shaped vehicle bears little resemblance to the operational version USAF plans to field.

X-45B. Cancelled.

X-45C more closely resembles the objective UCAV system. This flying-wing-design variant will feature a new, larger airframe with dual internal weapons bays capable of carrying two 2,000-lb JDAMs and will demonstrate stealth characteristics. Block 2 flight testing currently under way includes the first multivehicle flights and release of an internally carried guided weapon. First prototype flight is expected in 2005.

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 employ a Chemical-Oxygen Iodine Laser (COIL) system, running down the interior of the aircraft. Laser fire will emerge through a large ball turret in the nose. Intended targets are TBMs in their boost, or very earliest, phase of flight. The system will track TBMs and maintain laser focus on their skin, which, when sufficiently heated, will cause the pressurized fuel within to explode. The Airborne Laser (ABL) can target TBMs hundreds of miles away and thus can remain over friendly territory to kill TBMs as they are launched.

Function: Airborne laser.

Operator: ACC.

First Flight: July 18, 2002 (Block 04 test bed).

Delivered: First aircraft undergoing installation of laser system.

IOC: FY12 (planned).

Production: seven planned.

Inventory: one.

Unit Location: TBD.

Contractor: Boeing (ABL platform; battle management (BM) system), TRW (now Northrop Grumman) (COIL and subsystems), Lockheed Martin (beam control system).

Power Plant: four GE CF6-80 turbofans, each 61,500 lb thrust.

Accommodation: flight crew of two, plus four mission specialists.

Dimensions: span 211.4 ft, length 228.8 ft, height 63.7 ft.

Weight: empty 423,882 lb, gross 800,000 lb.

Ceiling: 45,000 ft.

Performance: max operating speed Mach 0.83, max laser weapon range hundreds of miles, unrefueled endurance at 40,000 ft with operational laser weapon load approx six hr. Chemical fuel carried on board will enable more than 20 shots.

COMMENTARY

The Airborne Laser will become the first directed energy weapon in the US arsenal. The Missile Defense Agency (MDA) assumed overall direction and budget authority for the program in summer 2001. USAF continues to man and develop the program through its Airborne Laser System Program Office at Kirtland AFB, N.M.

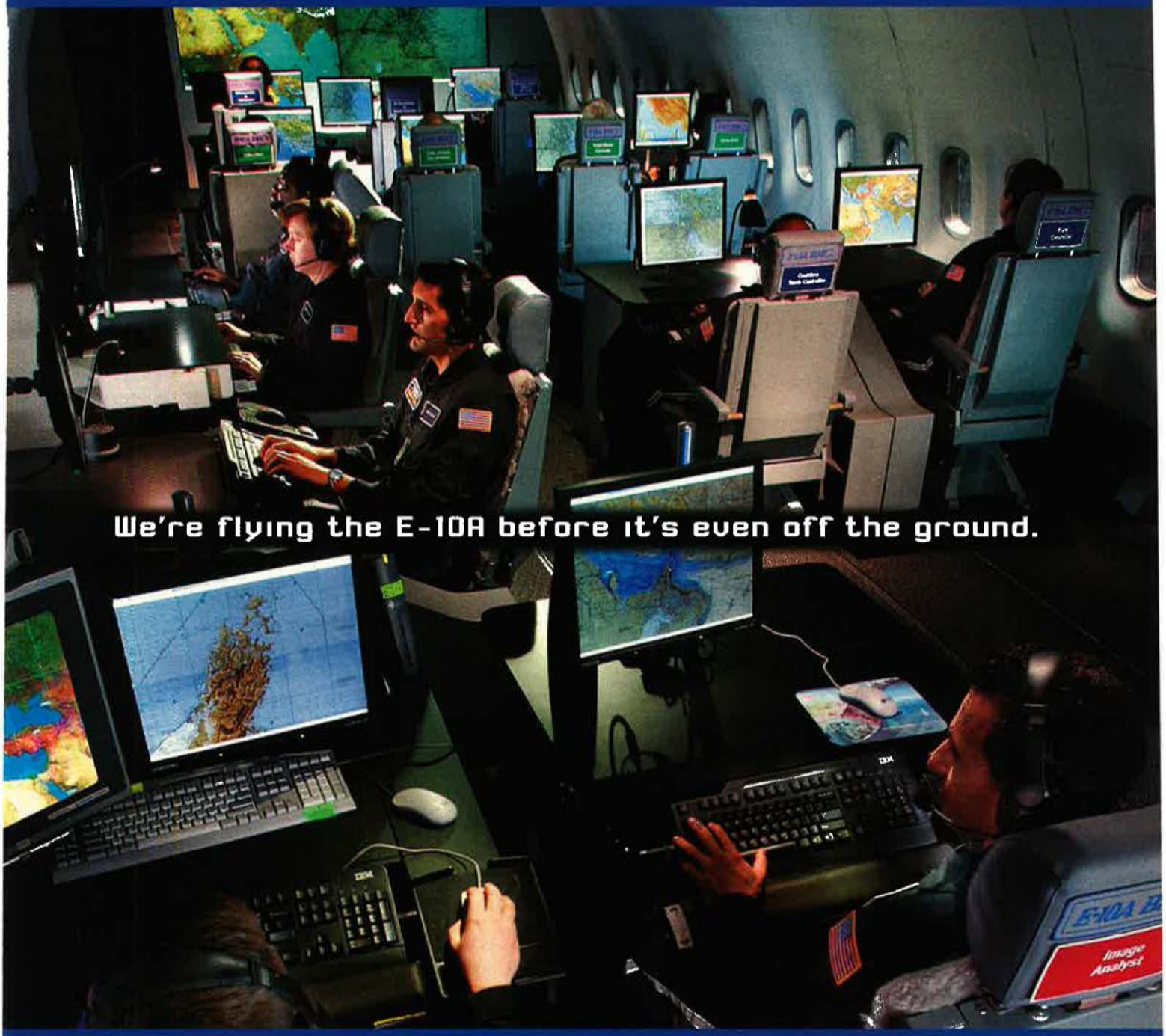
Air Combat Command will have operational responsibility and currently plans to base the attack laser in CONUS but could deploy the ABL with minimal airlift support to any region of the world. It will arrive in theater with its crew, laser fuel, and initial spares ready to fight. Operational concepts call for ABLs to fly continuous patrols over deployed US forces, at an altitude of 40,000 feet. The aircraft will detect and shoot down any TBMs launched at US forces or nearby allied nations. The ABL will also have the capability of determining hostile launch locations and passing that information to other US assets. As US forces achieve air superiority, ABL will be able to move closer to enemy territory. ABLs represent the only near-term boost-phase missile defense. Once the decision is made to proceed with full production, USAF's acquisition community will assume responsibility for procurement; fleet size has not been determined.

The attack laser's main armament is a lightweight, megawatt-class COIL. This laser technology can deliver high energy over a great distance largely because of its IR wavelength. In addition to the COIL, the ABL houses three other lasers: the active ranger system, which provides preliminary tracking data; the track illuminator laser, which produces more refined data; and the beacon illuminator laser, which measures atmospheric disturbance.

Following a two-year structural modification, the ABL platform's first flight took place July 18, 2002, from Boeing's Wichita, Kan., facility. A 10-month laser module test was completed in 2002, and, in late 2002, the platform was flown to Edwards AFB, Calif. While YAL-

***F/A-22** Raptor* (TSgt. Michael Ammons)

***X-45A** UCAV concept demonstrator* (Boeing)



Developing the best network-centric solution for the Air Force E-10A Battle Management Command and Control (BMC2) subsystem requires experience, vision, leading-edge tools and team commitment to industry and the customer. Our enterprise-wide BMC2 team has demonstrated what it takes. "Live-Fly" testing, using our corporate Crew Area Virtual Environment as the E-10A component in our Cyber Warfare Integration Network, is validating early measures of performance and effectiveness to refine our BMC2 solution. By integrating combat proven simulation models with live events, we've created realistic future battle environments — providing tomorrow's warfighter with superior vision and decision-quality knowledge.

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1A is in the hangar, tests are being conducted independently on the ABL optical system and the six laser modules that make up the complete COIL system. Once proved effective, they will be installed on the aircraft in preparation for a rigorous series of ground and air tests of the entire ABL configuration. Initial tests are expected to culminate in a test destruction of a boosting ballistic missile over the Pacific in early 2005.

An expansion of the ABL mission to include national missile defense against ICBMs is currently under consideration.

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 C3 for tactical and air defense forces.

Function: Airborne early warning, BM, C3 aircraft.

Operator: ACC, PACAF, AFRC (Assoc.).

First Flight: Oct. 31, 1975 (full avionics).

Delivered: March 1977-84.

IOC: 1977.

Production: 34.

Inventory: 32.

Unit Location: Elmendorf AFB, Alaska, Kadena AB, Japan, Tinker AFB, Okla. AFRC: (Assoc.) Tinker AFB, Okla.

Contractor: Boeing; Northrop Grumman (radar); Lockheed Martin (computer).

Power Plant: four Pratt & Whitney TF33-PW-100/100A turbofans, each 21,000 lb thrust.

Accommodation: flight crew of four; 13–19 mission specialists.

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.

Standard E-3A aircraft, with additional radio, console, and radar capabilities. Redelivered 1984.

A series of major sustainability, reliability, and availability upgrades for USAF E-3s has been undertaken to support the continuing demands on the system. Upgrades include new passive detection systems, known as electronic support measures (ESM), that complement the active beaming radar, enabling the aircraft to detect signals emitted by both hostile and friendly targets, improved Joint Tactical Information Distribution System (JTIDS), jam-resistant communications, increased computer capacity, and GPS capability. Radar system improvements permit AWACS aircraft operating in the pulse–Doppler mode to detect smaller, stealthier targets. Further improvement and management support are being handled within a single, long-term contract awarded in 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, C2 aircraft.

Operator: ACC and ANG, as the blended 116th Air Control Wing.

First Flight: December 1988.

Delivered: May 1996–present

IOC: Dec. 18, 1997.

Production: 17 planned.

Inventory: 16.

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 (Surveillance Target Attack Radar System) is a BM platform capable of providing theater commanders with C2 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 C2 of air operations to engage enemy forces in day, night, and adverse weather conditions. 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). During Iraqi Freedom, EC-8C Joint STARS aircraft were airborne 24 hours a day to help coalition forces maintain battlefield awareness.

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 seven production aircraft feature more advanced computer systems, which are to be retrofitted on the 10 earlier aircraft. Planned improvements include Link 16 upgrade for data transmission to attack aircraft; enhanced SAR; new satellite radios; upgrades to allow Joint STARS to assume the Airborne Battlefield Command and Control Center (ABCCC) mission of attack support to ground force commanders; and global air traffic management (GATM) upgrades to permit use of optimum altitudes and flight routes in European airspace.

E-10

Brief: A multisensor command and control aircraft (MC2A) that will provide ground surveillance and cruise missile defense as well as battlefield management command and control (BMC2).

Function: Ground surveillance, cruise missile defense, and BMC2 aircraft.

Production: five planned.

Inventory: TBD.

Unit Location: TBD.

Contractor: Boeing (airframe).

Power Plant: four Pratt & Whitney PW4062 turbofans or four General Electric CF6-80C2B8F turbofans.

Accommodation: mission crew of between 30 and 50, depending on mission.

Dimensions: span 170.3 ft, length 201.3 ft, tail height 55.3 ft.

Weight:TBD.

Ceiling: TBD.

Performance: TBD.

COMMENTARY

The E-10A is intended to be the central platform in USAF's new Command and Control Constellation, initially replacing the E-8 Joint STARS aircraft and, possibly, assuming missions currently performed by

***E-3C** Sentry* (Ted Carlson)

COMMENTARY

A critical component of the USAF inventory, the E-3 Airborne Warning and Control System (AWACS) aircraft is capable of surveillance from Earth's surface up to the stratosphere, over land or water, at more than 200 miles. During conflict it will coordinate the actions of hundreds of strike, support, and cargo aircraft.

E-3A. Of the 24 built for USAF in standard production configuration, 22 were later upgraded.

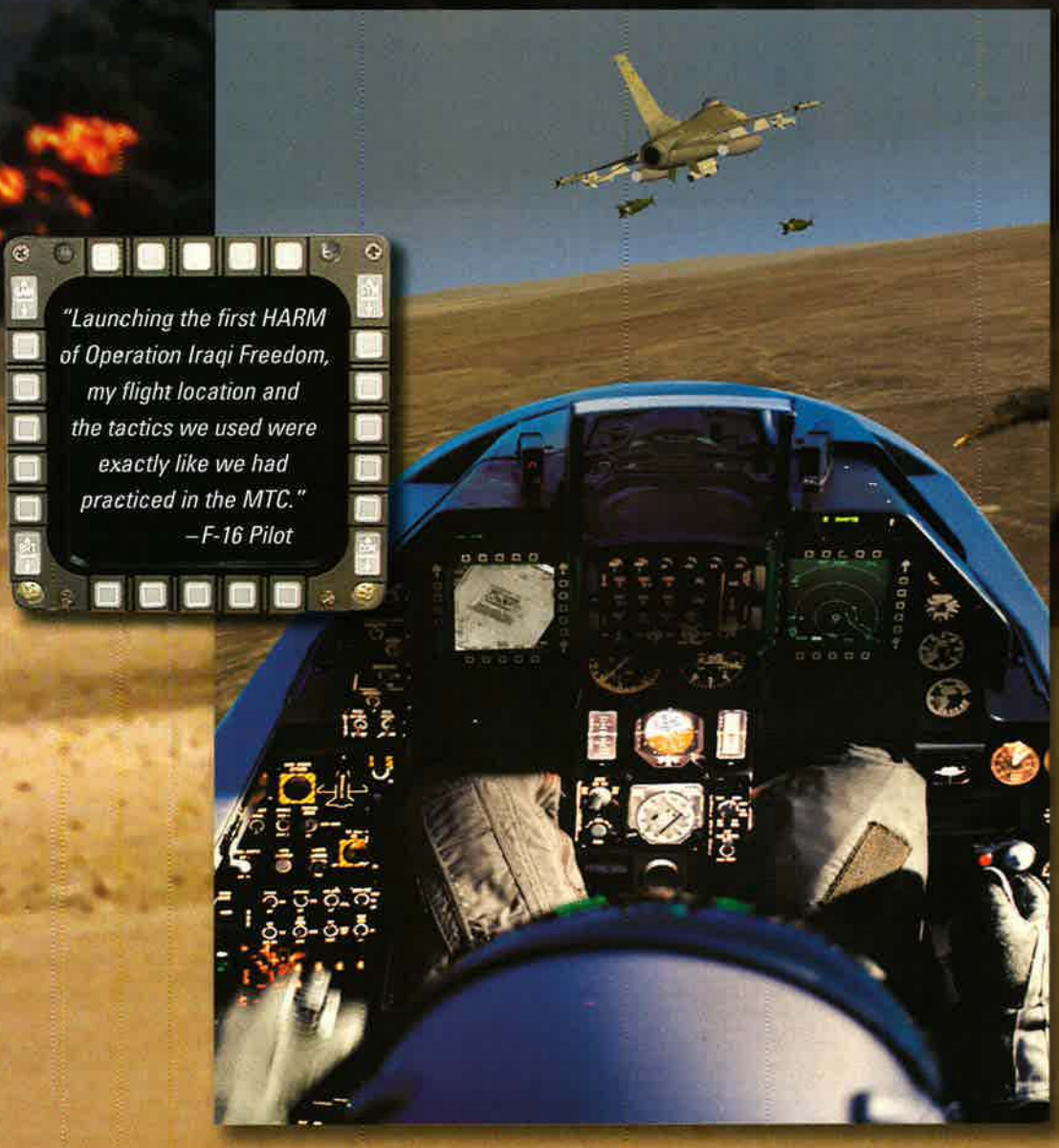
An improved US/NATO Standard E-3A configuration was initiated with the 25th USAF Sentry, delivered in December 1981, with a larger-memory computer and a maritime detection capability. Nine were built new for USAF, and one of the original E-3As was upgraded.

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

***E-8C** Joint STARS*

IF THE MISSIONS WERE ANY MORE REAL, WE'D HAVE TO ACTUALLY BRING IN THE BAD GUYS.



Lockheed Martin's F-16 Mission Training Center provides training missions that look and feel like the real deal for both the Air National Guard and the Air Force Reserve Command. In fact, we are the world leader in simulation and training. And with our advanced technology simulation and training hardware and software, we're able to meet both the current and projected F-16 training needs of the USAF Air Combat Command. We offer a foundation and flexibility to tailor a best-value, ground-based pilot training solution. One that meets any F-16 aircraft configuration, training philosophy and interoperability requirement. With our F-16 MTC, when the bad guys are real, our warfighters are ready for them.

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other aircraft such as the RC-135 Rivet Joint and E-3 AWACS aircraft. The Command and Control Constellation is to be a fully connected system of sensors (land, air, and space) that will relay information automatically, using common standards and communications protocols.

USAF has ordered the first of five planned E-10As, which are based on the Boeing 767-400ER airframe, to serve as the program flying test bed. In May 2003, a team comprising Northrop Grumman, Boeing, and Raytheon was awarded a presystem development and demonstration contract for weapons system integration on the initial E-10A. Contracts for the initial design of the BMC2 rear-end suite were awarded to industry teams led by Boeing, Lockheed Martin, and Northrop Grumman. The winning design was to be announced this spring.

E-10B is slated to provide cruise missile defense and advanced airborne ground surveillance and targeting capability via Northrop Grumman/Raytheon's new active electronically scanned array (AESA), developed under the Multiplatform Radar Technology Insertion Program (MP-RTIP), and an advanced BMC2 subsystem.

The shape of **E-10C,** which includes provision of an airborne moving target indicator with a 360-degree scan, will depend on the decision whether to co-host the airborne early warning and control (AEW&C) system on the same platform or to create a dedicated AEW&C platform.

***RC-135W** Rivet Joint*

***RQ-1A** Predator* (SSgt. Suzanne M. Jenkins)

MQ-1 Predator A

Brief: A medium-altitude, long-endurance unmanned aerial vehicle (UAV), flown remotely. Joint force commander multimission asset, combining imagery sensors with strike capability.

Function: Unmanned reconnaissance and strike aircraft.

Operator: ACC.

First Flight: July 1994.

Delivered: July 1994 (USAF from 1996)–present.

IOC: 2003.

Production: 100 air vehicles.

Inventory: six.

Unit Location: Eglin AFB, Fla., Indian Springs AFAF, Nev.

Contractor: General Atomics Aeronautical Systems.

Power Plant: one Rotax 914 turbocharged engine.

Accommodation: unmanned system.

Dimensions: length 27 ft, height 7.2 ft, span 48.7 ft.

Weight: empty 950 lb, gross 2,250 lb.

Ceiling: 25,000 ft.

Performance: cruise speed 80 mph, up to 138 mph, endurance 24 hr (460 miles with 16 hr on station).

Armament: Two Hellfire missiles on multispectral targeting system (MTS)–equipped vehicles.

COMMENTARY

Operated by the 11th, 15th, and 17th RSs, the Predator UAV has evolved into a known and trusted component in USAF's warfighting inventory. The Predator system includes four air vehicles, a ground control station, satellite link, and about 55 personnel for 24-hour operations. The Predator crew comprises a pilot and two sensor operators.

DOD first used the advanced concept technology demonstration (ACTD) Predator in 1995 to support Provide Promise. In 1997, USAF took over the Predator program, and in 1999, while the UAV was still in development, the service deployed the system operationally for surveillance missions over Bosnia and Iraq. In July 2001, USAF successfully experimented with Predators armed with Hellfire missiles, and the system has since been used to attack targets in Afghanistan, Yemen, and Iraq. USAF changed the designation for Predator A to MQ-1 to denote its multimission capability for both reconnaissance and strike.

MQ-1 designates the weaponized Predator A. It carries an MTS sensor ball supplied by Raytheon in place of the Wescam sensor ball. The MTS provides a laser target designator with EO/IR sensors in a single package, where, previously, one video camera had to be removed to house a laser designator. The SAR is removed to make room for some of the laser designator equipment.

RQ-1A. The ACTD version of Predator A; slated for retirement.

RQ-1B. The reconnaissance-only version of Predator A, with an internal 450-lb surveillance payload that includes two EO and one IR video cameras carried in a ball-shaped turret under the nose and produced by Wescam. The internal sensor payload also includes a SAR still imagery camera for a day/night, all-weather reconnaissance capability. USAF is retrofitting most RQ-1Bs to MQ-1 status.

MQ-9

Brief: A high-altitude, long-endurance UAV, flown remotely. Joint force commander multimission asset combining imagery sensors with expanded strike capability.

Function: Unmanned reconnaissance and strike aircraft.

Operator: ACC.

First Flight: February 2001.

Delivered: November 2003.

IOC: TBD.

Production: nine (planned).

Inventory: TBD.

Unit Location: Indian Springs AFAF, Nev.

Contractor: General Atomics Aeronautical Systems.

Power Plant: one Honeywell TPE-331-10T turboprop engine or Williams FJ44-2A turbojet engine.

Accommodation: unmanned system.

Dimensions: length 36.2 ft, span 64 ft.

Weight: empty 6,000 lb, gross 10,000 lb.

Ceiling: 50,000+ ft.

Performance: cruise speed 172 mph, up to 230 mph, endurance 30+ hours.

Armament: various air-to-surface and, possibly, air-to-air weapons.

COMMENTARY

Developed initially under an internal company research and development effort, USAF acquired two 7,500-lb gross UAV prototypes (known by General Atomics as Predator B) in October 2001 to evaluate their capability as a weapons platform and to carry an enhanced sensor payload. In June 2002, USAF issued a contract for a 10,000-lb prototype, based on the earlier prototypes. The USAF has additionally ordered three more 10,000-lb UAVs, with the designation **MQ-9.** First preproduction version flew Oct. 17, 2003.

The MQ-9 hunter–killer UAV flies higher, faster, and has significantly greater payload capacity than the MQ-1. With its 750-lb internal payload capacity, the MQ-9 will be able to carry simultaneously numerous payloads such as a larger, more capable camera system, SAR, MTS, and other detection systems. Its 3,000-lb external payload capacity will enable it to carry a combination of munitions. USAF is exploring various weapons mixes and a possible air-to-air role.

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 arms control treaty observation and imagery collection missions with vertical-looking and panoramic optical cameras installed in the rear of the aircraft.

OC-135B modifications include one vertical and two oblique KS-87E framing cameras, used for photography approximately 5,000 ft above the ground, and one KA-91C panoramic camera, which pans from side to side to provide a wide sweep for each picture, used for high-altitude photography up to approximately 35,000 ft. Data is processed and recorded by a recording and annotation system.

RC-135

Brief: Specially configured variant of the Boeing C-135 Stratolifter, having an elongated nose and cheeks containing highly advanced electronic signal collection systems. Used to acquire real-time electronic intelligence (Elint) 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 will 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 measurement and signature intelligence (MASINT) collection platforms. The Cobra Ball can deploy anywhere in the world in 24 hours and provide on-scene EO reconnaissance for treaty verification and TBM proliferation. Equipment includes wide-area IR sensors, long-range optical cameras, and an advanced communications suite.
RC-135U Combat Sent. Two aircraft with precision signals intelligence (Sigint) reconnaissance gear and a larger tailcone and fin fairing, used for measuring and analyzing foreign electronic and IR equipment. Combat Sent can deploy anywhere in the world within 24 hours and provide on-scene precision measurement of potential threat emitters. 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 secure voice and data link networks. The aircraft's recon systems are continuously upgraded to keep pace with new threats.
TC-135S/W. Used for training purposes.

RQ-4 Global Hawk
Brief: A high-altitude, long-range, long-endurance UAV.
Function: Unmanned reconnaissance aircraft.
Operator: ACC.
First Flight: Feb. 28, 1998.
Delivered: seven advanced concept technology demonstrators; two production vehicles.
IOC: Used operationally in Afghanistan and Iraq while still in development phase.
Production: LRIP. (Plans call for nine production RQ-4As before switching to a larger, more capable RQ-4B version.)
Inventory: two.
Unit Location: Beale AFB, Calif., first planned operational base.
Contractor: Northrop Grumman (prime); Raytheon.
Power Plant: one Rolls Royce–Allison AE 3007H turbofan, 7,600 lb thrust.
Accommodation: unmanned system.
Dimensions: length 44 ft, height 15.2 ft, span 116 ft.
Weight: empty 9,200 lb, gross 25,600 lb.
Ceiling: 65,000+ ft.
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. Combat range 15,525 miles.
Armament: none.
COMMENTARY
The **RQ-4A** is a high-altitude endurance UAV carrying a 1,960-lb payload, incorporating EO/IR and SAR sensors that permit switching among radar, IR, and visible wavelengths as required. The objective **RQ-4B** system will add Sigint and improved 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 began as an advanced concept technology demonstrator. The No. 2 aircraft 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 stand-down. During test it completed more than 100 flights and flew in excess of 66,000 ft altitude and 31 hours endurance, and accumulated more than 1,300 hours total flight time. Global Hawk flew over water to Alaska, completing the first transoceanic crossing to Portugal and back. In spring 2001, Global Hawk flew to Australia for six weeks of demonstrations. In March 2001, it entered into EMD. Although still a development system in November 2001, Global Hawk first deployed operationally to support Enduring Freedom in Afghanistan, flying more than 50 missions and 1,000 combat hours.
Global Hawk provides continuous, all-weather, day/night, wide area surveillance. It will operate in low-to-moderate air defense threat environments with the ability to fly above or stand off from enemy defenses. The Navy is also considering purchase of Global Hawk.

***RQ-4** Global Hawk* (Gene Yano)

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: 34.
Unit Location: Beale AFB, Calif.
Contractor: Lockheed Martin.
Power Plant: F118-GE-101 turbojet.
Accommodation: one (two for trainer).
Dimensions: span 103 ft, length 63 ft, height 16 ft.
Weight: gross 40,000 lb.
Ceiling: above 70,000 ft.
Performance: speed 475 mph; range more than 4,500 miles; max endurance 10+ hr.
COMMENTARY
The U-2 remains the Air Force's premier high-altitude reconnaissance platform, capable of carrying Imint and Sigint sensors simultaneously, making it USAF's only truly operational multi-intelligence platform and a key performer in combat operations.
More than $1.5 billion has been invested in the U-2 since 1994. Completed or ongoing improvements include a new GE F118-101 engine, a complete electrical system replacement, a new glass cockpit utilizing up-front controls and multifunction displays (MFDs), and a new EW system. Sensors upgrades include the ASARS-2A radar sensor, which provides enhanced imaging modes and improves geo-location accuracy; the SYERS-2 EO imagery system, which provides multispectral and IR capability; enhanced RF-intelligence capability; and new data links enabling the U-2 to connect in near real time with network-centric hubs as well as line-of-sight ground stations, airborne data relays, and beyond-line-of-sight satellite data relays.
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 34 aircraft (29 U-2S mission aircraft, five 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. NASA has two ER-2 versions of the U-2 used for high-altitude scientific experiments and atmospheric research, including investigation of global ozone depletion.

WC-130 Hercules
Brief: A high-wing, medium-range aircraft flown by AFRC for weather reconnaissance missions. It flies into the eye of tropical cyclones or hurricanes, collecting weather data from within the storm's environment.
Function: Weather reconnaissance aircraft.
Operator: AFRC.
First Flight: circa 1959.
Delivered: October 1999–2002.
IOC: 1959.
Production: no new-build WC-130H; 10 WC-130J.
Inventory: 20.
Unit Location: Keesler AFB, Miss.
Contractor: Lockheed Martin.
Power Plant: WC-130J: four Rolls Royce AE2100D3 turboprops, each 4,500 shp.
Accommodation: six.
Dimensions: WC-130J: span 132.6 ft, length 97.8 ft, height 38.9 ft.
Weight: WC-130J: gross 175,000 lb.
Ceiling: WC-130J: 30,500 ft.
Performance: speed 374 mph at 20,000 ft.
COMMENTARY
The WC-130 is flown by AFRC 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, operated by the 53rd WRS for weather reconnaissance duties, including penetration of tropical storms, to obtain data for forecasting storm movements. Equipment includes two external 1,400-gallon fuel tanks, an internal 1,800-gallon fuel tank, and uprated Allison T56-A-15 turboprops, each 4,910 shp. WC-130H aircraft are being converted to HC-130Ps.
WC-130J. Weather-reconnaissance version of the latest C-130 model, featuring improved radar, four Rolls Royce AE2100D3 turboprops, and Dowty 391 six-bladed composite propellors. First of 10 aircraft replacing the WC-130H was delivered Oct. 12, 1999.
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.

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 C3 center allowing national/defense leaders to direct US forces, execute emergency war orders, and coordinate actions by civil authorities.
Function: Airborne operations center.
Operator: ACC.
First Flight: June 13, 1973 (E-4A); June 10, 1978 (E-4B).
Delivered: December 1974–85.
IOC: December 1974 (E-4A); January 1980 (E-4B).
Production: four.
Inventory: four.
Unit Location: Offutt AFB, Neb.
Contractor: Boeing; Rockwell; Raytheon E-Systems.
Power Plant: four General Electric CF6-50E2 turbofans, each 52,500 lb thrust.
Accommodation: up to 114 (63 crew/battle staff; 51 passengers.
Dimensions: span 195.7 ft, length 231.3 ft, height 63.4 ft.
Weight: gross 800,000 lb.
Ceiling: above 40,000 ft.
Performance: 6,900+ miles; unrefueled endurance in excess of 12 hr; with aerial refueling up to 72 hr.

***EC-130J** Commando Solo II* (Peter A. Torres/Lockheed Martin)

COMMENTARY

A militarized version of the Boeing 747-200, E-4B aircraft perform the National Airborne Operations Center (NAOC) mission. The E-4B fleet provides a survivable C3 platform throughout the full threat spectrum, including sustained operations in a nuclear environment. First operational mission was flown in March 1980.

E-4Bs are hardened against the effects of nuclear explosions, including electromagnetic pulse, and have in-flight refueling capability. A 1,200-kVA electrical system supports advanced system electronics as well as state-of-the-art communications and data processing equipment such as EHF Milstar satellite terminals and six-channel International Maritime Satellite (INMARSAT). A triband radome also houses the E-4B's super high frequency (SHF) frequency division multiple access (FDMA) communications antenna, the only such system on an airborne platform.

The E-4B system is capable of linking with commercial telephone and radio networks and could be used for radio broadcasts to the general population. E-4Bs also support the Federal Emergency Management Agency (FEMA).

In early 2000, the E-4B entered the SDD phase of a modernization program aimed at updating the electronic infrastructure supporting the aircraft's primary mission equipment and increasing the bandwidth of external communications and onboard data transfer. These updates, along with programmed changes to the aircraft's interior configuration, internal noise reduction modifications, BM improvements, and GATM avionics modifications, will ensure the E-4B aircraft can effectively execute its NAOC mission, providing C3 in the homeland security environment and beyond for the foreseeable future.

EC-130E/J

Brief: A heavily modified C-130 with variants used for battlefield command, EW, and electronic combat.

Function: C2; psychological warfare.

Operator: ANG.

First Flight: January 1990.

Delivered: March 1990.

IOC: December 1990.

Production: (no USAF new-build EC-130Es); five (J).

Inventory: six (E); two (J).

Unit Location: 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.

Accommodation: five flight crew, six mission.

Dimensions: EC-130J: span 132.6 ft, length 97.8 ft, height 38.9 ft.

Weight: EC-130J: gross 175,000 lb.

Ceiling: EC-130J: 30,500 ft.

Performance: speed 299 mph, range in excess of 2,100 miles; (C-130J) 393 mph, range 4,140 miles.

COMMENTARY

EC-130E ABCCC Airborne Battlefield Command and Control Center. Seven aircraft were updated by Unisys to ABCCC III standard. The advanced JTIDS received data transmitted by AWACS aircraft and other systems, enabling the crew to see a real-time picture of air operations over a combat area. Now retired.

EC-130E Commando Solo. Version used by the ANG as a broadcasting station for psychological warfare operations. Specialized modifications include enhanced navigation systems, self-protection equipment, and worldwide color television configuration.

EC-130J Commando Solo II. Five specialized versions of the latest C-130 aircraft, ordered to replace aging Es, with current mission equipment transferred from the older aircraft. Entered service mid–2003 with the 193rd Special Operations Wing (ANG), Harrisburg.

Commando Solo aircraft have been used in numerous military operations, including Iraqi Freedom. They also have a role in civil emergencies. Secondary mission is electronic attack in the military frequency spectrum.

EC-130H Compass Call

Brief: A heavily modified C-130 for electronic combat.

Function: Electronic warfare.

Operator: ACC.

First Flight: 1981.

Delivered: 1982.

IOC: 1983; (Block 30) February 1999.

Production: (converted).

Inventory: 14.

Unit Location: Davis–Monthan AFB, Ariz.

Contractor: Lockheed Martin.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: standard crew 13.

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 counterinformation (OCI) capability against modern C2 systems. Completion expected FY10.

Tanker Aircraft

HC-130N/P

Brief: An extended-range, combat search and rescue (CSAR)–configured C-130 that extends the range of rescue helicopters through in-flight refueling and performs tactical delivery of pararescue jumper (PJ) specialists and/or equipment in hostile environments.

Function: Aerial refueling/transport.

Operator: ACC, AETC, AFSOC, ANG, AFRC.

First Flight: Dec. 8, 1964 (as HC-130H).

Delivered: from 1965.

IOC: 1986.

Production: (converted).

Inventory: 32.

Unit Location: Active:Davis–Monthan AFB, Ariz., Kirtland AFB, N.M., Moody AFB, Ga.; ANG: Francis S. Gabreski Arpt., N.Y., Kulis ANGB, Alaska; AFRC: Patrick AFB, Fla.

Contractor: Lockheed (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.

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 (PLS) compatible with aircrew survival radios. Additional modifications include an improved digital low-power color radar, integrated satellite communications radio, NVG–compatible interior/exterior lighting, and cockpit armor. The C-130 avionics modernization program (AMP) provides for complete update of the HC-130 avionics. Four retired EC-130E ABCCC and 10 WC-130H aircraft are converting to HC-130 standard.

KC-10 Extender

Brief: A modified McDonnell Douglas DC-10 that combines in a single aircraft the operations of aerial refueling and long-range cargo transport.

Function: Aerial refueling/transport.

Operator: AMC, AFRC (Assoc.).

First Flight: April 1980.

Delivered: March 1981–April 1990.

IOC: August 1982.

Production: 60.

Inventory: 59.

Unit Location: McGuire AFB, N.J., Travis AFB, Calif. AFRC: (Assoc.) Travis AFB, Calif., McGuire AFB, N.J.

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 recon-

***KC-10A** Extender* (Guy Aceto)

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***KC-135E** Stratotanker* (Guy Aceto)

naissance, and conventional operations.

The KC-10 can be air refueled by a KC-135 or another KC-10, increasing its range and diminishing the need for forward bases, leaving vital fuel supplies in the theater of operations untouched.

KC-10A is a DC-10 Series 30CF, modified to include fuselage fuel cells, an air refueling operator's station, aerial refueling boom and integral hose reel/drogue unit, a receiver refueling receptacle, and military avionics. Wing-mounted pods enhance the aircraft's capabilities. Other modifications include the addition of communications, navigation, and surveillance equipment to meet civil air traffic control requirements.

Because it has both types of tanker refueling equipment installed, the KC-10A can service USAF, USN, USMC, and allied aircraft on the same mission. Special lighting permits night operations.

KC-135 Stratotanker

Brief: A short- to medium-range tanker aircraft, meeting the air refueling needs of USAF bomber, fighter, cargo, and reconnaissance forces. It also supports USN, USMC, and allied aircraft.

Function: Aerial refueling/airlift.

Operator: AETC, AFMC, AMC, PACAF, USAFE, ANG, AFRC.

First Flight: August 1956.

Delivered: January 1957–66.

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., RAF Mildenhall, UK, Robins AFB, Ga. ANG: 20 units. AFRC: nine units.

Contractor: Boeing.

Power Plant: KC-135R/T: four CFM International F108-CF-100 turbofans, each 22,224 lb thrust; KC-135E: four Pratt & Whitney TF33-PW-102 turbofans, each 18,000 lb thrust.

Accommodation: crew of four; up to 80 passengers.

Dimensions: span 130.8 ft, length 136.2 ft, height 38.3 ft.

Weight: empty 119,231 lb, gross 322,500 lb (KC-135E 301,600 lb).

Ceiling: 50,000 ft.

Performance: max speed at 30,000 ft 610 mph, range with max fuel 11,015 miles.

COMMENTARY

Mainstay of the USAF tanker fleet, the long-serving KC-135 is similar in size and appearance to commercial 707 aircraft but was designed to military specifications, incorporating different structural details and materials. The KC-135 fuel tanks are located in the "wet wings" and in fuel tanks below the floor in the fuselage.

KC-135A. Original version with J57 turbojets. USAF built 732, since modified to other standards.

KC-135E/D. The JT3D re-engining program upgraded USAF, AFRC and ANG KC-135As to KC-135E standard with JT3D turbofans and related components removed from surplus commercial 707s; fuel carrying capacity increased by 20 percent. One hundred and twenty five KC-135Es remain in service, all but one with the ANG and AFRC. Four KC-135Ds are similar but have minor configuration differences as they were converted from RC-135A aircraft.

KC-135R/T. Designation of re-engined KC-135A/Es with 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 and retain the capability to carry different fuels in the wing and body tanks. Eight KC-135Rs are air refuelable. Twenty KC-135Rs have wing-mounted refueling pods for enhanced refueling of USN and NATO aircraft

Ongoing modifications are extending the capability and operational utility of the KC-135. The recently completed Pacer CRAG avionics modernization program installed a new compass, radar, and GPS navigation systems, a traffic alert and collision avoidance system (TCAS), and new digital multifunctional cockpit displays. The Global Air Traffic Management (GATM) modification further improves the avionics, ensuring future access into premium airspace. Forty KC-135R/T aircraft are being outfitted with the capability to relay Link 16 tactical information beyond other aircrafts' line of sight.

Plans to replace KC-135Es, the oldest models in the KC-135 fleet, by leasing 20 and buying 80 new Boeing 767s modified as tankers were on hold as of early spring 2004, pending results of several reviews.

MC-130P Combat Shadow

Brief: Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide air refueling for Special Operations Forces (SOF) helicopters or to air-drop small special operations teams, small bundles, and zodiac and combat rubber raiding craft.

Function: Air refueling for SOF helicopters/airdrop.

Operator: AETC, AFSOC, ANG, AFRC.

First Flight: Dec. 8, 1964 (as HC-130H).

Delivered: from 1965.

IOC: 1986.

Production: (converted).

Inventory: 26.

Unit Location: Active: Hurlburt Field, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK. ANG: Kulis ANGB, Alaska, 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: 33,000 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 SOF by airdrop or air-land operations. To perform these missions, depending upon the enemy threat, crews navigate using both visual and electronic means or visual means only. Primary emphasis is on NVG operations.

Modifications include improved secure communications, advanced integrated navigation equipment, including digital scan radar, ring-laser gyro INS, FLIR, GPS, and dual nav stations, as well as new missile warning systems and countermeasures for refueling missions in hostile environments. Some aircraft have been modified with an inflight refueling system allowing them to be air refuelable.

Strategic Transports

C-5 Galaxy

Brief: A heavy-lift, air refuelable cargo transport for massive strategic airlift over long ranges, including outsize cargo. Supports special operations missions.

Function: Cargo and troop transport.

Operator: AETC, AFMC, AMC, ANG, AFRC.

First Flight: June 30, 1968.

Delivered: October 1969–April 1989.

IOC: September 1970.

Production: 131.

Inventory: 120 by end 2004.

Unit Location: Active: Altus AFB, Okla., Dover AFB, Del., Travis AFB, Calif. ANG: Stewart Arpt., N.Y. AFRC: Dover AFB, Del., Lackland AFB, 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

***C-5** Galaxy* (TSgt. Brad Fallin)

***C-17** Globemaster III* (SSgt. Suzanne M. Jenkins)

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 is currently under assessment. A total of 14 C-5As, including the 11 oldest, are to be retired.

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 undergoing a complete AMP that will install a state-of-the-art cockpit and ensure global access navigation safety compliance by the end of 2006; first upgraded aircraft flew December 2002. Additionally, the Air Force has contracted an 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, with program completion expected 2010. To enhance force protection, a number of C-5s have been equipped with a missile defense system.

C-17 Globemaster III

Brief: A heavy-lift, air refuelable cargo transport for intertheater (strategic) and intratheater (tactical) direct delivery airlift of all classes of military cargo, including outsize items.

Function: Cargo and troop transport.

Operator: AETC, AFMC, AMC, ANG, AFRC.

First Flight: Sept. 15, 1991.

Delivered: June 1993–July 2008 (planned).

IOC: Jan. 17, 1995.

Production: 180 (planned).

Inventory: 109.

Unit Location: Active: Altus AFB, Okla., Charleston AFB, S.C., Edwards AFB, Calif., McChord AFB, Wash. AFRC: Charleston AFB, S.C., McChord AFB, Wash. Planned: Dover AFB, Del., Travis AFB, Calif. ANG: (Assoc.) Hickam AFB, Hawaii, March ARB, Calif. AFRC: (Assoc.) Elmendorf AFB, Alaska.

Contractor: Boeing.

Power Plant: four Pratt & Whitney F117-PW-100 turbofans, each 40,440 lb thrust.

Accommodation: normal flight crew of three (two pilots plus loadmaster); additional pilot may be carried. Provisions for full range of military airlift missions, incl capacity for up to 189 passengers/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; palletized passenger seats.

Dimensions: span over winglet tips 169.8 ft, length 173.9 ft, height 55.1 ft.

Weight: empty 277,000 lb, max payload 170,900 lb, gross 585,000 lb.

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 air-drop outsize cargo directly to 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. Block 12 aircraft, delivered from 2001, have the ERFCS upgrade. Other C-17 improvements include a terrain awareness warning system (TAWS) and video integrated processor (VIP). Defensive systems include laser and flare systems for IR missile jamming. Ongoing retrofit/modernizations include adding TAWS and upgrades to GATM to previously delivered aircraft. In October 2002, the C-17 assumed the special operations low level (SOLL) mission previously 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, and operations in Afghanistan and Iraq. C-17s performed their first operational airdrop in March 2003, when a formation of 15 aircraft delivered a US Army brigade, complete with equipment, directly into northern Iraq.

C-141 Starlifter

Brief: Workhorse of the US airlift force for 40 years, 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: AMC, ANG, AFRC.

First Flight: Dec. 17, 1963.

Delivered: October 1964–June 1982.

IOC: May 1965.

Production: 285.

Inventory: 59.

Unit Location: Active: McGuire AFB, N.J. ANG: Allen C. Thompson Field, Miss., Memphis Arpt., Tenn. AFRC: March ARB, Calif., 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. However, with the continuing deployment of C-17 aircraft, all will be retired 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 has increased 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.

Theater and Special Use Transports

C-9 Nightingale

Brief: A twin-engine, medium-range, swept-wing jet aircraft used for DV duties.

Function: DV duties.

Operator: AMC, USAFE, AFRC.

First Flight: August 1968.

Delivered: August 1968–February 1975.

IOC: circa 1968.

Production: 24.

Inventory: six.

Unit Location: Andrews AFB, Md., Ramstein AB, Germany. AFRC: (Assoc.) Scott AFB, Ill.

***C-141B** Starlifter* (TSgt. Rick Sforza)

C-21A

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-32
Brief: A modified Boeing 757-200 used to provide transportation for the vice president, Cabinet, Congressional members, and other high-ranking US and foreign officials.

C-32

Contractor: Boeing (McDonnell Douglas).
Power Plant: two Pratt & Whitney JT8D-9A turbofans, each 14,500 lb thrust.
Accommodation: crew of three.
Dimensions: span 93.2 ft, length 119.2 ft, height 27.4 ft.
Weight: gross 108,000 lb.
Ceiling: 35,000 ft.
Performance: max cruising speed at 25,000 ft 565 mph, range 2,500 miles.
COMMENTARY
C-9A. A derivative of the DC-9 Series 30 commercial airliner, the recently retired C-9A was the only USAF aircraft modified specifically for the aeromedical evacuation mission, a role now undertaken by C-130, C-141, and C-17 aircraft. One remaining C-9A 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 the special air mission supporting the President and other US government officials. Upgrades include improvements to the passenger communications equipment, GATM, TAWS, and vertical separation equipment.

C-12 Huron
Brief: Aircraft to provide airlift support for attache and military advisory groups worldwide.
Function: Special airlift.
Operator: AFMC, PACAF.
First Flight: Oct. 27, 1972 (Super King Air 200).
Delivered: 1974–late 1980s.
IOC: circa 1974.
Production: 88.
Inventory: 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 nine 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.
First Flight: December 1979.
Delivered: September 1983–1989.
IOC: circa 1983.
Production: not available.
Inventory: 10.
Unit Location: Andrews AFB, Md., Ramstein AB, Germany.
Contractor: Gulfstream.
Power Plant: C-20A/B: two Rolls Royce–Spey MK511-8 turbofans, each 11,400 lb thrust; C-20H: two Rolls Royce–Tay MK611-8 turbofans, each 13,850 lb thrust.
Accommodation: crew of five; 12 passengers.
Dimensions: span 77.8 ft; length (C-20A/B) 83.1 ft, (C-20H) 88.3 ft; height 24.3 ft.
Weight: C-20A/B gross 69,700 lb; C-20H gross 74,600 lb.
Ceiling: 45,000 ft.
Performance: max cruising speed 576 mph, range 4,800 miles.
COMMENTARY
C-20A. Three Gulfstream III transports were acquired to replace aging C-140B aircraft. They provided USAFE's operational support airlift fleet with intercontinental range and ability to operate from short runways. Retired in September 2002.
C-20B. 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-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. The two C-20H aircraft were reassigned to USAFE to replace retired C-20As.
Upgrade for C-20A/B/H aircraft includes GPS, vertical separation equipment, GATM, and TCAS.

C-21
Brief: Aircraft designed to provide cargo and passenger airlift and transport litters during medical evacuations.
Function: Pilot seasoning, passenger and cargo airlift.
Operator: AETC, AMC, PACAF, USAFE, ANG.
First Flight: January 1973.
Delivered: April 1984–October 1985.
IOC: April 1984.
Production: 84.
Inventory: 77.
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.
Function: VIP air transport.
Operator: AMC.
First Flight: Feb. 19, 1982 (USAF Feb. 11, 1998).
Delivery: June–December 1998.
IOC: 1998.
Production: four.
Inventory: five.
Unit Location: Andrews AFB, Md.
Contractor: Boeing.
Power Plant: two Pratt & Whitney PW2040 turbofans, each 41,700 lb thrust.
Accommodation: 16 crew and 45 passengers.
Dimensions: span 124.8 ft, length 155.2 ft, height 44.5 ft.
Weight: empty 127,800 lb, gross 255,000 lb.
Ceiling: 41,000 ft.
Performance: cruise speed Mach 0.8–0.86 (530 mph), range 5,750 miles.
COMMENTARY
A military version of the commercial Boeing 757-200, four new **C-32As** were purchased as replacements for C-137B/C aircraft. The commercial DV interior includes a crew rest area, DV stateroom, conference area, and general passenger area. The passenger communications system provides worldwide clear and secure voice and data communications. Modern flight deck avionics allow operations to any suitable airfield in the world and provide an upgrade path as new capabilities become available. Upgrades include installation of a digital communications management system and broadband data transmit and receive, providing an office-in-the-sky capability.

C-37A
Brief: A modified Gulfstream V utilized as part of the executive fleet, providing transportation for the vice president, Cabinet, Congressional members, Secretary of Defense, Service Secretaries, and other prominent US and foreign officials.
Function: VIP air transport.
Operator: AMC, PACAF.
First Flight: USAF October 1998.
Delivery: October 1998–present.
IOC: Dec. 9, 1998.
Production: 10.
Inventory: nine.
Unit Location: Andrews AFB, Md.; Chievres, Belgium; Hickam AFB, Hawaii, MacDill AFB, Fla.

Contractor: Gulfstream.
Power Plant: two BMW–Rolls Royce BR710A1-10 turbofans, each 14,750 lb thrust.
Accommodation: five crew and 12 passengers.
Dimensions: span 93.5 ft, length 96.4 ft, height 25.8 ft.
Weight: empty 47,601 lb, gross 90,500 lb.
Ceiling: 51,000 ft.
Performance: cruise speed Mach 0.8 (530 mph), range 6,095 miles.
COMMENTARY
The **C-37A** is a military version of the Gulfstream V. Two C-37As, along with the C-32s, were purchased as replacements for the VC-137B/C aircraft. The interior includes separate DV and passenger areas and a communications system capable of worldwide clear and secure voice and data. Aircraft are capable of operations at any suitable civilian or military airfield worldwide. A third C-37A was purchased for combatant commander support airlift and was based at Chievres, Belgium. It has since been reassigned to Andrews AFB, Md. Two more C-37s were purchased for crisis response support. Five C-37As are being leased from Gulfstream Aerospace as combatant commander support aircraft; three are assigned to MacDill AFB, Fla.; one to Chievres; and one to Hickam AFB, Hawaii. Upgrades include GATM and continuing passenger communications system upgrades to the Andrews–based aircraft.

C-38A
Brief: A twin-engine transcontinental aircraft used to provide transportation for DVs such as Congressional or high-ranking military members. It can also be configured for medevac and a wide range of special missions including C3 in time of war.
Function: VIP air transport and operational support.
Operator: ANG.
First Flight: 1998.
Delivered: April–May 1998.
IOC: 1998.
Production: two.
Inventory: two.
Unit Location: Andrews AFB, Md.
Contractor: Tracor (Israel Aircraft Industries Ltd).
Power Plant: two AlliedSignal TFE731-40R-200G, each 4,250 lb thrust.
Accommodation: typically two crew and eight passengers. In medevac role: two Spectrum 500 Life Support Units and two medical attendants. All seats removable for cargo.
Dimensions: span 54.6 ft, length 55.6 ft, height 18.2 ft.
Weight: gross 24,800 lb.
Ceiling: cruise, 33,000 ft.
Performance: cruise speed Mach 0.87.
COMMENTARY
The **C-38A** is a military version of the Astra SPX produced by IAI and supported worldwide by Galaxy Aerospace. 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-40
Brief: A Boeing 727-700 used by ANG as its primary medium-range aircraft for airlift of personnel.
Function: Passenger transportation.
Operator: ANG.
First Flight: USN C-40A: April 14, 1999.
Delivered: 2002.
Production: seven planned.
Inventory: four.
Unit Location: Andrews AFB, Md., Hickam AFB, Hawaii.

C-40

Contractor: Boeing.
Power Plant: two General Electric CFM56-7 turbofans, each 24,000 lb thrust.
Accommodation: flight crew of four, plus three or four cabin crew; up to 89 passengers.
Dimensions: span 112 ft 7 in, length 110 ft 4 in, height 41 ft 2 in.
Weight: gross 171,000 lb.
Ceiling: 41,000 ft.
Performance: cruise speed 0.78–0.82 Mach, range 3,450 miles.
COMMENTARY
The C-40 is the military version of the commercial Boeing 737-700 increased gross weight aircraft. C-40s are used for SAM and support of combatant commanders.
C-40B. The B model is equipped with a DV suite, staff work area, conference area, and worldwide secure communications and data capability. USAF purchased two C-40Bs for delivery to Andrews AFB, Md., and Hickam AFB, Hawaii, in FY03 to support combatant commanders. One additional C-40B has been purchased for SAM and is assigned to Andrews. A further C-40B is being leased for the SAM mission, operating from Andrews in 2004.
C-40C. The C model has a DV seating area, general passenger seating area, and secure communications capability. Two C-40Cs have been leased for ANG to replace recently retired C-22Bs at Andrews. Another aircraft will be leased for delivery in 2004 in support of airlift missions.

C-130 Hercules
Brief: A rugged aircraft capable of operating from rough dirt strips to provide theater airlift and paradropping of troops and equipment into hostile areas.
Function: Inter- and intratheater airlift.
Operator: AETC, AMC, PACAF, USAFE, ANG, AFRC.
First Flight: August 1954 (C-130A).
Delivered: December 1956–present (C-130J).
IOC: circa 1958.
Production: more than 2,200; (C/CC-130J) 168 planned.
Inventory: 512: 206 (E), 289 (H), 17 (J).
Unit Location: Active: Dyess AFB, Tex., Elmendorf AFB, Alaska, Little Rock AFB, Ark., Pope AFB, N.C., Ramstein AB, Germany, Yokota AB, Japan. ANG: 23 units. AFRC: 10 units.

***C-130** Hercules* (Fred W. Baker III)

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; C-130J: gross 175,000 lb.
Ceiling: 33,000 ft at 100,000 lb T-O weight.
Performance: (C-130H) max cruising speed 430 mph, T-O run 3,585 ft, landing run (at 130,000 lb) 1,700 ft, range with 40,000-lb payload 2,240 miles; range 3,450 miles.
COMMENTARY
First flown 48 years ago, the C-130 Hercules transport continues in production and has been delivered to more than 60 countries. Basic and specialized versions operate throughout USAF, performing diverse roles in both peace and war situations, including airlift support, Arctic ice cap resupply, aeromedical missions, aerial spray missions (AFRC), fire-fighting duties (AFRC and ANG) for the US Forest Service, and natural disaster and humanitarian relief missions.
C-130A, B, and D. Early versions, now retired. The initial production C-130A had four Allison T56-A-11 or -9 turboprop engines. USAF ordered a total of 219. The C-130B had improved range and higher weights and introduced Allison T56-A-7 turboprops; 134 were produced, with delivery from April 1959. Twelve were modified beginning 1961 as **JC-130Bs** for air-snatch satellite recovery together with three early H models. Twelve C-130Ds were modified As for Arctic operations.
C-130E is an extended-range development of the C-130B, with large under-wing fuel tanks; 389 were ordered, with deliveries beginning in April 1962. A wing modification to correct fatigue and corrosion extended the life of the aircraft well into this century. Other modifications include a self-contained navigation system, with an integrated communications/navigation management suite, GPS capability, and a state-of-the-art autopilot that incorporates a ground collision avoidance system.
C-130H is generally similar to the E model but has updated turboprops, a redesigned outer wing, and improved pneumatic systems; delivery began in July 1974. Subsequent improvements include updated avionics, improved low-power color radar, and other minor modifications. Night vision instrumentation system was introduced from 1993, TCAS II in new aircraft from 1994. ANG and AFRC **LC-130H/R** aircraft are modified with wheel-ski gear to support Arctic and Antarctic operations. Two **DC-130Hs** were modified for UAV control duties.
Boeing is undertaking a major AMP for the C-130E/H. Improvements include digital displays, flight-management systems, multifunction radar, new communications systems, and a single air data computer. Work is expected to begin in 2005, with planned completion in 2016. The AMP upgrade includes all C-130 models (LC/EC/MC/AC/HC) except the C-130J-30.
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. ANG and AFRC units began receiving J models in 1999. First active duty unit, the 48th AS at Little Rock AFB, Ark., was scheduled to receive its first C-130J aircraft in April 2004.

C-130J-30. USAF is acquiring a stretched version of the C-130J, with an additional 15 ft to the fuselage, capable of carrying up to 128 ground troops or 92 paratroops, to replace its oldest 1960s-vintage C-130Es. ANG received three in 2001 and two in 2002. Of five on contract for 2004 delivery, active duty will receive one; ANG, three; AFRC, one. USAF awarded a multiyear contract in 2002 with deliveries from 2005–09.

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: 2006 (planned).

IOC: 2009 (planned).

Production: 50 (planned).

Inventory: 50 (planned).

Unit Location: Hurlburt Field, Fla., Kirtland AFB, N.M.

Contractor: Bell Boeing; Raytheon.

Power Plant: two Rolls Royce–Allison AE1107C turboshafts, each 6,200 shp.

Accommodation: four (two pilots, two flight engineers); additional pilot for extended duration missions; up to 18 troops or 8,000 lb internal cargo.

Dimensions: proprotor diameter 38 ft, width, rotors turning 84.6 ft, fuselage length 57.3 ft, height 22 ft.

Weight: gross weight 34,900 lb, max VTO 52,870 lb; STO 57,000 lb, self-deploy T-O 60,500 lb.

Ceiling: 26,000 ft.

Performance: typically will carry troops or cargo over a 500-mile combat radius at 265 mph. Self-deployment range with one air refueling 2,417 miles.

COMMENTARY

CV-22 is the designation for the US Special Operations Command variant of the V-22 Osprey. The CV-22 is a multi-engine, dual-piloted, self-deployable, medium-lift vertical takeoff and landing (VTOL) tilt-rotor aircraft for the conduct of special operations, including nuclear, biological, and chemical (NBC) warfare conditions. It will operate from land bases and austere forward operating locations, as well as air capable ships without reconfiguration or modification. An in-flight refueling capability extends combat mission range when required, and the aircraft will be self-supporting to the maximum practical extent. The CV-22's mission is long-range clandestine penetration of denied areas in adverse weather and low visibility to infiltrate, exfiltrate, and resupply SOF.

CV-22 avionics include a fully integrated precision navigation suite, with GPS and INS; a digital cockpit management system oriented around four multifunction displays (MFDs); FLIR; an integrated NVG HUD; terrain-following/terrain-avoidance (TF/TA) radar; and digital map system. Additionally, it is equipped with robust self-defensive avionics and secure antijam, redundant communications compatible with current and planned systems used by command and control agencies and ground forces. The CV-22 unrefueled combat range satisfies current and emergent major theater war (MTW) requirements, as well as national mission tasking. The aircraft is capable of completing most assigned missions during one period of darkness.

The first CV-22 is planned to begin initial operational test and evaluation in summer 2006. Initial training capability is scheduled for early 2007 at Kirtland AFB, N.M., and IOC for early 2009 at Hurlburt Field, Fla. USAF may place detachments of CV-22s in EUCOM and PACOM theaters.

MC-130E/H Combat Talon

Brief: A modified C-130 able to provide global, day, night, and adverse weather capability to air-drop personnel and to deliver personnel and equipment to support US and allied SOF.

Function: SOF infiltration, exfiltration, and resupply.

Operator: AETC, AFSOC, AFRC.

First Flight: circa 1965 (E); January 1990 (H).

Delivered: initially 1966.

IOC: 1966 (E); June 1991 (H).

Production: 22 new-build Hs.

Inventory: 14 (E); 22 (H).

Unit Location: Active (Assoc.) and AFRC MC-130Es at Duke Field, Fla. Active: MC-130H at Hurlburt Field, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK.

Contractor: Lockheed Martin (airframe); Boeing integrated weapons system support.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: E: crew of nine; 53 troops or 26 paratroops; H: crew of seven; 77 troops, 52 paratroops, or 57 litters.

Dimensions: span 132.7 ft, height 38.6 ft, length 100.8 ft (E), 99.8 ft (H).

Weight: empty 72,892 lb, gross 155,000 lb.

Ceiling: 30,000 ft.

Performance: max speed 289 mph, range 3,110 miles, unlimited with refueling.

COMMENTARY

MC-130 Combat Talon aircraft are equipped with terrain following radars, precision navigation systems using INS/GPS, and electronic and infrared countermeasures for self-protection. Both aircraft are capable of in-flight refueling, are NVG-compatible and have a high-speed aerial delivery system. The primary mission of the aircraft is to conduct infiltration, resupply, and exfiltration of special operations forces (SOF). They are also capable of supporting psychological operations. Combat Talons are able to air-drop or to and on austere unmarked landing or drop zones.

MC-130E Combat Talon I. Fourteen modified C-130E aircraft are additionally equipped with a pod-based system to air refuel SOF helicopters. Two units are MC-130E-equipped, the 8th and the 711th SOS.

MC-130H Combat Talon II. Twenty-four new-build MC-130Hs modified with an integrated glass cockpit were acquired in the early 1990s to supplement the Combat Talon Is. The aircraft are currently being modified with a state-of-the-art pod-based aerial refueling system to augment the MC-130E and MC-130P aerial refueling fleet. The 1st, 7th, and 15th SOSs provide support to SOF in Europe, the Pacific, and CONUS, respectively. The 58th SOS at Kirtland AFB, N.M., is responsible for MC-130H mission qualification training.

VC-25 Air Force One

Brief: A specially configured Boeing 747-200B used for air transport of the President and his entourage. When the President is aboard, it has the radio call sign "Air Force One."

Function: Air transport of the President.

Operator: AMC.

First Flight: first flown as Air Force One Sept. 6, 1990.

Delivered: August–December 1990.

IOC: circa 1990.

Production: two.

Inventory: two.

Unit Location: Andrews AFB, Md.

Contractor: Boeing.

Power Plant: four General Electric CF6 turbofans, each 56,700 lb thrust.

Accommodation: crew of 26; up to 76 passengers.

Dimensions: span 195.7 ft, length 231.8 ft, height 63.4 ft.

Weight: long-range mission T-O weight 803,700 lb., gross 833,000 lb.

Ceiling: 45,000 ft.

Performance: speed 630 mph (Mach 0.92), normal cruising speed Mach 0.84, unrefueled range 7,820 miles.

COMMENTARY

Based on the Boeing 747-200B airframe, two **VC-25As** assigned to Andrews AFB, Md., support the President. Aircraft are equipped with staff work areas, a conference room, a general seating area, and an executive office. Communications capability includes worldwide secure and clear communications equipment. Upgrades include GATM and installation of a broadband data transmit and receive capability to provide video teleconferencing and office-in-the-sky capability.

Trainer Aircraft

T-1A Jayhawk

Brief: A medium-range, twin-engine jet trainer version of the Beechcraft 400A. It is used by the Air Force to train student pilots to fly airlift and tanker aircraft.

Function: Advanced pilot training.

Operator: AETC, AFRC.

First Flight: Sept. 22, 1989 (Beechcraft 400A).

Delivered: Jan. 17, 1992–July 1997.

IOC: January 1993.

Production: 180.

Inventory: 180.

Unit Location: Active: Columbus AFB, Miss., Laughlin and Randolph AFBs, Tex., Vance AFB, Okla., NAS, Pensacola, Fla. (forward operating station). AFRC: (Assoc.) Randolph AFB, Tex.

Contractor: Raytheon.

Power Plant: two Pratt & Whitney Canada JT15D-5B turbofans, each 2,900 lb thrust.

Accommodation: two, side by side, and one to the rear; rails are fitted to accommodate an extra four seats to permit transport of maintenance teams.

Dimensions: span 43.5 ft, length 48.4 ft, height 13.9 ft.

Weight: empty 5,200 lb, gross 16,100 lb.

Ceiling: 41,000 ft.

Performance: max speed at 27,000 ft 538 mph, range 2,400 miles.

COMMENTARY

The swept-wing **T-1A** Jayhawk is a military version of the Beech 400A used in the advanced phase of joint specialized undergraduate pilot training (JSUPT) for students selected to go on to fly transports such as the C-5 and C-17 or tankers such as the KC-10 and KC-135. It has cockpit seating for an instructor and two students. Special mission equipment includes GPS, an electronic flight instrument system (EFIS) avionics system, a single-point refueling system, an additional fuselage fuel tank, and increased bird-strike protection in the windshield and leading edges for sustained low-level operation. T-1As typically log 100,000 flying hours a year, supporting all-weather training operations at high and low altitudes.

T-6A Texan II

Brief: A single-engine turboprop aircraft used for training student pilots, navigators, and naval flight officers in fundamentals of aircraft handling and instrument, formation, and night flying.

Function: Primary trainer.

Operator: AETC, AFRC, USN.

First Flight: July 15, 1998.

Delivery: May 2000–present (operational aircraft).

IOC: November 2001.

Production: USAF 372 (ordered), USN 328 (planned).

Inventory: 110 (USAF).

Unit Location: USAF: Active: Laughlin and Randolph AFBs, Tex., Moody AFB, Ga. AFRC: (Assoc.) Randolph AFB, Tex. Planned: Columbus AFB, Miss., Sheppard AFBs, Tex., 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.

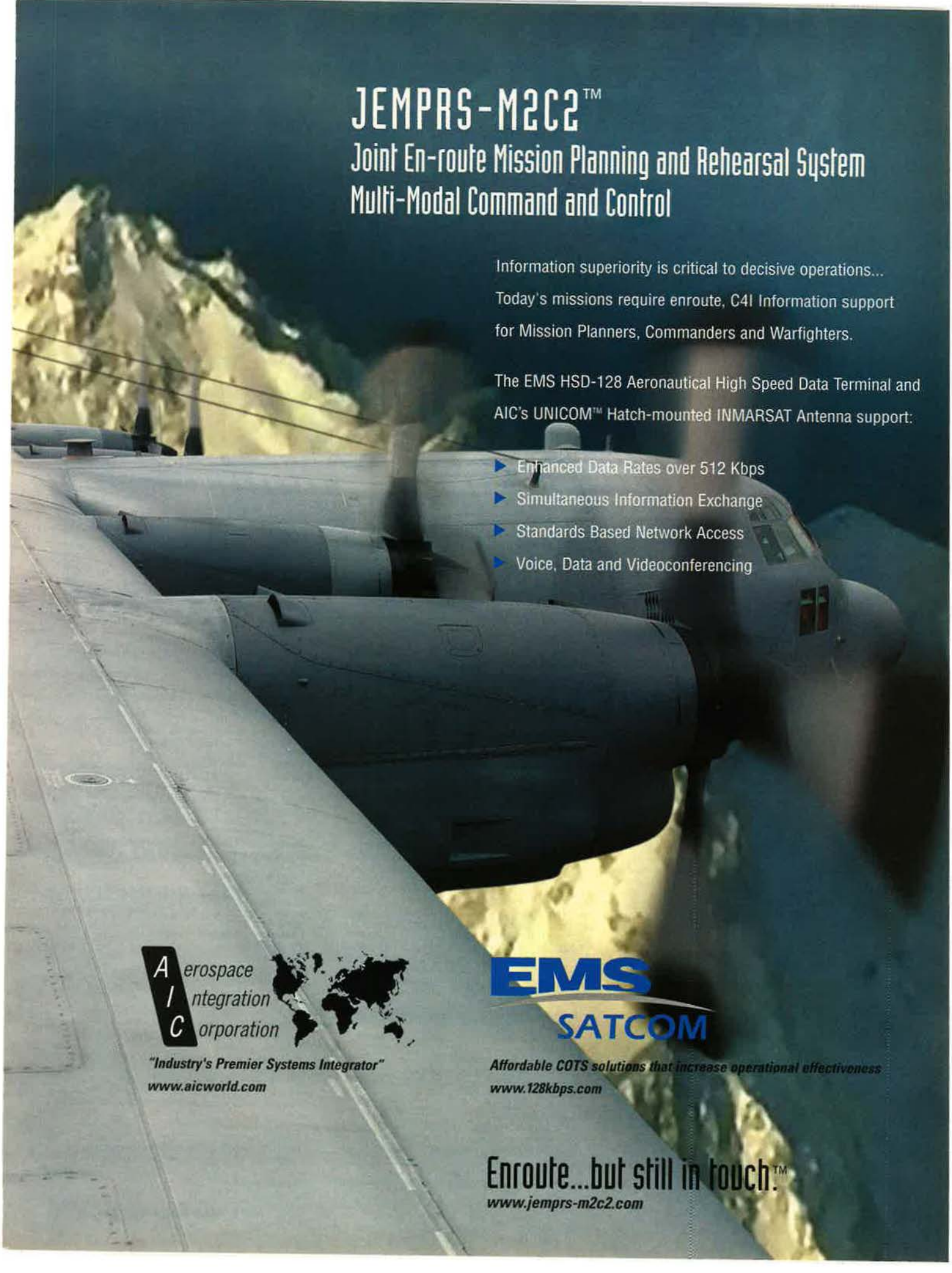
Ceiling: 31,000 ft.

Performance: max speed 368 mph, range 920 miles.

COMMENTARY

The Joint Primary Aircraft Training System (JPATS)

***MC-130H** Combat Talon II* (SSgt. Efren Lopez)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***T-6** Texan II* (MSgt. David Richards)

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 is replacing USAF's T-37Bs and USN's T-34Cs in primary pilot training, as well as supporting undergraduate naval flight officer and USAF navigator training. Pilot training in T-6A began at Moody AFB, Ga., in October 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: 333.
Unit Location: Active: Columbus AFB, Miss., Laughlin, Randolph, and Sheppard AFBs, Tex., Vance AFB, Okla. AFRC: (Assoc.) Randolph AFB, Tex.
Contractor: Cessna.
Power Plant: two Continental J69-T-25 turbojets, each 1,025 lb thrust.
Accommodation: two, side by side, on ejection seats.
Dimensions: span 33.7 ft, length 29.2 ft, height 9.1 ft.
Weight: empty 3,870 lb, gross 6,625 lb.
Ceiling: 35,000 ft.
Performance: max speed at S/L 315 mph, range 460 miles.

COMMENTARY

USAF's first purpose-built jet trainer, the T-37 has been 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. 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 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: T-38: 458, AT-38: 31.
Unit Location: Active: 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. AFRC: (Assoc.) Randolph AFB, Tex.
Contractor: Northrop Grumman.
Power Plant: two General Electric J85-GE-5A turbojets, each 2,680 lb thrust dry, 2,900 lb thrust with afterburning.
Accommodation: two, in tandem, on ejection seats.
Dimensions: span 25.3 ft, length 46.3 ft, height 12.8 ft.
Weight: empty 7,164 lb, gross 12,500 lb.
Ceiling: above 55,000 ft.
Performance: max level speed 812 mph, range 1,000 miles.

COMMENTARY

Most of the T-38s in service are used by AETC for advanced bomber–fighter training track in JSUPT. Capabilities are being enhanced through an ongoing program of modifications and structural renewal, including a full avionics upgrade with a HUD and integrated GPS/INS, and a propulsion modernization. As a result of the reduction in the T-38's workload through introduction of the T-1A and JSUPT, the service life of the T-38s should extend well beyond 2020.

T-38A. Close in structure to the F-5A export tactical fighter, the T-38A was the world's first supersonic trainer aircraft. It is used to teach supersonic techniques, aerobatics, formation, night and instrument flying, and cross-country and low-level navigation. 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. The first T-38C was received late summer 2002; planned completion is 2008. Additionally, the propulsion system is being upgraded to improve performance and reliability. First modification was early 2003, and planned completion is 2011.

T-41 Mescalero

Brief: Short-range, high-wing trainer used primarily for aerodynamic and navigation courses.

Function: Training, support.
Operator: USAFA.
Delivered: 1969.
Inventory: four.
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.

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.

***T-38** Talon* (SSgt. Jeffrey Allen)

Power Plant: two Pratt & Whitney JT8D-9 turbofans, each 14,500 lb thrust.
Accommodation: crew of two; 12 students and six instructors.
Dimensions: span 93 ft, length 100 ft, height 37 ft.
Weight: gross 115,500 lb.
Ceiling: 37,000 ft.
Performance: econ cruising speed 535 mph (Mach 0.7), operational range 2,995 miles.

COMMENTARY

T-43A. The T-43A was derived from the commercial Boeing Model 737-200 and was equipped with the same onboard avionics as most USAF operational aircraft, including mapping radar, VHF omnidirectional radio and Tacan radio systems, INS, radar altimeter, all required communications equipment, and celestial navigation capability.

A number of T-43s are configured for passengers and provide operational support to assigned commands.

TG-10B Merlin

Brief: Two-seat medium-performance sailplane used for introductory glider training, instructor upgrade training, spin training, and basic cross-country soaring training.

Function: Trainer.
Operator: USAFA.
Delivered: May 2002.
IOC: December 2002.
Production: 12.
Inventory: 12.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: two.
Dimensions: span 55.4 ft, length 27.9 ft, height 6.2 ft.
Weight: 1,168 lb.
Performance: speed 142.6 mph, glide ratio 28:1.

COMMENTARY

The **TG-10B** is an L-23 Super Blanik dual sailplane, produced in the Czech Republic and used by USAFA to introduce cadets to flight through the Soar-For-All program.

TG-10C Kestrel

Brief: Two-seat medium-performance sailplane used for instructor spin upgrade and aerobatic demonstrations.

Function: Trainer.

TG-10C

Operator: USAFA.
Delivered: May 2002.
IOC: December 2002.
Production: five.
Inventory: five.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: two.
Dimensions: span 46.6 ft, length 27.6 ft, height 6.9 ft.
Weight: 1,100 lb.
Performance: speed 146.1 mph, glide ratio 26:1.
COMMENTARY
The **TG-10C** is an L-13AC Blanik dual sailplane, produced in the Czech Republic and used primarily for spin training and aerobatic demonstrations.

TG-10D Peregrine
Brief: Single-seat medium-performance sailplane used for cross-country soaring training and high-altitude wave flight.
Function: Trainer.
Operator: USAFA.
Delivered: May 2002.
IOC: December 2002.
Production: four.
Inventory: three.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: single.
Dimensions: span 46.3 ft, length 21.7 ft, height 4.7 ft.
Weight: 750 lb.
Performance: speed 149.5 mph, glide ratio 33:1.
COMMENTARY
The **TG-10D** is an L-33 Solo Blanik sailplane produced in the Czech Republic. It is a medium performance sailplane that allows students to master basic flight maneuvers while solo, before progressing to a more advanced sailplane. It is primarily used for cross-country training and high-altitude wave flight.

TG-14A Ximango
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: September 2002.
IOC: December 2002.
Production: 14.
Inventory: 14.
Unit Location: USAFA, Colo.
Contractor: Grupo Aeromot, Brazil.
Power Plant: one Rotax 912A, 81 hp engine.
Accommodation: two, side by side.
Dimensions: span 57.3 ft, length 26.4 ft, height 6.3 ft.
Weight: gross 1,874 lb.
Performance: cruise speed 110 mph, glide ratio 31:1, range 690 miles at high-speed cruise, max endurance seven hr.
COMMENTARY
The **TG-14A** is a military version of the Ximango 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. 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.

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.

Helicopters

HH-60G Pave Hawk
Brief: Specially modified helicopters used for SAR and support missions.
Function: SOF heavy-lift helicopter.
Operator: ACC, AETC, AFMC, AFSOC, PACAF, USAFE, ANG, AFRC.
First Flight: October 1974.
Delivered: 1982–present.
IOC: circa 1982.
Production: 105.
Inventory: 103.
Unit Location: Davis–Monthan AFB, Ariz., Eglin AFB, Fla., Kadena AB, Japan, Kirtland AFB, N.M., Moody AFB, Ga., NAS Keflavik, Iceland, Nellis AFB, Nev., Robins AFB, Ga. ANG: Francis S. Gabreski Arpt., N.Y., Kulis ANGB, Alaska, Moffett Federal Airfield, Calif. AFRC: Davis–Monthan AFB, Ariz., Patrick AFB, Fla.
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
Black Hawk helicopters were modified to **HH-60G** Pave Hawk configuration for use by active duty, ANG, and AFRC air rescue units for CSAR and mission activities worldwide. The Pave Hawk is a highly modified version of the Army Black Hawk helicopter, featuring an upgraded communications/navigation suite that includes INS/GPS/Doppler navigation systems, SATCOM, secure/antijam communications, and a PLS that provides range/steering 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 or .50-caliber machine guns.

MH-53 Pave Low
Brief: Specially outfitted heavy-lift helicopters used by Air Force Special Operations Forces for infiltration/exfiltration as well as CSAR missions.
Function: SOF heavy-lift helicopter.
Operator: AETC, AFSOC.
First Flight: March 1967.
Delivered: from July 1987 (MH-53J).
IOC: 1988 (MH-53J).
Production: not available.
Inventory: 36.
Unit Location: AETC: Kirtland AFB, N.M., AFSOC: Hurlburt Field, Fla., RAF Mildenhall, UK.
Contractor: Sikorsky; Texas Instruments.
Power Plant: two General Electric T64-GE-100 turboshafts, each 4,330 shp.
Accommodation: crew of six; up to 38 troops.
Dimensions: rotor diameter 72.2 ft, length of fuselage (without refueling probe) 67.2 ft, height 25 ft.
Weight: gross 50,000 lb.
Ceiling: 16,000 ft.
Performance: speed 164 mph, max range 630 miles, unlimited with air refueling.
Armament: mounts for any combination of three 7.62 miniguns and .50-caliber machine guns.
COMMENTARY
MH-53H. Older version of the helicopter, all of which, together with all HH/CH-53B/Cs, were upgraded to MH-53J Pave Low III "Enhanced" standard from 1986.
MH-53J. A long-range deep penetration helicopter, adverse weather capable and equipped for extended operations when air refueled. Equipped with a nose-mounted FLIR, an integrated digital avionics suite that includes TF/TA radar, Kalman filtered navigation suite (GPS, INS, Doppler), projected map display, secure UHF, VHF, FM, HF communications, PLS, SATCOM, hover coupler, rescue hoist, mission commander's C2 panel, armor plating, and an ECM suite with radar and IR missile jammers, flare/chaff dispensers, RWR, and missile launch detectors.
A service life extension program (SLEP) upgraded

***HH-60G** Pave Hawk* (MSgt. Dave Nolan)

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***MH-53J** Pave Low III* (MSgt. Dave Nolan)

the aircraft's hydraulics, wiring, and basic airframe structure for increased gross weight, and an automated blade/pylon fold system optimized for shipboard compatibility. All aircraft modified to support aircrew eye/respiratory protection system.

MH-53M. MH-53J helicopters upgraded to Pave Low IV standard, delivered from 1999. Upgrades include the interactive defensive avionics suite/multimission advanced tactical terminal capability which integrates onboard EW systems with off-board, over-the-horizon, near-real-time intelligence, and mission software improvements. Cockpit modifications include three MFDs, integrated digital map, and mission commander situation awareness panel in the cabin area.

UH-1 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: 61.

Unit Location: Andrews AFB, Md., Fairchild AFB, Wash., F.E. Warren AFB, Wyo., Hurlburt Field, Fla., Kirtland AFB, N.M., Malmstrom AFB, Mont., Minot AFB, N.D., Robins AFB, Ga., Vandenberg AFB, Calif., Yokota AB, Japan.

Contractor: Bell.

Power Plant: 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, deployed on B-52H aircraft, which can be equipped with either a nuclear or conventional warhead and can be used to help dilute air defenses and complicate an enemy's air defense task.

Function: Strategic air-to-surface cruise missile.

Operator: ACC.

First Flight: June 1979 (full-scale development).

Delivered: from 1981.

IOC: December 1982, Griffiss AFB, N.Y.

Production: 1,700+.

Unit Location: Barksdale AFB, La., Minot AFB, N.D.

Contractor: Boeing.

Power Plant: Williams/Teledyne CAE F107-WR-10 turbofan, 600 lb thrust.

Guidance: AGM-86B: inertial plus Terrain Contour Matching (TERCOM); AGM-86C: inertial plus GPS.

Warhead: AGM-86B: W80-1 nuclear; AGM-86C: blast/fragmentation conventional; AGM-86D: hard target penetrating warhead.

Dimensions: length 20.8 ft, body diameter 2 ft, wingspan 12 ft.

Weight: 3,150 lb (B), 3,277 lb (C).

Performance (approx): speed 550 mph (Mach 0.6), range 1,500+ miles (AGM-86B).

COMMENTARY

AGM-86A. A prototype cruise missile, developed in the mid–1970s. Slightly smaller than the later versions, it never entered production.

AGM-86B. First production version, the B is programmed for strategic attack on surface targets. Small radar signature and low-level flight capability enhance the missile's effectiveness. The last of 1,715 production models was delivered in October 1986. 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 Gulf War I 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 converted 622 Bs to the conventional configuration, the first of which was delivered in December 1987. The remaining CALCMs have Block 1A enhancements with improved accuracy and increased immunity to electronic jamming. Since Iraqi Freedom, few CALCMs remain.

AGM-86D. CALCM penetrator version with a Lockheed Martin AUP-3(M) warhead. The CALCM penetrator provides the warfighter with a cost-effective, standoff outside theater defenses capability against a wide range of hardened, deeply buried targets. The CALCM penetrator was used successfully in Iraqi Freedom.

AGM-129 Advanced Cruise Missile

Brief: A stealthy, long-range, winged air vehicle equipped with a nuclear warhead and designed to evade enemy air and ground-based defenses in order to strike hard, heavily defended targets at standoff distances.

Function: Strategic air-to-surface cruise missile.

Operator: ACC.

First Flight: July 1985.

Delivered: June 1990–August 1993.

IOC: circa 1991.

Production: 461.

Unit Location: Barksdale AFB, La., Minot AFB, N.D.

Contractor: General Dynamics (now Raytheon); McDonnell Douglas (now Boeing).

Power Plant: Williams International F112-WR-100 turbofan.

Guidance: inertial, with TERCOM update.

Warhead: W80-1 nuclear.

Dimensions: length 20.8 ft, body width 2.2 ft, wingspan 10.2 ft.

Weight: 3,700 lb.

Performance (approx): range 2,300+ miles, speed 550 mph.

COMMENTARY

AGM-129A. Embodying stealth technology, the AGM-129A is an air-launched strategic cruise missile with significant improvements over the AGM-86B in range, accuracy, and survivability. Armed with a W-80 warhead, it is designed to evade air- and ground-based defense systems in order to strike heavily defended, hardened targets at any location within an enemy's territory. Developed by General Dynamics, McDonnell Douglas was certified as second source for this advanced system, which is carried externally on B-52H aircraft. The ACM is undergoing modification to extend its service life to 2030.

LG-118 Peacekeeper

Brief: A solid-fuel ICBM 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.

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 50 in FY90 in response to the changing international political climate.

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.

On Oct. 3, 2002, USAF began deactivation of Peacekeeper ICBMs, scheduled for retirement under nuclear force structure reductions. Final decommissioning is expected October 2005.

LGM-30 Minuteman

Brief: A solid-fuel ICBM capable of being fired from silo launchers and delivering a thermonuclear payload of one to three warheads with high accuracy over great distances.

Function: Strategic surface-to-surface ballistic missile.

Operator: AFSPC.

First Flight: February 1961.

Delivered: 1962–December 1978.

IOC: December 1962, Malmstrom AFB, Mont.

Production: 1,800.

Unit Location: F.E. Warren AFB, Wyo., Malmstrom AFB, Mont., Minot AFB, N.D.

Contractor: Boeing.

Power Plant: stage 1: Thiokol M-55 solid-propellant motor, 210,000 lb thrust; stage 2: Aerojet General SR19-AJ-1 solid-propellant motor, 60,300 lb thrust; stage 3: Thiokol SR73-AJ-1 solid-propellant motor, 34,400 lb thrust.

Guidance: inertial guidance system.

Warheads: one–three Mk 12/12A MIRVs (downloaded to one).

Dimensions: length 59.8 ft, diameter of first stage 5.5 ft.

Weight: launch weight (approx) 78,000 lb.

Performance: speed at burnout more than 15,000 mph, highest point of trajectory approx 700 miles, range with max operational load more than 6,000 miles.

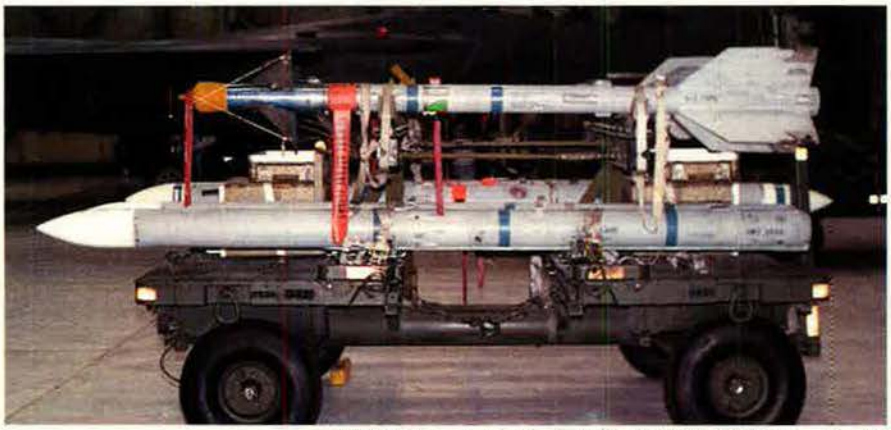
COMMENTARY

A key element in the US strategic deterrent posture, Minuteman is a three-stage, solid-propellant ICBM, housed in an underground silo.

LGM-30A/B. Minuteman I version deployed in the early 1960s. The last Minuteman I missile was removed from its silo at Malmstrom AFB, Mont., in February 1969. USAF had deployed 150 A and 650 B models in 16 squadrons.

LGM-30F. Minuteman II version incorporated a larger second stage, an improved guidance package, greater range and payload capability, and hardening against the effects of nuclear blast. IOC was reached in October 1965 at Grand Forks AFB, N.D. USAF deployed 450 in nine squadrons.

LGM-30G. The Minuteman III became operational in June 1970, providing improved range, rapid retargeting, and the capability to place three multiple independently targetable re-entry vehicles (MIRVs) on three



***AIM-9** Sidewinder* (top) ***AIM-120** AMRAAM* (Guy Aceto)

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 viability to 2020. Major upgrades include refurbishment of liquid propulsion post-boost rocket engine, remanufacture of the solid-propellant rocket motors, replacement of the environmental control system, repair of launch facilities, installation of updated, survivable communications equipment, and a C2 sustainment program.

Tactical Missiles and Weapons

AGM-65 Maverick

Brief: A tactical, TV– or imaging-infrared (IIR)–guided air-to-surface missile carried by fighters and designed for use in CAS, interdiction, and defense suppression missions, having standoff capability and high probability of strike against a wide range of targets.

Function: Air-to-surface guided missile.
First Flight: August 1969.
Delivered: from August 1972.
IOC: February 1973.
Production: sustainment phase.
Contractor: Raytheon.
Power Plant: Thiokol TX-481 solid-propellant rocket motor.
Guidance: self-homing, EO guidance system (IIR on D and G models).
Warhead: AGM-65A/B/D/H 125-lb high-explosive, shaped charge; AGM-65G/K 298-lb blast fragmentation.
Dimensions: length 8.2 ft, body diameter 1 ft, wingspan 2.3 ft.
Weight: launch weight (AGM-65A) 462 lb, (AGM-65G) 670 lb.
Performance: range about 9.2 miles.

COMMENTARY

Maverick missiles have a long and distinguished combat record. They were first employed by USAF in Vietnam and were used extensively during Gulf War I and II. They currently equip A-10, F-15E, and F-16 aircraft for use against tanks and columns of vehicles and in the SEAD role.

AGM-65A. The basic Maverick is a launch-and-leave, TV-guided air-to-surface missile that enables the pilot of the launch aircraft to seek other targets or leave the target area once the missile has been launched. Production was initiated in 1971, following successful test launches over distances ranging from a few thousand feet to many miles and from high altitudes to treetop level.

AGM-65B. A version with a "scene magnification" TV seeker that enables the pilot to identify and lock on to smaller or more distant targets.

AGM-65D. System developed to overcome limitations of the TV Maverick, which can be used only in day light 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, antiship cruise missile system capable of being fired from B-52H aircraft, ships, and submarines.

Function: Air-to-surface antiship missile.
First Flight: March 1974 (for USN).
Delivered: from 1977 (USN).
IOC: circa 1985 (USAF).
Production: sustainment phase.
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 antisurface operations, the Harpoon all-weather antiship 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 antiradiation missile.
First Flight: April 1979.
Delivered: 1982–98.
IOC: circa 1984.
Production: sustainment phase.
Contractor: Raytheon.
Power Plant: Thiokol smokeless, dual-thrust, solid-propellant rocket motor.
Guidance: passive homing guidance system, using seeker head that homes on enemy radar emissions.
Warhead: high-explosive fragmentation, weighing 145 lb.
Dimensions: length 13.7 ft, body diameter 10 in, wingspan 3.7 ft.
Weight: 795 lb.
Performance: cruising speed supersonic, altitude limits S/L to 40,000 ft, range more than 10 miles.

COMMENTARY

The High-speed Anti-Radiation Missile (HARM) exhibits great velocity along with an ability to cover a wide range of frequency spectrums through the use of programmable digital processors in both the carrier aircraft's avionics equipment and in the missile. The combination gives this second generation anti-radiation missile greatly improved capability over first-generation Shrikes and Standards. The AGM-88 proved highly effective against enemy ground radar during the Gulf War I and, again, in subsequent operations. HARMs equip F-16 Block 50/52s (F-16CJ) dedicated to the SEAD mission.

AGM-88A. A factory-programmed version used to equip the now-retired F-4G Wild Weasel to increase its lethality in electronic combat.

AGM-88B. Older versions of the AGM-88B are being upgraded with the enhanced capability guidance seeker currently equipping the C version.

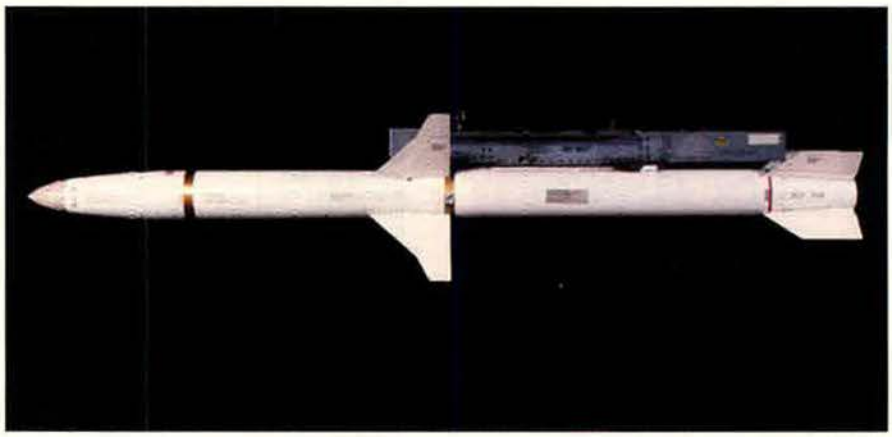
AGM-88C. This current production version has a more lethal warhead, containing tungsten alloy cubes, rather than steel, and the enhanced-capability AGM-88C-1 guidance head.

Erasable electronically programmable read-only memory has been retrofitted on ACC, PACAF, and USAFE HARMs, permitting changes to missile memory in the field. 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 to be added to the C. Further upgrades to include 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.
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



***AGM-88** HARM*

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-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: 6,114 (planned).

Contractor: Raytheon.

Guidance: INS/GPS.

Dimensions: length 13.3 ft.

Weight: 1,065–1,500 lb.

Performance: range: low-altitude launch 17 miles, high-altitude launch 40+ miles.

COMMENTARY

A medium-range, INS/GPS–guided, standoff air-to-ground weapon designed to attack a variety of soft and armored area targets (fixed, relocatable, and mobile) during day/night/adverse weather conditions. JSOW enhances aircraft survivability, 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 allows several target kills per aircraft sortie. JSOW arms B-1, B-2, B-52, F-15E and F-16 aircraft. USAF has withdrawn from further JSOW buys.

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. Now canceled.

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: first of 76 LRIP missiles due April 2003; through FY17 (planned).

IOC: September 2003

Production: 2,853 + 1,426 JASSM-ER (planned).

Contractor: Lockheed Martin; Raytheon; Honeywell.

Guidance: INS, GPS, and IIR terminal seeker.

Power Plant: Teledyne Continental Motors.

Dimensions: length 14 ft.

Weight: 2,250 lb.

Performance: 1,000-lb class penetrator and blast-fragmentation warheads; standoff range greater than 230 miles.

COMMENTARY

JASSM is a next generation missile that enables 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. This autonomous precision strike weapon can attack both fixed and relocatable targets, ranging from nonhardened above ground to moderately hardened buried targets. The system also offers low operational support costs. Threshold aircraft are B-52H and F-16, with B-1B, B-2, F-15E, F-117, F/A-18E/F, and P-3C to follow. An extended-range version **(JASSM-ER),** with a range of more than 575 miles, began development in FY03 and will begin production in 2006.

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).

AGM-130 (Boeing)

Production: sustainment phase.

Contractor: Hughes and General Dynamics (now Raytheon).

Power Plant: Hercules Mk 58 Mod 0 4.5 sec boost–11 sec. sustain rocket motor.

Guidance: AIM-7M: monopulse semiactive radar.

Warhead: high-explosive, blast fragmentation, weighing 86 lb.

Dimensions: length 12 ft, body diameter 8 in, wingspan 3.3 ft.

Weight: launch weight 504 lb.

Performance (estimated): max speed more than 2,660 mph (Mach 3.5), range more than 34 miles.

COMMENTARY

Early versions. Production of Sparrow has been under way for 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 and F-16s (ADF) and Navy F-14s and F-18s.

AIM-7P. Block 1 retrofit to AIM-7M guidance and control sections (GCSs), providing low-altitude guidance and fuzing capability. Block 2 provides new-build for AIM-7P GCSs.

AIM-9 Sidewinder

Brief: A supersonic, short-range, IR–guided air-to-air missile carried by fighter aircraft, having a high-explosive warhead.

Function: Air-to-air missile.

First Flight: September 1953.

Delivered: 1983–present. First production AIM-9X delivered May 1, 2002.

IOC: circa 1983 (AIM-9M).

Production: sustainment phase (AIM-9M); LRIP from November 2000 (AIM-9X).

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 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 modification to improve IRCCM capability of early missiles. Complete.

AIM-9X is the result of a Navy–Air Force program, derived from a jointly funded demonstration and validation contract. The AIM-9X entered LRIP from November 2000. USAF's F-15-equipped 12th and 19th FS, part of the 3rd Wing at Elmendorf AFB, Alaska, became the first operational units to receive AIM-9Xs in November 2003. USAF plans to buy 5,097 missiles.

The AIM-9X incorporates advanced technologies such as a focal plane array imaging seeker, high off-boresight sensor (HOBS), and a highly maneuverable jet-vane control system. The missile utilizes the existing AIM-9M rocket motor, warhead, and fuze. It will be integrated with the JHMCS to maximize its HOBS capability. It will be employed on F-15, F-16, F-35, F/A-18, and F/A-22 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 2010 (planned).

IOC: September 1991.

Production: 10,917+ planned for USAF/USN.

Contractor: Raytheon.

Power Plant: Alliant boost-sustain solid-propellant rocket motor.

Guidance: inertial/command, inertial with active radar terminal homing.

Warhead: high-explosive directed fragmentation weighing 48 lb.

Dimensions: (A/B models) length 12 ft, body diameter 7 in, span of tail control fins 2.1 ft.

Weight: 335 lb.

Performance: cruising speed approx Mach 4, range more than 23 miles.

COMMENTARY

A joint project between the Navy and USAF, the AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) is a replacement for the AIM-7 Sparrow. The AIM-120 equips F-15, F-16, F/A-18, and F/A-22 fighters. (The F/A-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/A-22, with HOBS launch capability.

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.

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Performance: dispenses 202 BLU-97 combined effects bomblets over an area roughly 800 ft by 400 ft.

COMMENTARY

The CBU-87 Combined Effects Munition dispenses 202 BLU-97 shaped charge antipersonnel/antimateriel fragmentary/incendiary bomblets over the target in a rectangular pattern. It is currently delivered by USAF and Navy aircraft as an unguided gravity weapon. Density and size of the area covered depends on release parameters and spin rates.

CBU-103. USAF is retrofitting its inventory of CEMs with the WCMD tail kit. The WCMD improves 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/antipersonnel mine dispenser used by USAF and Navy fighters and bombers for interdiction.

Function: Scatterable mines.

Production: sustainment phase.

GBU-24 (Guy Aceto)

GBU-31 *Joint Direct Attack Munition* (SSgt. Suzanne M. Jenkins)

Contractor: Honeywell; Aerojet General; Olan; Alliant Tech.

Guidance: none (CBU-89).

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 705 lb.

Performance: dispenses 72 BLU-91 anti-armor and 22 BLU-92 antipersonnel mines.

COMMENTARY

The CBU-89 Gator dispenser holds 94 mines, of which 72 are antitank and 22 are antipersonnel. The mines are dispersed over the target in a rectangular pattern. The antitank 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 improves 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: 3,937 (planned).

Contractor: Textron Systems.

Guidance: IR sensors in each warhead search for targets, then detonate over them.

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 920 lb.

Performance: delivers 40 lethal projectiles over an area of about 500 ft by 1,200 ft.

COMMENTARY

The CBU-97 Sensor Fuzed Weapon (SFW) comprises an SUU-66/B tactical munitions dispenser with an FZU-39 fuze and a payload of 10 BLU-108/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 IR signature; if no target is detected, the warhead detonates after a preset time. The SFW's primary targets are massed tanks, armored personnel carriers, and propelled targets. It also provides direct attack capability and interdiction against C2 centers.

The CBU-97 is delivered as an unguided gravity weapon from the A-10, B-1, B-2, B-52H, F-15E, and F-16. A preplanned product improvement SFW variant is in full-scale production, incorporating 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. April 2003, during Iraqi Freedom, marked the combat debut of CBU-105; it was launched from a B-52 aircraft.

CBU-107 Passive Attack Weapon

Brief: The CBU-107 Passive Attack Weapon (PAW) provides the capability to attack non-hardened surface targets, with a minimum of collateral and environmental damage.

Function: Wide-area cluster munition.

First Flight: 2002

Delivered: 2002–03

IOC: December 2002

Production: not available, but completed March 2003.

Contractor: General Dynamics (kinetic energy penetrator payload and cannister); Lockheed Martin (WCMD); Textron (tactical munition dispenser kit).

Guidance: via WCMD.

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 1,000 lb.

Performance: delivers a high-speed volley of 3,000+ metal "arrows" projected from a single canister; three types of projectiles: 350 x 15 in-long rods, 1,000 x 7 in-long rods, and 2,400 small nail-size.

COMMENTARY

The CBU-107 Passive Attack Weapon (PAW) was developed from September 2002 to provide USAF aircraft with a new weapon that destroys targets with kinetic energy rather than explosives, thereby minimizing collateral and environmental damage. Following release from an aircraft, the WCMD-equipped weapon glides toward its target. Before impact the inner chamber containing the rods begins to rotate and the "arrows" are ejected in rapid succession by centrifugal force, penetrating a target within a 200-ft radius. Two CBU-107s were used during Iraqi Freedom. CBU-107s are intended for use on F-16, F-15E, and B-52 aircraft.

GBU-10 Paveway II

Brief: An unpowered laser guided bomb (LGB) used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface guided munition.

First Flight: early 1970s.

Delivered: from 1976.

IOC: 1976

Production: 10,000; continuing.

Contractor: Lockheed Martin; Raytheon.

Guidance: semiactive laser.

Warhead: GBU-10C/D/E/F: Mk 84 bomb (2,000-lb unitary); GBU-10G/H/J: BLU-109.

Dimensions: length GBU-10C/D/E/F: 14 .1 ft; GBU-10G/H/J: 14 ft, body diameter GBU-10C/D/E/F: 1.5 ft; GBU-10G/H/J: 1.2 ft, wingspan 5.5 ft.

Weight: 1,985 lb.

Performance: CEP 29.7 ft; range 9.2 miles.

COMMENTARY

Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The GBU-10 is used primarily for precision bombing against nonhardened targets but is capable of greater penetration than previous version. It can operate in cloud ceilings down to 2,500 ft. GBU-10 platforms include A-10, B-52, F-15E, F-16, and F-117 aircraft.

GBU-12 Paveway II

Brief: An unpowered LGB used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface guided munition.

First Flight: early 1970s.

IOC: 1976.

Production: about 30,000; continuing.

Contractor: Lockheed Martin; Raytheon.

Guidance: semiactive laser.

Warhead: Mk 82 (500 lb) blast/fragmentation bomb.

Dimensions: length 10.9 ft, body diameter 10.7 in, wingspan 4.4 ft.

Weight: 603 lb.

Performance: CEP 29.7 ft; range about 6 miles.

COMMENTARY

Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The LGB is used primarily to strike fixed armor. It can operate in cloud ceilings down to 2,500 ft. GBU-12 platforms include A-10, B-52, F-15E, F-16, and F-117 aircraft.

GBU-15

Brief: An unpowered bomb carried by the F-15E and used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface guided munition.

First Flight: 1975.

Delivered: 1983–complete.

IOC: 1983.

Production: more than 2,000.

Contractor: Boeing; Raytheon.

Guidance: TV or IIR seeker.

Warhead: Mk 84 bomb (2,000-lb unitary) or BLU-109.

Dimensions: length 12.8 ft, body diameter 1.5 ft, wingspan 4.9 ft.

Weight: 2,500 lb.

Performance: cruising speed subsonic; range about 17 miles; CEP about 10 ft.

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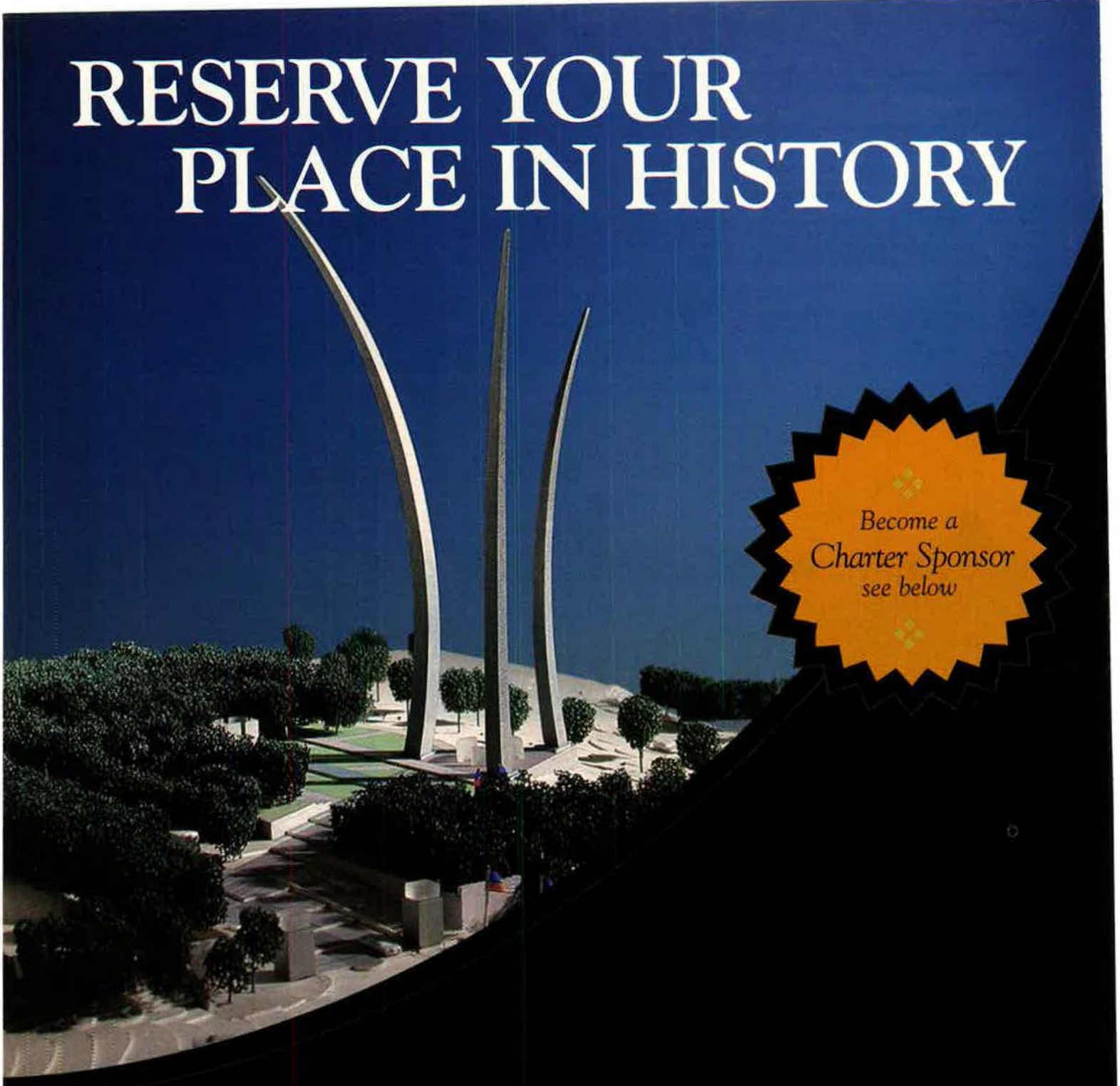

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COMMENTARY
GBU-15 is an air-launched, cruciform-wing glide bomb fitted with a guidance system designed to give it pinpoint accuracy from low or medium altitudes. It also has a standoff capability. Development began in 1974, based on experience gained in Vietnam with the earlier Pave Strike GBU-8 modular weapon program. The GBU-15 is intended for tactical use to suppress enemy defenses and to destroy heavily defended targets. The target-detecting device is carried on the front of the warhead. The control module, with autopilot and data link module, attaches to the rear.

The weapon has two modes of attack. In direct attack, the weapon is locked on to the target before launch and flies a near line-of-sight profile to impact. In the indirect mode, the seeker can be locked on to the target after launch, or the operator can fly the weapon manually to impact, using guidance updates provided through the data link. A "buddy" system may be operated whereby the weapon is launched from one aircraft and controlled by another. The GBU-15 is deployed with the F-15E.

GBU-15(V)1/B. A TV–guided variant, qualified for operational service in 1983 (production complete).

GBU-15(V)2/B. IIR version entered service in 1987.

GBU-15-I. Combines accuracy of GBU-15 with the penetration capability of the improved 2,000-lb BLU-109/B penetrator bomb.

EGBU-15. GPS–guided variant, allowing pilot to select either TV, IR, or GPS guidance over the target, depending on weather and/or threat conditions. USAF had 100 initially produced for Allied Force, with field-level upgrade of over 1,200 existing GBU-15s.

GBU-16 Paveway II
Brief: An unpowered LGB used to destroy high-value enemy targets from short standoff distances.
Function: Air-to-surface glide munition.
First Flight: early 1970s.
IOC: 1976.
Production: not available.
Contractor: Lockheed Martin; Raytheon.
Guidance: semiactive laser.
Warhead: Mk 83 (1,000 lb) bomb.
Dimensions: length 12.1 ft, body diameter 1.2 ft, wingspan 5.5 ft.
Weight: approx 1,000 lb.
Performance: CEP about 29 ft; range 9.2 miles.
COMMENTARY
Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The GBU-16 LGB is used primarily to strike fixed armor. Its platforms include A-10, F-15E, and F-16 aircraft.

GBU-24 Paveway III
Brief: A precise air-to-ground low-level LGB (LLLGB) equipped with an advanced guidance kit.
Function: Air-to-surface penetrating glide bomb.
First Flight: GBU-24A/B (USAF) in service May 1985; GBU-24B/B (Navy) June 1992.
Delivered: from 1986.
IOC: 1986.
Production: USAF 14,000; Navy 12,000.
Contractor: Raytheon.
Guidance: semiactive laser.
Dimensions: length 14.2 ft.
Weight: 2,350 lb.
Performance: range more than 11.5 miles.
COMMENTARY
GBU-24A/B. An air-to-ground weapon equipped with the third generation Paveway III guidance kit, integrated with a BLU-109 penetrating warhead. The kit consists of an advanced guidance section and high-lift airframe. It is extremely precise and highly effective against a broad range of high-value hard targets. The system can be employed from low, medium, and high altitudes, providing operational flexibility through the use of an adaptive digital autopilot and large field-of-regard, highly sensitive scanning seeker. The GBU-24A/B was highly successful during Desert Storm.

The GBU-24 adapts to conditions of release, flies an appropriate midcourse, and provides trajectory shaping for enhanced warhead effectiveness. The weapon is deployed on USAF F-15E and F-16 and Navy F-14 and F/A-18.

GBU-27
Brief: A precise air-to-ground penetrating LGB equipped with an advanced guidance kit.
Function: Air-to-surface guided glide bomb.
First Flight: not available.
Delivered: from 1988.
IOC: 1988 (unconfirmed).
Production: approx 3,000.
Contractor: Raytheon.
Guidance: semiactive laser.
Dimensions: span 5.5 ft, length 13.9 ft.
Weight: 2,170 lb.
Performance: range more than 11.5 miles.
COMMENTARY
To meet the unique requirements of the F-117A, the GBU-24A/B was adapted to GBU-27 standard, incorporating specific guidance features to accomplish this mission. The GBU-27 is extremely precise and was used to great effect in Desert Storm.

EGBU-27. Integrates GPS/INS guidance into the existing GBU-27 laser seeker to provide adverse weather capability and improved target location. Entered production in FY98. First operational use was in Iraqi Freedom.

GBU-28
Brief: A large 5,000-lb class air-to-ground penetrating LGB equipped with an advanced laser guidance kit, used for striking and destroying hard underground targets.
Function: Air-to-surface guided glide bomb.
First Flight: February 1991.
Delivered: circa 1991.
IOC: 1991.
Production: approx 500.
Contractor: Raytheon.
Dimensions: length 19.2 ft, diameter 1.2 ft.
Weight: 4,676 lb.
Performance: range more than 5.75 miles.
COMMENTARY
Under USAF's rapid-response program, the GBU-28 bunker-busting LGB was developed for Desert Storm for use against deeply buried, hardened C2 facilities. Four of the GBU-28 weapons were used during the war: two for testing and two by F-111Fs against a bunker complex Feb. 27, 1991. Guidance is by a modified GBU-27 system.

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: 240,882 (planned).
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 AV-8B, B-1, B-2, B-52, F-14, F-15E, F-16, F-35, F-117A, F/A-18C/D/E/F, and F/A-22 aircraft.

GBU-31. Variant that adds an INS/GPS guidance kit to the 2,000-lb general-purpose Mk 84 bomb or the 2,000-lb BLU-109 penetrator. First used in combat March 24, 1999.

GBU-32. Variant that adds an INS/GPS guidance kit to the 1,000-lb general-purpose Mk 83 bomb or the 1,000-lb BLU-110 penetrator.

GBU-38. Variant that adds an INS/GPS guidance kit to the 500-lb general-purpose Mk 82 bomb. First production deliveries, slated for the B-2, expected in 2004.

Planned upgrades include an antispoofing GPS receiver and low-cost antijam antenna.

Massive Ordnance Air Blast (MOAB) Bomb
Brief: A massive precision guided munition designed to be dropped by B-1, B-2, or B-52 bombers.
Function: Massive bomb.
Guidance: GPS/INS.
Warhead: 18,000 lb, high explosive.
Dimensions: length 30 ft, diameter 3.3 ft.
Weight: 21,500 lb.
COMMENTARY
On March 11, 2003, USAF live-tested the largest PGM developed to date. Unlike the earlier unguided "Daisy Cutter" bomb, the MOAB does not require a parachute. Testing continues.

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: FY06.
Production: 24,000 (planned).
Contractor: Boeing.
Guidance: GPS/INS.
Dimensions: TBD.
Weight: 250-lb class.
Performance: near precision capability against fixed and relocatable targets in all weather; standoff range up to 46 miles.
COMMENTARY
The Small Diameter Bomb (SDB) is a 250-lb class weapon that increases loadout (number of weapons an aircraft can carry), thus maximizing the number of kills per sortie. It will use a common MIL-STD 1760 carriage system carrying four weapons. Some aircraft will also carry them internally. The SDB will provide fighter and bomber aircraft with an air-to-surface standoff capability from outside of point defenses against fixed targets. The SDB will use GPS/INS for guidance. Threshold aircraft for SDB is the F-15E. Objective aircraft include the A-10, B-1, B-2, F-16, F-35, F-117, F/A-22, and UCAV. The SDB weapons system will be interoperable with the information exchange requirements of the air operations theater C2 and intelligence-surveillance-reconnaissance (ISR) architecture. Boeing was awarded the contract to develop the SDB in August 2003.

Wind-Corrected Munitions Dispenser
Brief: A tail kit fitted to CEM/Gator/SFW (CBU-87/89/97) and CBU-107 PAW 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: from 2000.
IOC: FY00.
Production: 26,412 (planned), with 11,103 delivered as of Nov 30, 2003.
Contractor: Lockheed Martin.
Dimensions: length 1.4 ft, diameter 1.3 ft.
Weight: 100 lb.
Performance: range about eight miles.
COMMENTARY
USAF is modifying standard tactical munition dispensers with guidance kits to compensate for wind drift on downward flight from high altitudes. The combat-proven WCMD kits include an INS guidance unit, movable tail fins that pop out in flight, and a signal processor. The kits are fitted on the following inventory cluster weapons: CEM (CBU-103), Gator (CBU-104), SFW (CBU-105), and PAW (CBU-107). Successful flight testing began in February 1996; WCMDs are now operational on B-1, B-52, F-15E, and F-16 aircraft. Objective aircraft are A-10, B-2, F-117, and F-35.

Satellite Systems

Advanced EHF (AEHF)
Brief: Joint service satellite communications system that provides global, secure, protected, and jam-resistant communications for high priority air, ground, and sea assets.
Function: near-worldwide, secure, survivable satellite communications.
Operator: AFSPC.
First Launch: April 2007 (planned).
IOC: 2009 (planned).
Constellation: three satellites.
Design Life: 14 years.
Launch Vehicle: evolved expendable launch vehicle.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 22,000+ miles (geosynchronous).
Contractor: Lockheed Martin.
Dimensions: length 32 ft (across payload axis), width 75.8 ft (across solar array axis).
Weight: approx 13,500 lb at launch, 9,000 lb on orbit.
Performance: 10 times the capability of the Milstar Block II satellite.
COMMENTARY
The Advanced EHF (AEHF) system comprises three satellites in geosynchronous orbit that provide 10 times the capacity of the 1990s-era Milstar Block II satellites. Advanced EHF allows the President, Secretary of Defense, and combat forces to control their tactical and strategic forces at all levels of conflict through general nuclear war and supports the attainment of information superiority. AEHF will provide connectivity across the spectrum of mission areas, including air, land, and naval warfare; special operations; strategic nuclear operations; strategic defense; theater missile defense; and space operations and intelligence.

Defense Meteorological Satellite Program
Brief: Satellites that collect air, land, sea, and space environmental data to support worldwide strategic and tactical military operations.

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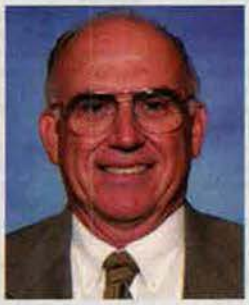

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Function: Environmental monitoring satellite.
Operator: National Polar-orbiting Operational Environmental Satellite System (NPOESS) program office.
First Launch: May 23, 1962
IOC: classified but in use during Vietnam War.
Constellation/on-orbit: two.
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 1,200–1,300 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 F16, the first Block 5D-3 satellite, was launched successfully on Oct. 18, 2003. (DMSP F15, with a 5D-3 satellite bus but 5D-2 sensors, was launched Dec. 12, 1999, and is credited as the first 5D-3 launch.) Block 5D-3 satellites have an improved spacecraft bus and sensors that provide for longer and more capable 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 C2 communication.
Function: Communications satellite.
Operator: AFSPC.
First Launch: 1971 (DSCS II); 1982 (DSCS III); 2000 (DSCS III/SLEP).
IOC: Dec. 13, 1978 (DSCS II).
Constellation: five (III).
Design Life: 10 yr (III).
Launch Vehicle: Atlas II.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 22,000+ miles in geosynchronous orbit.
Contractor: Lockheed Martin.
Power Plant: solar arrays generating 1,269 watts, decreasing to 980 watts after 10 yr; 1,500 watts (SLEP).
Dimensions: rectangular body 6 ft x 6 ft x 7 ft; 38-ft span with solar arrays deployed.
Weight: 2,580 lb; 2,716 lb (SLEP).
Performance: DSCS satellites orbit Earth at about 22,000 miles altitude and employ six SHF transponder channels for secure voice and high-rate data communications.
COMMENTARY
DSCS III. The Defense Satellite Communications System provides worldwide, high-bandwidth satellite communications supporting strategic and tactical C3I 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 antijam capability, and host the AFSATCOM package (single channel transponder) for dissemination of protected emergency action messages. The last four DSCS satellites underwent a SLEP. These provide approximately twice the bandwidth of the original DSCS III satellites. The first SLEP satellite was launched in FY00. The DSCS inventory was fully deployed in 2003. The modernization of satellite communications will continue with the deployment of the Wideband Gap-filler Satellites (WGS).

Defense Support Program
Brief: An early warning spacecraft that travels in geosynchronous orbit and provides alert of possible ballistic missile attack on US forces or homeland.
Function: Strategic and tactical launch detection system.
Operator: AFSPC.
First Launch: November 1970.
IOC: circa 1972.
Constellation: classified.
Design Life: three yr.
Launch Vehicle: Titan IV IUS.
Unit Location: Peterson AFB, Colo.
Orbit Altitude: 22,000+ miles in geosynchronous orbit.
Contractor: TRW (now Northrop Grumman); Aerojet.
Power Plant: solar arrays generating 1,485 watts.
Dimensions: diameter 22 ft, height 32.8 ft, with solar paddles deployed.
Weight: 5,000 lb (approx).
Performance: orbits at approx 22,000 miles altitude in geosynchronous orbit; uses IR sensors to sense heat from missile and booster plumes against Earth's background.
COMMENTARY
The incredibly flexible Defense Support Program (DSP) satellite system was used extensively in Desert Storm to detect theater missile launches against coalition forces. Though not designed to spot and track smaller missiles, the system was highly successful in detecting launches, enabling timely warnings of Iraqi Scud attacks. Using existing sensors and data collection sources, global data related to theatre missile warning was transmitted to the Attack and Launch Early Reporting to Theater (ALERT) and Shield systems then located at the National Test Facility (NTF) at Schriever AFB, Colo. The Space Based Infrared System (SBIRS) mission control station (MCS), located at Buckley AFB, Colo., became operational in December 2001 and now performs both the strategic and theater missile warning missions. ALERT was deactivated in September 2001 and Shield continues as a research and development effort that evaluates and demonstrates the potential benefits of using multiple data sources and novel techniques in support of missile warning.
DSP satellites are a key part of the North American and theater early warning systems, capable of detecting missile launches and nuclear detonations. Warning data are fed to NORAD and US Strategic Command early warning centers at Cheyenne Mountain AFS, Colo. Since the first launch, DSP satellites have provided an uninterrupted early warning capability to the US; 21 satellites have been launched to date. USAF plans to launch the final two DSPs in 2004-05. America's early warning capability will be modernized with the introduction of the new Space Based Infrared System to be phased in beginning in FY07.

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 less than 100 ft.
Function: Worldwide navigation satellite.
Operator: AFSPC.
First Launch: Feb. 22, 1978.
IOC: Dec. 9, 1993.
Constellation: 28.
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 a third civilian channel. Block IIF satellites are expected to enter service in mid–2006.

Milstar Satellite Communications System
Brief: A satellite communications system that provides secure, jam-resistant worldwide C2 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: five.
Design Life: 10 yr.
Launch Vehicle: Titan IV/Centaur.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 22,300 miles.
Contractor: Lockheed Martin; Boeing; TRW (now Northrop Grumman).
Power Plant: solar arrays generating almost 5,000 watts.
Dimensions: length 51 ft, width 116 ft (with full solar array extension).
Weight: 10,000 lb.
Performance: 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 was fully deployed in 2003, and modernization of satellite communications will continue with the Advanced EHF (AEHF) constellation deployment.

Polar MILSATCOM
Brief: Satellite that provides secure, survivable communications, supporting peacetime, contingency, and wartime operations in the North Pole region, above 65° north latitude.
Function: Communications satellite.
Operator: USN.
First Launch: late 1997.
IOC: 1997.
Constellation: three.
Design Life: host satellite dependent.
Launch Vehicle: not available.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 25,300 miles.
Contractor: classified.
Power Plant: 410 watts consumed by payload (power from host solar array).
Dimensions: numerous items integrated throughout host.
Weight: 470 lb (payload).
COMMENTARY
Augmenting the Milstar constellation, the Polar MILSATCOM payload is a cost-effective means of providing secure communications for the northern polar region. Like Milstar, the system enables worldwide operations by linking strategic and tactical forces with secure, jam-resistant EHF communication links.

Space Based Infrared System High
Brief: Advanced surveillance system for missile warning, missile defense, battlespace characterization, and technical intelligence. System includes satellites in geosynchronous Earth orbit (GEO) and highly elliptical orbit.
Function: IR space surveillance.
Operator: AFSPC.
First Launch: (planned) High GEO: FY07.
IOC: TBD.
Constellation: High: four GEO sats, two highly elliptical orbit sensors.
Design Life: not available.
Launch Vehicle: Evolved Expendable Launch Vehicle (EELV) Heavy.
Unit Location: Buckley AFB, Colo.
Orbit Altitude: High at approx 22,300 miles.
Contractor: Lockheed Martin.
Power Plant: not available.
Dimensions: not available.
Weight: not available.
COMMENTARY
The follow-on to the DSP is the Space Based Infrared System **(SBIRS) High.** SBIRS High is an integrated "system of systems" including satellites in GEO, sensors hosted on satellites in highly elliptical orbits, and ground assets.
SBIRS is being fielded incrementally. Increment 1 consolidated all DSP ground processing in one CONUS master control station at Buckley AFB, Colo. IOC was

declared Dec. 18, 2001. Increment 2 will field the space and ground assets. SBIRS High is in the EMD phase led by a Lockheed Martin team. The system will integrate the Space Tracking and Surveillance System (STSS) capabilities as they become available.

Space Tracking and Surveillance System
Brief: Advanced surveillance system with IR and visible sensors for detecting and tracking ballistic missiles. STSS (formerly SBIRS Low) will have satellites in low Earth orbit (LEO) that work in concert with SBIRS High and other missile defense systems.
Function: Space surveillance.
Operator: AFSPC.
First Launch: FY06-07 (planned).
IOC: TBD.
Constellation: TBD (from nine up to 30 under consideration).
Design Life: not available.
Launch Vehicle: TBD.
Unit Location: TBD.
Orbit Altitude: 60–300 miles.
Contractor: Northrop Grumman (completion and launch of two R&D satellites).
Power Plant: not available.
Dimensions: not available.
Weight: not available.
COMMENTARY
The Missile Defense Agency manages the Space Tracking and Surveillance System (STSS), which, in December 2002, replaced the program known as SBIRS Low. In April 2002, MDA ended the SBIRS Low program definition and risk reduction competition and named TRW (purchased by Northrop Grumman) as prime contractor for a redefined space-based sensor R&D element of MDA's integrated Ballistic Missile Defense System (BMDS). The initial STSS contract calls for completion and launch of two LEO satellites in FY06–07 under Block 2006. New technologies will be inserted into subsequent R&D satellites under Block 2008 and beyond, leading to an operational system.

Wideband Gap-filler Satellite (WGS)
Brief: Satellites that provide wideband communications for deployed tactical forces (air, land, and sea).
Function: Worldwide satellite communications.
Operator: AFSPC.
First Launch: December 2005 (planned).
IOC: August 2007 (planned).
Constellation: five satellites.
Design Life: 14 years.
Launch Vehicle: EELV.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: GEO.
Contractor: Boeing.
Dimensions: based on Boeing 702 Bus.
Weight: 13,000 lb.
Performance: approx 12 times the capability of a DSCS satellite.
COMMENTARY
The WGS constellation, planned to consist of five satellites will provide two-way services for national leaders, DTS, DISN, and all service ground fixed and mobile users. In addition it will provide direct broadcast of digital multimedia, high-bandwidth imagery, and video information directly from global and theater sites to deployed warfighters. The satellites will have X-band (DSCS III–like), Ka-band broadcast (GBS Phase 2–like), two-way Ka-band services, and cross-channelization between its X- and Ka-band services.

MQM-107 Streaker (TSgt. Michael Ammons)

QF-4E (SrA. Matthew C. Simpson)

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).
Unit Location: Tyndall AFB, Fla.
Contractor: Raytheon (D model); Marconi (formerly Tracor) (E model).
Power Plant: initially on D model, one Teledyne CAE 373-8 engine, 950 lb thrust; MQM-107Ds delivered since 1989 have 950 lb thrust TRI 60-5 turbojets. Microturbo TRI 60-5 engine, 1,061 lb thrust or TCAE 373-8B (E model).
Guidance and Control: analog or digital, for both ground control and preprogrammed flight (D model); high–G autopilot provisions; digital autopilot and remote control by the Gulf Range Drone Control Upgrade System (GRDCUS), a multifunction C2 multilateration system (E model).
Dimensions: length 18.1 ft, body diameter 1.3 ft, span 9.8 ft.
Weight: max launch weight (excl booster) 1,460 lb.
Performance: operating speed 207–630 mph, operating height 50–40,000 ft, endurance 2 hr 15 min.
COMMENTARY
MQM-107D. A third generation version of the MQM-107 Streaker, it is a recoverable, variable-speed target drone used for research, development, test, and evaluation and the Weapon System Evaluation Program.
MQM-107E. Improved performance follow-on to the MQM-107D. In operational service, it replaces the MQM-107D and expands the flight envelope.

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: 33.
Unit Location: Tyndall AFB, Fla.
Contractor: Teledyne Ryan.
Power Plant: one General Electric J85-GE-100 turbojet, 2,850 lb thrust.
Guidance and Control: remote-control methods incl choice of radar, radio, active seeker, and automatic navigator developed by Teledyne Ryan; the current model of the BQM-34A is configured to accommodate the 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.
Inventory: 54.
IOC: not available.
Unit Location: Tyndall AFB, Fla. (detachment at Holloman AFB, N.M.)
Contractor: Marconi (formerly Tracor).
Power Plant: two General Electric J79-GE-17 turbojets, each with approx 17,000 lb thrust with afterburning.
Guidance and Control: remote-control methods incl the GRDCUS (Tyndall) and the Drone Formation and Control System (Holloman); will also accommodate the triservice Target Control System currently under development.
Dimensions: length 16 ft, height 6 ft, wingspan 38.4 ft.
Weight: mission operational weight 49,500 lb.
Performance: max speed Mach 2+, ceiling 55,000 ft, range (approx) 500 miles.
COMMENTARY
The QF-4 replaced the QF-106 Full-Scale Aerial Target (FSAT) in 1998 when the F-106 inventory was depleted. The QF-4 provides for a larger operational performance envelope (maneuvering) and greater payload capability compared with its predecessors.
More than 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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AF031

AFA / AEF National Report

afa-aef@afa.org

By Frances McKenney, Assistant Managing Editor

Enlisted Heritage

Air Force Association Chairman of the Board John J. Politi attended the graduation ceremony for the Senior NCO Academy at Gunter Annex, Maxwell AFB, Ala., in March.

He and retired CMSAF James M. McCoy presented the highest award for academic achievement in Class 04-B to MSgt. John L. Barnhouse, now with the 502nd Air Operations Squadron, Hickam AFB, Hawaii. The award is sponsored by AFA and is named for McCoy, who was the sixth Chief Master Sergeant of the Air Force (1979-81) and later the association's National President and Board Chairman.

The day before the ceremony, Politi was the honored guest at the **Montgomery Chapter's** "Air Force Issues Luncheon," held at the Falcon's Nest club at Gunter, and presented AFA national-level awards to chapter members (listed in November 2003, p. 73). Retired Col. John A. Warden III, one of the key planners of the Operation Desert Storm air campaign, was guest speaker, describing his view of the future for the Air Force. Warden retired from USAF in 1995 and heads a strategic planning company in Montgomery.

Politi also toured Enlisted Heritage Hall at Gunter with CMSAF Gerald R. Murray and Chapter President Mark Dierlam. The hall displays artifacts and documents on the contributions of enlisted personnel to the Air Force and its predecessor organizations. Plans are under way to build a 3,000-square-foot addition to the facility, and, on the chapter's behalf, Dierlam presented a check for $2,000 that is earmarked for exhibits to be housed in the new space. The chapter has an overall goal of raising $200,000 for the supplies and materials EHH needs to construct its museum displays. The fund drive is called "Berlin to Baghdad."

CMSgt. David L. Hamel, director of the Enlisted Heritage Research Institute and also a Montgomery Chapter member, and William I. Chivalette, institute curator, accepted the chapter's donation.

USAF photo by Melanie Rogers

AFA Board Chairman John Politi and retired CMSAF James McCoy present the academic achievement award to MSgt. John Barnhouse at the Senior NCO Academy graduation in March.

Cross Into the Blue

It's the US Air Force's recruiting slogan, and for the past year, SSgt. Robert Barnes has explained to potential recruits in south-central Indiana why they should "Cross Into the Blue."

In February, he spoke about this challenge to the **Columbus–Bakalar Chapter (Ind.).** Barnes's recruiting area covers nearly 2,000 square miles, with just about the same number of high school seniors attending 12 high schools. Barnes has been in the Air Force for 14 years and was a cruise missile maintainer at Minot AFB, N.D., before becoming an enlisted accessions recruiter in Columbus, Ind. According to Chapter Vice President James R. Alvis, Barnes—who is assigned to the 330th Recruiting Squadron—has had success by emphasizing service to country and, particularly, educational opportunities for enlisted personnel.

Another part of the chapter's evening program covered the Veterans History Project. Established by public law in 2000 under the American Folklife Center at the Library of Congress, the project involves collecting oral histories and personal documents from American war veterans and those who served in their support. Volunteers conduct the interviews.

One of the interviewers, Elizabeth Bond–Petro, spoke to the chapter about talking with veterans in Bartholomew County, Ind. She is one of many volunteers working through the office of Indiana Sen. Richard G. Lugar (R). She told the audience about the usual questions covered in interviews and played part of one, on audio tape, that she had conducted. Some of the veterans she has interviewed have never shared their wartime recollections before, and Bond–Petro said this is why she decided to participate in the project. Her late father received a Bronze Star in World War II Army service but had not talked to her about his service or the award.

Lugar's Web site states that his volunteers have collected nearly 3,000 interviews, accounting for a quarter of all those on file for the project at the Library of Congress. Lugar is a Navy veteran, having served from 1957 to 1960.

Under Fire

A Department of Homeland Secu-

rity official told a meeting of the **David D. Terry Jr. Chapter (Ark.)** that creating the new agency was akin to building an airplane in the air while being shot at.

Asa Hutchinson, undersecretary for border and transportation security at DHS, addressed the chapter in January at Little Rock AFB, Ark. The former Congressman from Arkansas (1997-2001) now heads a directorate of more than 110,000 personnel who coordinate enforcement activities at borders and in transportation and immigration systems.

Maj. Jonathan P. Shockey, the Terry Chapter president, said that Hutchinson spoke about USAF's role in the war on terror, initiatives on immigration and confirming identities of foreign visitors, and about the need for the base and its civilian community to work with DHS to deter terrorism.

Hutchinson was appointed to the Homeland Security position in January 2003. Before then, he had been administrator of the Drug Enforcement Agency.

Shockey noted that this breakfast meeting at the base's consolidated club brought out more than 130 guests, among them officials from the base and its reserve units, as well as local business leaders. A large contingent of the state and chapter AFA officers there included Lt. Col. Kevin Sluss, state president; Jerry Reichenbach, state secretary; and Wayne Cullins, state treasurer. Also on hand was National Director Julie E. Petrina of the **Baltimore Chapter.**

Distinguished American

Rep. C.W. "Bill" Young (R-Fla.) recently received the Distinguished American Award from the **Nation's Capital Chapter (D.C.) .**

Chapter President Joel "Tom" Coney presented the honor to the House Appropriations Committee chairman in March at the chapter's quarterly Congressional luncheon.

"Each year," Coney said, "the chapter proposes several candidates who we feel meet the criteria of the award. Besides being a strong supporter of defense and in particular the Air Force, Air National Guard, and Air Force Reserve, we seek someone who is also focused on helping retirees, veterans, and the American public." Young was selected because of his attention to national security issues, as well as his advocacy of biomedical research and the national marrow donor program.

In accepting the award, the Congressman mentioned that he was running late because he had been meeting wounded Marines at the National Naval Medical Center in Bethesda, Md., while his wife, Beverly, visited wounded troops at Walter Reed Army Medical Center in D.C. Young, who served in the Army National Guard from 1948 to 1957, said he or his wife visit war casualties at least once a week.

Young also noted that some people question why the Air Force needs to improve its weapons systems, but he said as a father, he wouldn't want his children flying in anything less than "the very best."

Those two points, Coney said later, illustrated why Young deserved the chapter award.

The No. 1 Problem

Sen. Saxby Chambliss (R-Ga.) spoke at Robins AFB, Ga., in March at a lunch gathering co-hosted by the **Carl Vinson Memorial Chapter** and the local chapter of the Reserve Officers Association.

Chambliss told the audience that the large number of Guard and Reserve members who do not have health care is affecting military readiness. The base newspaper reported him as saying that the No. 1 problem is dental care, with a large percentage of reservists turned down or delayed for deployment as a result of years of poor dental care.

A member of the Senate Armed Services Committee, Chambliss was first elected to Congress in 1994, serving four terms as a Congressman before being elected to the Senate in 2002. Along with membership on other committees, he is in the Senate Caucus on Military Depots, Arsenals, and Ammunition Plants. Among the more than 140 guests at the luncheon was Brig. Gen. Michael A. Collings, commander of Warner Robins Air Logistics Center.

Chapter President Lynn Morley reported that Chambliss also talked about the upcoming base realignment and closure round and the war on terror.

Where Warheads Go to Die

The *New York Times* once described the Pantex Plant near Amarillo, Tex., as "the place where warheads are made and where they go to die."

Members of the **Panhandle AFA Chapter (Tex.)** learned about the plant's history and mission in a briefing presented by Larry Boyer at their February meeting. Boyer is a section manager in Pantex's Safety and Health/Emergency Services Division and retired from the Air Force as a senior master sergeant, specializing in bioenvironmental engineering services.

The facility was constructed in 1942 as an Army ordnance plant. Its more than 16,000 acres encompassed not only loading lines for conventional bombs but also residence buildings, a community center, store, and movie theater. Pantex closed down three years later but reopened in 1951 for nuclear weapons and high-explosives operations. The last nuclear weapon was completed there in 1991.

Today, contractor BWXT Pantex, Sandia National Laboratory, and the Army Corps of Engineers carry out the plant's industrial operations for the Department of the Energy. Along with weapons evaluation, repair, and

AFA Board Chairman John Politi looks over plans for an expansion of Enlisted Heritage Hall at Gunter Annex, Ala., as CMSgt. David Hamel of the Enlisted Heritage Research Institute explains the project. See "Enlisted Heritage," p. 170.

AFA In Action

The Air Force Association works closely with lawmakers on Capitol Hill, bringing to their attention issues of importance to the Air Force and its people.

■ AFA Executive Director Donald L. Peterson and staff attended a veterans roundtable discussion hosted by House Democratic leaders. Meeting with representatives from several veterans and service organizations to discuss the 2005 budget for the Department of Veterans Affairs and other issues were **Rep. Lane Evans** (Ill.), ranking Democratic member of the House Veterans' Affairs Committee, and **Rep. Nancy Pelosi** (Calif.), House Democratic Leader.

Discussion ranged from the VA's plan to streamline its operations, including closing some hospitals, and efforts to reform the Survivor Benefit Plan. (See "Action in Congress," April, p. 22.) AFA is working with the Military Coalition, an umbrella group of service organizations, and lawmakers on these and other veterans issues.

■ At a recent USAF and AFA breakfast on Capitol Hill, **Gen. T. Michael Moseley,** USAF vice chief of staff, spoke to lawmakers who are members of the Air Force Caucus. Moseley highlighted Air Force successes from Operation Iraqi Freedom and provided a look to the service's future. A key topic of concern for members of Congress at the session was the Air Force's F/A-22 program, which is undergoing another review. (See "The F/A-22 Force Forms Up," April, p. 34.) Lawmakers also queried Moseley about the state of electronic warfare and current operations in Afghanistan and Iraq. **Sen. Mike Enzi** (R-Wyo.), **Sen. Ben Nelson** (D-Neb.), **Rep. Phil Gingrey** (R-Ga.), and **Rep. Joseph Pitts** (R-Pa.) were among those present.

■ The Capitol Hill breakfast venue also presented an opportunity for Ed Grillo, president of the Air Force Memorial Foundation, to provide lawmakers with an update on the progress of the Air Force Memorial.

■ AFA and the Air Force Senate Liaison Office co-hosted a reception on Capitol Hill for Senate military legislative assistants and those who work Air Force issues. The primary purpose of the event, which drew more than 125 Hill staff members, was to discuss current legislation and Air Force programs. Also in attendance were Air Force Legislative Fellows and staff from the Air Force's Legislative Liaison office.

Some of the Congressional staffers attending were Angela Kouters of the Senate Commerce Committee, Ann Hollingsworth from the office of **Sen. Fritz Hollings** (D-S.C.), John Bonsell, military legislative assistant in the office of **Sen. James Inhofe** (R-Okla.), and Caroline Tess of **Sen. Bill Nelson's** (D-Fla.) office.

■ AFA's Government Relations staff recently met with Lars Anderson, communications director for **Rep. Adam Smith** (D-Wash.) to discuss AFA's 2004 Statement of Policy and Top Issues. They also encouraged Smith, who serves on the House Armed Services Committee and has McChord Air Force Base in his district, to join the Air Force Caucus.

disassembly, the plant develops the high explosives that surround nuclear components of weapons and is an interim storage site for plutonium cores.

Chapter Secretary George F. Moore said several AFROTC cadets from Texas Tech University drove two hours from Lubbock to attend this chapter meeting.

A New Name

On Nov. 15, 2003, the Greater Cincinnati Chapter was rededicated as the **Gen. Joseph W. Ralston Chapter.**

Ralston, who retired in March 2003 as commander, US European Command and Supreme Allied Commander Europe, graduated from Norwood High School in Cincinnati. He entered the Air Force after graduating from Miami University in Oxford, Ohio.

Chapter President Stephen Dillenburg said AFROTC cadets from Ralston's alma mater attended the banquet where the chapter was renamed. Ralston told the audience that he had signed up for AFROTC at the university originally just to fill a gap in his freshman-year class schedule, without thoughts of an Air Force career. He then challenged the cadets to take on each assignment to the best of their abilities. The career, he said, will take care of itself.

According to Dillenburg, the retired four-star described the renaming of the chapter as one of the most humbling tributes of his career. Ralston, a member of the **Edward J. Monaghan Chapter (Alaska),** spent an hour talking to the audience afterward and posing for photos.

AFA leaders on hand to greet him included Daniel E. Kelleher, state president, and W. Ron Goerges, a national director and the 2003 AFA Member of the Year. Both are from the **Wright Memorial Chapter.**

Eaker Institute in LA

Rebecca Grant, president of IRIS Independent Research of Washington, D.C., and a fellow of Aerospace Education Foundation's Eaker Institute, delivered a presentation to the Rotary Club of Los Angeles in February.

Called "A Look Back on Iraq," the lecture covered the role of airpower before and during Operation Iraqi Freedom. AEF had funded Grant's research into the topic. (Grant is also a contributing editor to *Air Force* Magazine.)

The audience—nearly half of them women—was particularly interested in Grant's recounting of the role of women in the war. She mentioned the responsibilities of her niece, Ensign Rachael Gosnell, who served as a gunnery officer on the cruiser USS *Shiloh* in the Persian Gulf. Grant also spoke about USAF Capt. Kim Campbell, who flew an A-10 back to safety after its engine was hit by enemy fire during a mission over Baghdad, and Capt. Tricia Paulson, KC-135 aircraft commander, flying in the airspace over Kirkuk during a search and rescue mission.

The luncheon presentation took place at a private club for business executives and had been suggested by Roy Wuchitech and E. Robert Skloss, members of the **Gen. B.A. Schriever Los Angeles Chapter.**

AEF established the Eaker Institute in 1996 as a public policy and research arm to expand its educational and publishing efforts in the areas of aerospace and national security policy. Named after the World War II commander of Eighth Air Force, Gen. Ira C. Eaker, the institute hosts discussions among aerospace thinkers, conducts defense colloquia, and through public forums such as Grant's presentation, in-

creases public awareness of aerospace issues.

Eaker Institute publications include "Gulf War II: Air and Space Power Led the Way," by Grant. Copies were distributed at the luncheon.

Black History on Long Island

Members of several New York chapters participated in Black History Month activities on Long Island in February.

The Cradle of Aviation Museum in Garden City, N.Y., featured appearances by Tuskegee Airmen, including **Long Island Chapter** members Victor W. Terrelonge and Robert Olden Sr. Joining them was chapter member Eugene Garges Jr., who was an instructor pilot for the World War II African American airmen.

The museum chose a week in February that coincided with the winter holiday break for local schoolkids and invited the Tuskegee Airmen to spend every afternoon meeting youngsters, posing for photos, and autographing copies of books on the history of America's first black military airmen.

Earl Heron, from the **Queens Chapter,** held a book signing at the museum store twice during that week. His book, *One Desert Jet Turner: A Perspective on Youth, Fighter Aircraft, and Cold War,* covers experiences during his six years in the Air Force in the 1980s, encompassing assignments as an F-4 and F-16 mechanic at Nellis AFB, Nev., and a C-130 flight engineer at Pope AFB, N.C.

Long Island Chapter Vice President Christopher Patti lent the museum photos and descriptions of achievements by black aviators. Mounted on three folding panels and entitled "Standing on the Shoulders of Giants," it is one of three displays that he has assembled to help draw attention to AFA at local events.

Also receiving recognition during the week was Nancy Leftenant–Colon of the **Gen. Daniel "Chappie" James Jr. Memorial Chapter.** She became the first black nurse in the Regular Army Nurse Corps in the mid-1940s, after first being commissioned on reserve status in 1945. Leftenant–Colon was one of 13 children, six of whom served in the military, including a Tuskegee Airman who died in World War II service. She later became a flight nurse, after USAF was made a separate service, and retired as a major in 1965. In the 1990s she was national president of Tuskegee Airmen, Inc. As part of this year's Black History observances, Leftenant–Colon received the first African Americans of Distinction Award from the Nassau County executive, Thomas R. Suozzi.

More AFA/AEF News

■ Several members of the **Capt. Eddie Rickenbacker Memorial Chapter (Ohio)** were on hand in November 2003 for the dedication of a historical marker commemorating their chapter's namesake. The marker is located at Rickenbacker Airport in Columbus, Ohio. Rickenbacker, who achieved 26 aerial victories in World War I, was a Columbus native and a Medal of Honor recipient. At the marker dedication ceremony, Richard W. Hoerle, the chapter's VP for communications, spoke about Rickenbacker's life and helped unveil the marker with Chapter President Richard H. Coots and members Warren E. Motts and Melvin H. Gerhold. ■

Have AFA/AEF News?

Contributions to "AFA/AEF National Report" should be sent to *Air Force* Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Phone: (703) 247-5828. Fax: (703) 247-5855. E-mail: afa-aef@afa.org.

AFA Conventions

April 30-May 1	New Jersey State Convention, Atlantic City, N.J.
April 30-May 1	South Carolina State Convention, Columbia, S.C.
May 8	Ohio State Convention, Columbus, Ohio
May 13-15	California State Convention, Palm Springs, Calif.
June 4-5	Oklahoma State Convention, Enid, Okla.
June 4-6	New York State Convention, Ronkonkoma, N.Y.
June 14	Delaware State Convention, Dover, Del.
July 16-18	Pennsylvania State Convention, Altoona, Pa.
July 17	Florida State Convention, Tampa, Fla.
July 23-25	Texas State Convention, Fort Worth, Tex.
July 31	North Carolina State Convention, Asheville, N.C.
Aug. 6-7	Illinois State Convention, Galesburg, Ill.
Aug. 12	Alaska State Convention, Anchorage, Alaska
Aug. 13-14	Missouri State Convention, Kansas City, Mo.
Aug. 14	Georgia State Convention, Warner Robins, Ga.
Aug. 20	Colorado State Convention, Aurora, Colo.
Aug. 20-21	Iowa State Convention, Fort Dodge, Iowa
Aug. 21	Utah State Convention, Ogden, Utah
Sept. 13-15	AFA Air and Space Conference, Washington, D.C.

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1st Air Commando Assn. Sept. 1-5 at the Pere Marquette Hotel in Peoria, IL. **Contact:** W.S. Mitsdarffer (815-223-7515).

1st Mobile/Combat Communications Gp/Sq. Oct. 12-14 in Biloxi, MS. **Contacts:** Don Devine (352-241-4965) (don@1stmob.com) or Dick Gillis (478-922-1377) (rtgillis@cox.net) (www.1stmob. com).

2nd Chemical Mortar Battalion and 461st Infantry Battalion, Korea (1950-53). Sept. 22-26 at the Radisson Hotel in Norfolk, VA. **Contact:** William Thomas, 7418 Overdale Dr., Dallas, TX 75254 (972-387-1247).

4th Emergency Rescue Sq Assn. Oct. 13-17 in Corpus Christi, TX. **Contact:** Chet Gunn (781-944-6616) (tightboot@msn.com).

19th ARS, SAC, Homestead AFB, FL, and Otis AFB, MA. Sept. 26-29 at the Shades of Green Resort in Orlando, FL. **Contacts:** Jack Crawford, 1571 N. Ridge Lake Cir., Longwood, FL 32750 (407-767-0722) (jcrawford11@cfl.rr.com) or Frank Szemere (850-862-4279) (fszemere@gnt.net).

21st FBW, Chambley AB, France. June 18-21 at the Holiday Inn Washington Dulles Arpt., Sterling, VA. **Contact:** Robert Sisk, Box 193, Emory, TX 75440 (903-473-2272).

36th TAS, McChord AFB, Wash. Sept. 17-22 in Reno, NV. **Contact:** Tom Hansen (253-380-5261) (c130hans@msn.com).

43rd TFS, Elmendorf AFB, AK. June 9-11 in Anchorage, AK. **Contacts:** Tom Walker (907-892-0211) (tomwalker@bigfoot.com) or Will Abbott (907-248-3798) (wsabbott@gci.net).

48th FS, FIS, & FTS. Oct. 20-24 at Langley AFB in Hampton, VA. **Contact:** Joe Onesty, 455 Galleon Way, Seal Beach, CA 90740-5937 (562-431-2901) (jonesty2@juno.com).

62nd TCS/ALS/AS. Dec. 1-4 in Little Rock, AR. **Contact:** Capt. Edwin Markie, 266 Cannon Dr., Little Rock AFB, AR 72099 (501-987-3653) (edwin.markie@littlerock.af.mil).

63rd Troop Carrier Wg, Donaldson AFB, SC (1953-63). Sept. 25-28 at the Savannah Marriott Riverfront Hotel in Savannah, GA. **Contact:** Keith Holmquist, 2021 Shelter Pt., Anderson, SC 29626 (864-226-6869) (keshi@charter.net).

92nd USAAF–USAF Memorial Assn, including 92nd BG, BW, and ARW. Oct. 12-17 at the Westin Crown Center in Kansas City, MO. **Contact:** Irv Baum, 3935 Young Ave., Napa, CA 94558-2654 (marirv92bg@aol.com).

96th ARS, Altus AFB, OK (1953-65). Oct. 12-15 in New Bern, NC. **Contact:** Terry Murphy, 904 Hidden Dr., New Bern, NC 28562 (252-637-9959) (terkat@coastalnet.com).

301st BG/Wg Assn. Oct. 28-30 in Las Vegas. **Contact:** Frank Riggsby (702-254-0203) (doredson@webtv.net).

307th BW/Gp (1946-54). Sept. 29-Oct. 3 at the Red Lion Hanalei Hotel in San Diego. **Contact:** Cyrus Johnson, 1595 Kirk Ave., Thousand Oaks, CA 91360 (phone: 805-495-3518 or fax: 805-495-0829).

324th FG (WWII). May 27-30 at the Crowne Plaza Hotel in Arlington, VA. **Contact:** J.T. Johnson, 201 Pelican Walk, Hampstead, NC 28443 (910-270-4635) (troyandmat@aol.com).

361st FG, Eighth AF, Bottisham, UK, St. Dizier, France, Chievres, Belguim, and Little Waldon, UK (WWII). Oct. 17-21 at the Lake Buena Vista Resort Hotel in Orlando, FL. **Contacts:** Dave Landin, 8419 Michael Rd., Richmond, VA 32210 (804-288-5889) (david.c.landin@verizon.net) or Bob Bland, 2528 Park Lake Dr., DeLand, FL 32724-3027 (386-734-5197) (mighty8th@ earthlink.net).

368th FG, Ninth AF (WWII). Sept. 30-Oct. 3 at the Essex Inn in Chicago. **Contact:** Randolph Goulding, 3412 Paces Ferry Cir., Smyrna, GA 30080 (phone: 678-333-0241 or fax: 770-455-7391).

374th Aerial Port Sq. Nov. 12-14 in Pompano Beach, FL. **Contacts:** John Johnson (321-255-7396) (jjmailman@aol.com) or Tom Shepke (tomshepke@comcast.net).

391st BG, Ninth AAF. Oct. 1-3 in Kansas City, MO. **Contact:** Bill Graves (256-534-6711).

416th/531st TFS (1959-64), including Polkadotters and 4th Fighter pilots. Oct. 4-6 in Austin, TX. **Contacts:** Les Frazier, 702 River Down Rd., Georgetown, TX 78628 (les@lesfrazier.com) or (floftus@mac. com).

483rd BG (H) Assn (WWII). Oct. 5-10 in San Diego. **Contact:** John Nobel, 4555 E. Hillsdale Ln., Inverness, FL 34452-9057 (352-726-1082) (jpnjwn@infi.net).

506th FW, Dow AFB, ME, and Tinker AFB, OK (1953-58). Sept. 30-Oct. 3 at the Dayton Marriott Hotel in Dayton, OH. **Contact:** Chuck Bowen, 97 Valencia Rd., Los Lunas, NM 87031 (cbowen12@earthlink.net).

511th AC&W Gp Assn, including the 613th, 847th, 848th AC&W Sqs and the 39th AD. Sept. 22-26 at the Doubletree Columbia River Hotel in Portland, OR. **Contact:** Don Simmons (972-231-6518) (dona7112@iadfw.net).

526th FS, including Meridian, MS, and Landstuhl and Ramstein ABs, Germany. Sept. 26-30 in Las Vegas. **Contact:** Wayne Rebischke, 5780 Canterbury Ave. N.E., Buffalo, MN 55313 (763-682-2685) (wkreb@att.net).

551st AEW&C Wg, Otis AFB, MA, including Texas Towers and N. Truro Radar. Sept. 16-18 at the Best Western Hotel in Dayton, OH. **Contact:** Floyd Shank, 66 Kings Pond Place Rd., Plymouth, MA 02360 (508-746-5713) (easy12@adelphia.net).

601st Tactical Control Wg (1945-95), and all subordinate units. Sept. 29-Oct. 2 in Omaha, NE. **Contact:** John Haggard, 6860 E. Rosewood Cir., Tucson, AZ 85710 (520-298-8208) (haphagg@aol.com).

623rd AC&W Assn (Okinawan Air Defense), including the 305th, 624th, 851st, 529th, 2152nd, et al. Sept. 26-Oct. 1 in Las Vegas. **Contact:** David Cory, 10408 Wedd, Overland Park, KS 66212 (913-888-4874) (dbcory@earthlink.net).

692nd Radar Sq. July 2-5 in Baudette, MN. **Contact:** Loni Rickert, 224 Tyler St., Athens, PA 18810570-888-4349) (lonirickert@stny.rr.com).

Air Control Sq. July 30-Aug. 1 in Volk Field, WI. **Contact:** Dick Pirwitz (608-847-5982) (mdpirwitz@jvlnet.com).

Air Force Gunners Assn. Sept. 22-25 at the Clarion Hotel in Charleston, SC. **Contact:** Dan Danish, 9550 Haviland Ct., San Antonio, TX 78251 (201-520-1517).

B-52 Assn. June 10-13 in Tucson. **Contact:** Wayne Pittman, 498 Carthage Dr., Beavercreek, OH 45434 (phone/fax: 937-426-1289).

BAD 2, Eighth AF, Warton, UK. Sept. 30-Oct. 1 in Romulus, MI. **Contact:** Dick McClune, 527 Quarterfield Rd., Newport News, VA 23602-6140 (bad2trsr@msn.com).

Pilot Class 43-K, all flying training commands and flying schools. Sept. 15-19 at the Wyndham Hotel in Colorado Springs, CO. **Contacts:** Tom Schuler, 149 Cincinnati Cir., Monroe, OH 45050 (513-539-7185) (tschuler@siscom.net) or Hal Jacobs (jakes43k@aol.com).

Pilot Class 44-D. Oct. 11-14 in Branson, MO. **Contact:** Lloyd Johnson, 5011 Sugar Creek Rd., Lincoln, NE 68516 (402-423-2304).

Pilot Class 49-B. Nov. 9-12 in Dallas. **Contact:** Jack Stolly, 11323 Cotillion Dr., Dallas, TX 75228 (972-681-8290) (flyingjack@juno.com).

SAC Airborne Command Control personnel. Sept. 22-26 in Omaha, NE. **Contacts:** Fred Kemp, 2356 S. Orchard View Dr., Green Valley, AZ 85614 (520-393-1054) (fkemp8367@aol.com) or Jack Suggs, 855 Crenshaw Loop N., Keizer, OR 97303 (503-390-2435) (jwsuggs1@msn.com).

Tan Son Nhut Assn. July 21-25 in Bourbonnais, IL. **Contacts:** Dean Gard (815-932-0238) or TSNA Public Affairs (757-627-7746).

Seeking members of the **72nd AES** (1972-84) for a reunion. **Contact:** David Cushing, 78 County Rd. 519, Phillipsburg, NJ 08865 (dcushing@webspan.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.

SPACE WARFARE SYMPOSIUM 2004

June 28-30, 2004 Keystone, CO

"Commanding the Future"

The Space Warfare Symposium: Recent conflicts point to the growing importance of space in service, joint and combined operations. From the Gulf War to Operation Iraqi Freedom, the need to control and exploit space is evident. In fact, it has become a necessity. Space capabilities are a force multiplier. So what is ahead for military space? How can we "command the future?" Join us for an exciting and thought provoking look at space warfare in the 21st century. Mark your calendars now. Even better, plan a vacation around this **AFA Lance P Sijan Chapter**-hosted event, taking place in the heart of the Rockies at Keystone, Colorado. For further information, visit the symposium website: **www.spacewarfare.org**.

Registration/Costs: The symposium early registration fee for AFA members is $395. After June 1st, it is $450. For non-AFA members, the early registration fee is $435 and after June 1st, it is $490. Non-AFA member fee includes a one year AFA membership. Additional cost applies for changes or cancellations.

Active Duty military officers and DoD civilians registration fee is $195. Active duty enlisted fee is $100 for two days and $60 for one day.

All registration fees include opening reception, continental breakfast each morning, refreshment breaks, and lunch. Tuesday night dinner tickets are $75 for industry and $45 for military/DOD civilians.

Dress for all events is "mountain" (business) casual .

Hotel Reservations: Contact Keystone Resort directly for special symposium room rates, 800-258-0437. Use group code CS9CAFC.

Golf Tournament: Join us for a round of golf at the Keystone Ranch Course on Monday, June 28th. Discounted fees will apply and reservations can be made through our web site.

Inquiries: For general questions, call Russ Anarde, 719-636-1150, Gary Dylewski, 719-277-9940, or Lamberth Blalock, 719-550-0255. For sponsorship opportunities, call Al Baker, 719-548-0488, or Debbie Estrem, 719-622-7900. For registration questions, contact Judy Arnold, 719-277-4028. Questions concerning golf, please contact J.J. Gagnon, 719-572-8500.

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Dr. Stephen Cambone: Undersecretary of Defense for Intelligence

Mr. Peter Teets: Undersecretary of the Air Force and Executive Agent for Space ***(confirmed)***

Dr. Ronald Sega: Director, Defense Research and Engineering, USD/ATL ***(confirmed)***

Gen Lance Lord : Commander, Air Force Space Command ***(confirmed)***

Gen Ed Eberhart: Commander, NORAD and United States Northern Command

Adm James Ellis: Commander, United States Strategic Command

Adm Edmund Giambastiani Jr.: Supreme Allied Commander Transformation and Commander, Joint Forces Command

Gen Buzz Moseley: Vice Chief of Staff, United States Air Force

Lt Gen Norton Schwartz: J-3 Operations, Joint Staff ***(confirmed)***

Lt Gen Brian Arnold: Commander, Space and Missile Systems Center ***(confirmed)***

LTG Larry Dodgen: Commanding General, US Army Space and Missile Defense Command / Army Strategic Command

VAdm James McArthur: Commander, Naval Network Warfare Command

Maj Gen Mike Hamel: Commander, 14th Air Force ***(confirmed)***

Maj Gen Frank Klotz: Commander, 20th Air Force ***(confirmed)***

Maj Gen(S) Doug Fraser: Director, Air & Space Operations, Hq AFSPC ***(confirmed)***

Maj Gen(S) Dan Darnell: Commander, Space Warfare Center ***(confirmed)***

Maj Gen(S) Ted Mercer: Director, Plans & Programs, Hq AFSPC ***(confirmed)***

Brig Gen Irv Halter: Deputy Director for National Systems Operations, Joint Staff, and Deputy Director for Military Support, NRO ***(confirmed)***

Brig Gen Tom Sheridan: Director, Requirements, Hq AFSPC ***(confirmed)***

Pieces of History

Photography by Paul Kennedy

The Cruise of the Snark

At the Air Force Space and Missile Museum, Cape Canaveral AFS, Fla., one sees items from the dawn of US military rocketry. An outdoor Rocket Garden boasts 55 displays. One features the Northrop B-62 (later SM-62) Snark, which was acquired in 1965. The nuclear-armed Snark was the first long-range cruise missile. The huge (48,000-pound) craft was launched from a mobile platform by two boosters and was powered by a jet engine. Snark first flew in 1953. Strategic Air Command activated its only operational Snark unit in 1958 but deactivated it in 1961 in favor of ICBMs. In theory, celestial guidance would take Snark to a spot over Russia, where its warhead-bearing nose would separate and strike. Testing Snark was difficult. So many crashed off the Cape that wags warned of "Snark-infested waters." In 1956, a Snark refused a destruct command and kept flying, vanishing into the Amazon. (A farmer found it in 1983.) The missile's name was suggested by Jack Northrop himself. It comes from a Lewis Carroll poem about a mythical creature—part snake, part shark.

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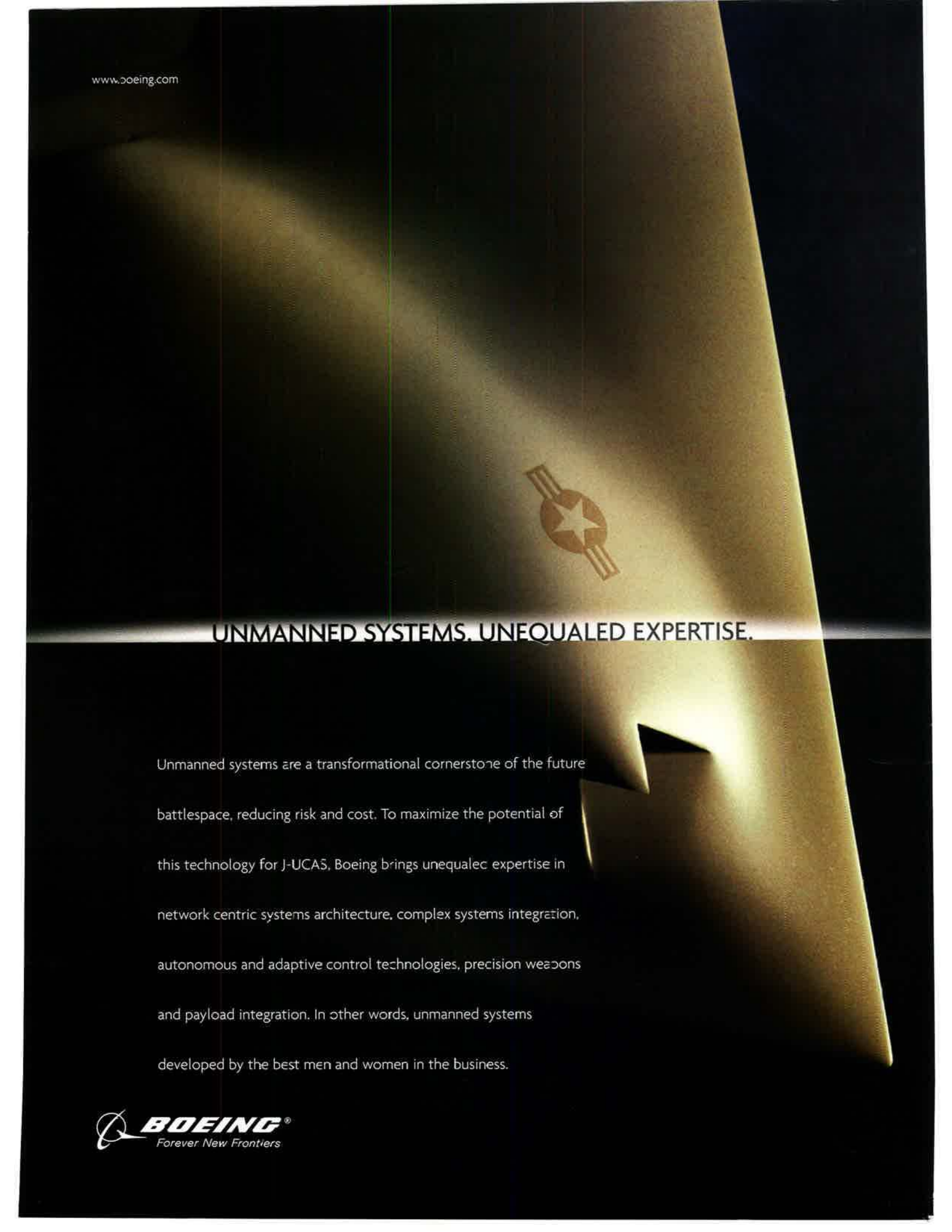
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