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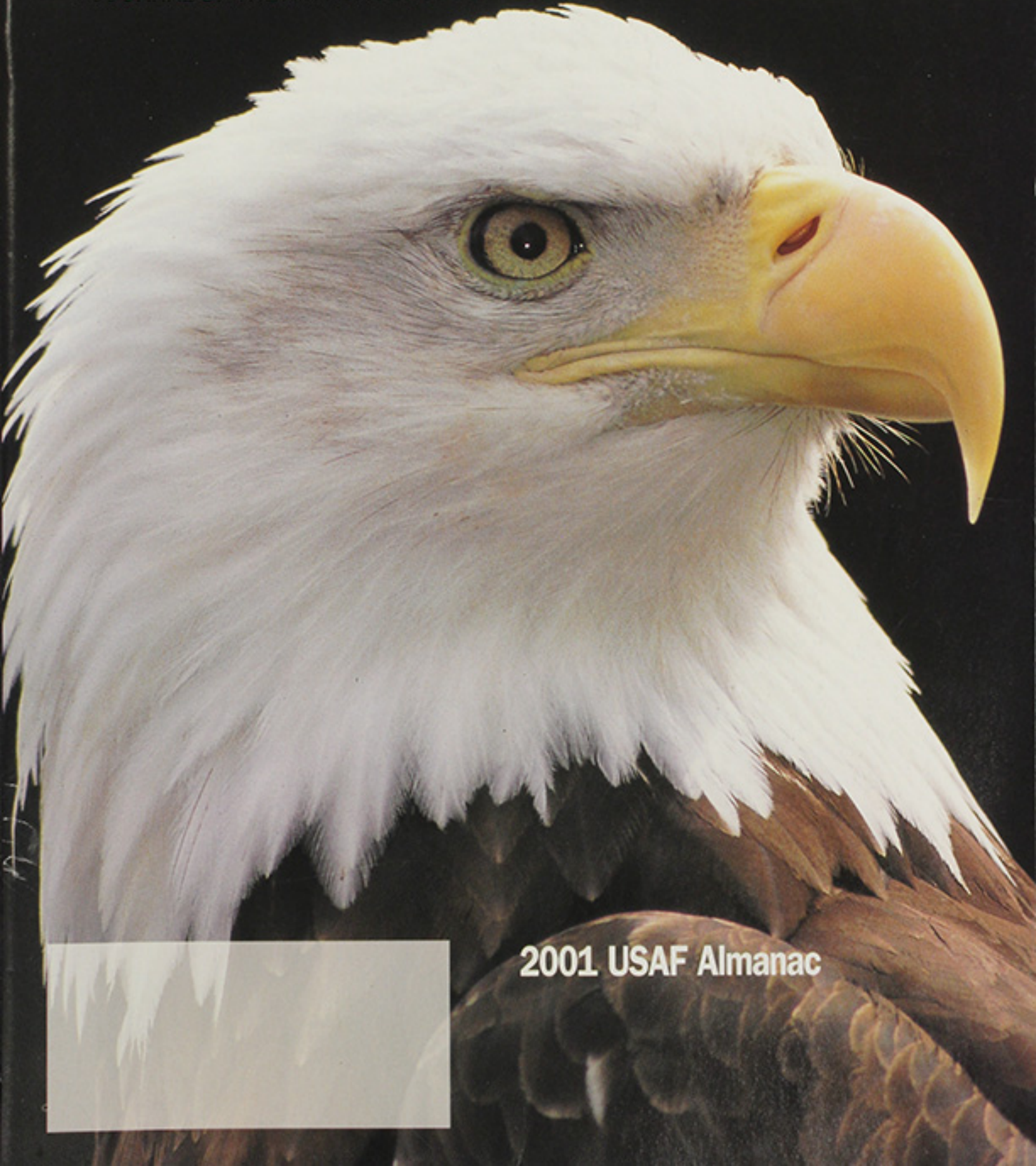
AIR FORCE MAGAZINE

JOURNAL OF THE AIR FORCE ASSOCIATION



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May 2001, Vol. 84, No. 5

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About the cover: An eagle graces the cover and *Air Force* Magazine's annual guide to the US Air Force. See "USAF Almanac 2001," p. 32. Photo © Tom and Pat Leeson.

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Editorial

By John T. Correll, Editor in Chief

Struggling for Transformation

Once again, transformation is in the wind at the Pentagon.

The White House announced in January that big decisions about the defense budget would be on hold, awaiting a new requirements study by Secretary of Defense Donald H. Rumsfeld.

Rumsfeld has been conducting his review behind closed doors in consultation with a limited group of trusted advisors.

It appears that Rumsfeld and the Administration have more in mind than minor adjustments, and that they will pick up the long-elusive goal of "transforming" the armed forces to be better attuned to the needs of the future.

That is presumed to include leap-ahead technology programs, national missile defense—a staple of the Bush Presidential campaign—and more emphasis on space.

Rumsfeld is said to be taking this limited-access approach to avoid getting hung up, as did the Quadrennial Defense Review and the National Defense Panel review in 1997, by internal Pentagon politics, which work to perpetuate the status quo.

The "transformation" theme was introduced by the National Defense Panel. It said the armed forces should focus on the coming challenges of the 21st century and become "a very different kind of military from that which exists today."

The idea of transformation sounds great, but there are barriers—institutional, practical, financial, political, and doctrinal—to getting there.

Some kinds of transformation go over better than others.

In 1996, Joint Vision 2010 looked beyond the prevailing model of attrition warfare and said that precision targeting and long range systems made it possible to achieve the effects of mass without the actual massing of forces within range of the enemy's guns.

That put increased reliance on airpower, and it alarmed the land power traditionalists. Massing of forces is their stock in trade. Four years later, official thinking was revised in Joint Vision 2020. It rolled back the consensus and reinstituted the principle of massing forces in response to crisis.

Thus the joint community walked up to doctrinal transformation, looked it in the eye, and ran from it.

On the other hand, we have seen the Army move out boldly to replace its heavy divisions with lighter forces and its tanks with wheeled combat vehicles.

Some kinds of transformation are easier than others.

Transformation is hard to define. Its most ardent disciples often speak in nebulous generalities about the future. Current systems get minimal respect. Evolutionary progress is not always recognized, even when there is a lot of it.

Today's precision strike capability, for example, is an enormous leap from what was possible 10 years ago, but you'd never know it from reading the newspaper commentaries.

Some theoreticians say transformation is about ideas and concepts, and up to a point, it is. But it is also financial.

In the end, it comes down to which new initiatives will be started, which old programs will survive, and which ones will be canceled or curtailed.

Congress will approach it that way, even if the Pentagon doesn't. Any move to reduce the role of big deck carriers, for example, will encounter fierce resistance in the Senate.

If transformation deteriorates to a budget competition, as happened in the Quadrennial Defense Review and the National Defense Panel review, strange things can happen.

Has it been noted that of the three aircraft programs under scrutiny, the Air Force's F-22, the Joint Strike Fighter, and the Navy's F/A-18, the one that is least likely to be cut—the F/A-18—is also the one that is least transformational?

Transformation competes with the needs of today. The short budgets of the Clinton years left the military in a deep hole. The replacement of worn-out capital equipment cannot be postponed much longer. Readiness problems are getting worse. The Bush election campaign recognized these realities with its pledge that "help is on the way."

We cannot stand down the force of today and reinvest the money in the force of tomorrow. Even if Bush and Rumsfeld succeed in reducing our operational obligations abroad, the remaining demands on current forces will still be substantial.

The present rate of spending, with 3.0 percent of GDP allocated to defense, isn't enough, even with cuts to existing programs to help pay the bills. For any sort of transformation, defense will have to get about 4.0 percent of GDP, its level in the first Clinton Administration.

And then there are the other problems.

Earlier this year, a draft report on the Joint Strategy Review recognized a "halt phase," in which a theater commander could try to stop the advance of an invading enemy early in a regional conflict, primarily with aircraft and cruise missiles.

It didn't say there must be a halt phase, only that it was an option open to theater commanders. The halt phase had been recognized previously as a good idea by the Quadrennial Defense Review in 1997.

Then as now, Army officers took exception. The halt phase diminished the importance of heavy ground forces, which would not get there in time to take part.

This time, they appealed the Joint Strategy Review language to the Chairman of the Joint Chiefs of Staff, who excised the reference to the halt phase, at least for the time being.

Some kinds of transformation are easier than others. ■

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There's More to the Story

Richard Newman's article contrasting actions taken in response to the 1996 Khobar Towers and 2000 USS *Cole* terrorist bombings was a good one, but it leaves a few major stones unturned. *[See "From Khobar to* Cole," *March, p. 48.]* As a point of departure, both bombings can be categorized as "terrorist attacks *outside* the perimeter." That categorization, I would argue, is where the similarity ends.

Newman expertly points out the surface differences in the way the ex–Secretary of Defense dealt with handling the aftermath of the two attacks. Far more interesting, I would suggest, are the politics that drove him—and the tactics he employed. With Khobar, the newly appointed William S. Cohen was hell-bent on establishing himself as the DOD tough guy in charge. Logic or fairness seemed to have little to do with his quest. When the Air Force three-star investigator, the acting US ambassador in Saudi Arabia, and all of the senior USAF leadership argued that the on-scene commander had been both vigilant and aggressive in his force protection actions, Cohen chose to blow them off. Instead, he stifled the Air Force in-depth report and directed another investigation, with instructions to "reconsider administrative action." When the next Air Force investigation came up with the same conclusion as the first, Cohen again chose to stifle the report, deciding this time to write his *own*. Unfortunately, he never spoke with the Air Force investigating board presidents to understand their rationale or questioned the commander firmly locked into his sights.

In predictable form, Cohen chose to announce his verdict, punishing the commander for the terrorist attack by canceling his previously earned promotion, on national television—essentially staging a modern day version of publicly breaking the commander's sword and ripping off his buttons. More disgustingly, Cohen did not respond to many of the victims' families who had written to him specifically pleading against such a verdict because it didn't make sense to them. In Cohen's mind the case was closed. His former Congressional cronies and media talking heads, who early on—and without the benefit of the investigative facts that Cohen had stifled—had chosen to blame the commander for the terrorist attack, were now appeased. Our SECDEF was on to the next political event.

With the USS *Cole* four-and-a-half years later, and with military morale and readiness at a precarious level, Cohen gave in to Navy leadership—even when they opposed their own service's investigation findings. Helping the Navy's case was the fact that their public relations effort had been successful in refocusing media attention from actions taken *before* the tragedy to the heroics *afterward* (a fact that a traditionally impotent Air Force public relations organization would do well to case-study). More significantly, this time Cohen—on his way out—had nothing more to gain.

An area glossed over in the Newman article is the fact that there were also significant differences between the events *leading up to* the Khobar Towers and USS *Cole* attacks. With Khobar, the bombing took place at a time when force protection was *not* a political buzzword. *Performing the mission* was every commander's primary focus. Taking care of the troops was already a well-understood part of every mission. The oft repeated—and amazingly limiting—quote by senior military and civilian leaders, "force protection is our No. 1 mission," came afterward.

The surface environments were also different between the two ground zeroes. With Khobar, the bombing took place in a tightly controlled and policed area of Saudi Arabia (the Eastern Province) that had *never* experienced an incident of terrorism against a Westerner in the 40-plus years of US citizen presence there. (The US Intelligence Community considered the area a relatively safe place to visit, which the JCS Chairman *and his wife* did *less than one month* before the bombing.) On the other hand, Yemen had a history of being both hostile and uncontrolled, an environment that was clearly evident in the media coverage after the attack.

In his article, Newman states that the Air Force commander initiated over 130 measures during his watch. One of those was to put armed rooftop guards on top of his Khobar Towers compound—an action that he alone—of all the US and allied commanders in the region—took. Those guards alerted and reacted to suspicious activity in the few minutes before the bomb went off—and saved lives. The unarmed "rooftop guards" on board the USS *Cole* did not. (With Khobar, Cohen accused the commander of "not doing enough." With the USS *Cole,* he was noticeably silent on the subject.)

As a final input, Newman states that much has changed for the Air Force since the terrorist attack at Khobar Towers. I would certainly agree, but *much also remains the same.* I would contend that a large majority of what has changed is form (new regulations, new organizations, more documentation) but still not enough substance. At the end of his year's tour, the Air Force wing commander who replaced me told me that the *only* thing he had done differently in terms of force protection measures was to move out into the desert—as he was directed to do.

Unfortunately, as a result of SECDEF Cohen's handling of the Khobar attack, we now have field commanders

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John A. Shaud

Editorial afmag@afa.org

Editor in Chief
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Juliette Kelsey Chagnon

Advertising adv@afa.org

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

Industry Relations Manager
Nicola C. Whitlock • 703/247-5800

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

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looking less to the front and more to the rear—concerned that they've appropriately "checked their six," worried that they'll be hung out to dry if something goes wrong. The recent request by the USS *Greeneville* commander for testimonial immunity underlines that fact.

A brave step that the new SECDEF could take to help reorient today's field commanders' focus is to reopen the Khobar case, and ask *all* of the board presidents, and the Air Force, and state department leadership in place at the time, why they argued as they did. He would also do well to ask the hard questions directly to that commander and *then* weigh the facts—remembering we *still* have not identified the real perpetrators.

For the sake of the victims of the Khobar Towers terrorist attack, and commanders sent into the arena today, I would be honored to respond to his questions.

Brig. Gen. Terryl J. Schwalier, USAF (Ret.)
Coupeville, Wash.
4404th Wing commander during Khobar Towers terrorist attack

The Right Place

The Air Force is exactly the right place for the space mission; however, I truly think in all fairness that budget money needs to come with this responsibility. *[See "The Space Commission Reports," March, p. 30.]* How can the Air Force be expected to dedicate badly needed current resources to developing a world-class space capability? Ultimately, you're talking about an Air Force pilot jumping into his "spacecraft" and flying combat patrol or logistics transport in and out of air and space as required. However, the Air Force can't afford to ignore space either, or it will eventually find itself becoming the equivalent of the Coast Guard (not meant to be derogatory), defending local airspace, while a "new" Space Department takes on the real "offensive and defensive 'air' operations."

CMSgt. David Lederman, USAF (Ret.)
Alexandria, Va.

Get the Lead Out

Your April issue piggybacked an earlier edition concerning the airlift problem, and it still appears as if no one wants to step on their shoeshine in making a command decision. *[See "The Airlift Shortfall Deepens," April, p. 54, and "A Clamor for Airlift," December, p. 24.]*

Despite the wonders of the C-17, the leadership was told many years ago that replacing some 240 C-141s with only 120 C-17s would not work. The Air Staff even examined keeping some Reserve C-141C units on longer than anticipated to alleviate the airlift shortfall that became so evident during the recent Balkan fiascos. However, the numbers speak for themselves. You simply can't put as many airframes in as many places as you need them when you've only got half the airframes.

The continuing saga of C-5 modernization vs. additional C-17 purchase continues to roam the halls at the puzzle palace. The C-5 became the budget-whipping toy when the C-17 came on line in the early 1990s. A large part of the [Military Airlift Command/Air Mobility Command] funding stream was diverted to make this a reality. Spare parts dried up for the Galaxy; cannibalization became a key part of on-time missions and locals; depot maintenance fell behind after [Desert Storm] 2; and the change to two-level maintenance system did more harm than good to this airframe.

As recently as 1998, all of the services participated in the Joint Staff directed Mobility Requirements Study 2005. This was one avenue, which definitely highlighted the shortage of airlift—especially in hauling the Army to hot spots until they could refine their "lighter" Army After Next requirements (which became so evident after Task Force Hawk). Recommendations on the MRS–2005 went to the Air Staff and Joint Staff in the fall of 1999. This report even included the Analysis of Alternatives on whether to retire some C-5s, furbish some or all with new engines and avionics, or do some C-5s with an additional C-17 purchase. Well, here it is nearly two years later, and they are still examining the shoeshine while they continue to kick the can down the road. You got it—each additional year they wait, the more expensive it becomes, and the more painful the decision in deciding which other pot to borrow funds from.

Of primary concern—and one, which no one can deny—the C-5 must remain part of the overall airlift picture! You can ill afford to put your entire airlift into one airframe (or eggs into one basket if you prefer). If the C-17 becomes our only airlifter, what happens with a problem along the lines like the weep hole problems the 141s had a few years back? Bingo, you've just grounded your airlift fleet. There goes both your "Global Mobility" or "911" capability.

Let's go, USAF leadership. This

has dragged on long enough. It's time to get the lead out—TACAMO!

Lt. Col. Rick Wooddell,
USAFR (Ret.)
Green Bank, W.Va.

Airpower and AUSA

I must comment on the astounding remarks on airpower made by Gordon Sullivan, a retired four-star general who is the former Chief of Staff of the Army. *[See "Aerospace World: AUSA Leader Cites Limits and Failures of Airpower," April, p. 20.]*

Sullivan [described the] limitations and failures of airpower in the Gulf War of 1991. [His] conclusion [was] that "despite massive air strikes the bulk of Saddam's armed forces remained intact and entrenched in Kuwait. ... Ground forces achieved in 100 hours what airpower could not achieve in six weeks of around-the-clock bombings."

First of all, airpower's mission was not to win the war by itself. I wonder what the ground forces would have done if 500-plus Iraqi fighters had been attacking those forces round-the-clock.

Who does Sullivan think shut down the Iraqi air force? Surely not the infantry. Most people know it was airpower that shut down command and control of most of the Iraqi forces, which most certainly benefitted the ground forces. I am astounded that a former senior officer would make such statements.

As far as history is concerned, how many troops would have survived the landings in France in 1944 had the Germans been able to put up several hundred fighter–bombers against the invasion? Who does Sullivan think made it possible for the forces to land without complete destruction? The German air force was pretty much decimated by that time.

If Sullivan would refer to the military history books he would learn that it was airpower that did the job. Ask the Germans and they will tell anyone who wants to know, how much airpower contributed to their defeat. Albert Speer's book *Inside the Third Reich* would help Sullivan understand the part airpower played in the demise of the Third Reich if he would take the time to read it.

As to his comments about Dresden, Sullivan should know that the bombing of Dresden was a British mission. US airpower chiefs had been requested by the RAF to participate and they refused, on the grounds that Dresden was not a military target. The US strategy was to take out military and industrial targets that contributed to the German war effort, thus shortening the war. Prime Minister Churchill appealed to President Roosevelt, and the decision was made that US bombers would participate. There were about 900 RAF and 175 US bombers that attacked Dresden in early 1945.

No doubt ground forces contributed to the defeat of Japan in 1945. But airpower had been pounding Japan for months before the surrender and with the dropping of the nuclear weapons, Japan gave up. We all know that the weapons were dropped by aircraft not tanks. It was airpower that made it possible to end the war without invading Japan, which many experts have estimated could have cost a million or more casualties.

Now we need to examine Sullivan's remarks about the Vietnam scenario. I suggest he review who selected targets and missions during that conflict. Those of us who were in the Pentagon during some of that fiasco know full well where our orders came from. After having studied his remarks, I am grateful, as all Americans should be, that Gen. "Hap" Arnold, his staff, and Congress had the foresight and understanding to opt for a separate Air Force.

I, along with most former Air Force airmen, will never maintain that airpower alone can win wars. We do say however that airpower can help make it decisive by supporting the other combat arms. And as a parting shot, we do realize that we sometimes make some serious mistakes and hurt some of our own comrades. But history relates that there is damage done to friendly forces by artillery and other heavy weapons fire as well.

Lt. Col. Walter Echwald,
USAF (Ret.)
Falls Church, Va.

Army Gen. Gordon Sullivan, the president of the Association of the US Army, reveals a parochial and self-serving analysis of history when he cites limits and failures of airpower.

Using the same flawed logic, one would try to score questionable debating points by claiming that, in the final analysis, artillery, too, is "not decisive." He could also endear himself to other comrades-in-arms by claiming that the US Navy was "not decisive" in moving the Army and its heavy equipment and supplies to the operational theater.

Maj. Mitchell S. Cwiek,
USAF (Ret.)
Escondido, Calif.

Tricare for Life

A big thank you to Tom Philpott for

his article "Here Comes Tricare for Life" *[p. 38]* in the April edition. Over the past several months I have received several publications from various other military organizations I belong to, but nothing written as well as this article. It was far and away the most comprehensive and easy to understand as anything I've read prior to this. The matrix which was included was clear, concise, and answered most of the questions I had.

MSgt. Ron Blatman,
USAF (Ret.)
Lakewood, Wash.

"Here Comes Tricare for Life" covered the subject extremely well. A concern for potential beneficiaries should be the prompt payment and a minimum of red tape paperwork for health care providers. Some of these providers are beginning to terminate their association with Tricare Prime for these reasons. Don't give us something well-deserved, but delayed for so long, and then mess it up for lack of foresight in this area.

Lt. Col. Joseph R. McNamara,
USAF (Ret.)
Salem, Ore.

I have read the article "Here Comes Tricare For Life" and still find nothing pertaining to dental benefits. We who entered service before 1956 are still being shortchanged on the benefits promised us at that time. I have written to many Congressmen asking that we be given those benefits, and here we end up being thrown in with every other military person, getting only part of what we are truly entitled to.

Why are dental benefits left out of every program for which we are eligible? It seems they are avoiding that benefit like it was something older people no longer require.

Let's get something going where we can get this benefit on the agenda.

Maj. Dan Wenger
USAF (Ret.)
Sacramento, Calif.

Deprived of First-Shot Capability?

As a former Air Force pilot and now one of many military personnel in the business world, I've watched from "outside" as USAF grows and changes since my exit in the early 1990s after Desert Storm. I have particularly noted the focus lately in your magazine and others in the area of [Suppression of Enemy Air Defenses] and EW capabilities. *[See "Electronic Warfare Is Dragging," April, p. 59.]* What interests me enough to take the time to write this comment is the awakening to an increased need for EW training and capability, be it air-to-ground or air-to-air.

Most recent articles have been concerned with the air-to-ground threats, though in our business we are acutely aware of a shortcoming in air-to-air EW or Electronic Attack. Threats have continued to evolve to the point where US pilots may be deprived of the first-shot capability in the Beyond Visual Range regime. Once past the BVR arena, the fight becomes a visual one that's best left to Hollywood, particularly with the newer generation of fighters appearing around the world.

What the US military and its leaders should be particularly concerned about is the mating of some of these next-generation fighters with the latest in EW/EA technology. To deny US aircrews the ability to take the first shot is bad, and pushing the fight visual with an Su-27/30 with a lack of situational awareness is worse. Air Force and Navy leaders alike should be concerned about the proliferating threat of Electronic Attack, called so because it's not just for defensive use anymore. Our line aircrews deserve appropriate training for this threat, and our leaders and budgeters need to support this training.

Jeffrey D. Parker
President, ATAC
Newport News, Va.

The Indispensable Fighter

During the development of the F-15 fighter in the 1970s, I presented the official USAF Threat to the F-15 Survivability Panel meeting in St. Louis at McDonnell Aircraft. At that time I was chastised by the panel chairman for including in the threat a Soviet SAM system that had a 90,000 effective (kill) altitude.

The chairman said that the SAM threat was not to be considered because the F-15 did not have a ground attack mission. In "The Indispensable Fighter" article *[March, p. 22]* you mention, "The F-22 is also at ease operating above 50,000—well beyond the reach of many SAMs. In some cases the best departure route may be right over the head of the defenders."

This sounds like the briefing given to Gary Powers when he was going to fly over the USSR in the U-2. Remember, he got shot down on that mission flying between 70,000

and 90,000 feet. This occurred in 1960. I'm sure the SAM technology must have advanced some since the early 1970s. Please tell the pilots that the SAMs can reach altitudes of at least 90,000 feet and to be careful, very careful.

Col. John E. Gilroy,
USAFR (Ret.)
Virginia Beach, Va.

Keeping Up

You should have titled the March article "Why the Allies Won't Keep Up" *["Why the Allies Can't Keep Up, p. 54].* They will never do that until the United States announces withdrawal of our 100,000 people.

Politicians of all parties are in the process of being forced to face up to the ordinary folks who are spending upward of $600 per month for health insurance, or forgoing it entirely, and who are worried sick over the prospects of being driven into bankruptcy to pay for long-term care of parents. They are increasingly aware that we are subsidizing Europeans who enjoy universal health care, often better than Medicare care available to any but the wealthiest Americans, and who are assured of long-term care without being forced to accept impoverishment.

The Washington mind-set had best catch up.

William V. Kennedy,
Wiscasset, Maine

Flash Point

"Flash Point Taiwan" *[March, p. 36]* brought back memories for me. In the early 1950s, I was flying for the 581st Air Resupply and Communications Wing, stationed at Clark AB, Philippines. This innocuous [unit] name was a cover-up for our real mission, which was psychological warfare and subversive activities.

The Korean "conflict" ended, [and] in August 1953 we were sent back to Clark. Formosa was the next hot spot. Chiang Kai-Shek's forces were driven out of China and stationed in Formosa. Our military and his Nationalist troops were convinced China was about to invade Formosa. His troops were ill-prepared to defend the island.

In September 1953, a small group of us were sent as "advisors" to his air force to help train their pilots. We reported directly to Tiger Wong, the head of the Nationalist air force. [The Nationalists] were fearless but not very skilled pilots. They needed a lot more training than we could give them.

Needless to say, mainland China made lots of threats and flyovers but never actually invaded Formosa. Forty-seven years later, we are having the same threats. Only the name has changed.

Arthur L. Snyder
Cranford, N.J.

The Minuteman

The Minuteman article *["Minuteman Turns 40," March p. 70]* was a trip into the past in many ways. On p. 71, I am the captain standing at the Minuteman I commander's console, 80 feet underground on the telephone. The deputy seated at his console is 2nd Lt. Paul Bragaw. The picture was taken at the 740th Strategic Missile Squadron, Echo Flight Launch Control Center (LCC), 70 miles south southwest of Minot AFB, N.D., in 1966 not 1971. Each LCC controlled and surveilled 10 Minuteman I missiles with at least a five-mile separation and spread over several counties. The 455th Strategic Missile Wing at Minot had 15 LCCs controlling a total of 150 missiles during my tenure (July 1963–July 1967).

We usually spent 10 tours each month on LCC duty for 30 hours, including the travel to and from Minot. It is amazing that there are still officers on duty at this very hour in those same underground facilities, on alert, monitoring Minuteman III missiles.

Incidently, since I had prior USAF B-52G navigator–bombardier experience, I also flew in the B-52Hs at Minot as a spare crew member during 1963–65—the point being the B-52s came off the production line in the early 1950s and are now projected to extend beyond 2020, and therefore I think the B-52 may easily "go into retirement as the heavyweight champ, the longest-lived weapon in Air Force history," not Minuteman.

Lt. Col. Gene E. Philbrick,
USAF (Ret.)
Salem, N.H.

Enjoyed the article, especially since I was a missile crew commander in the first operational Minuteman squadron, the 10th Strategic Missile Squadron. But the photo of the Minuteman combat crew is not a 1971 photo! It's more like a 1961 photo and was probably taken in one of the 10th SMS launch control facilities, probably Alpha 1. The crew members are a couple of officers I served with in that organization. Capt. Fletch Hunter is the crew commander standing at the commander's console and the deputy crew commander is sitting at his crew position. Your article brings back good memories of those times, some 40 years ago.

Col. Earl M. Buys,
USAF (Ret.)
Richardson, Tex.

[On] the article about the Minuteman ICBM, just a couple of comments: First, if the photo of the crew in the white coveralls was in 1971, they must have been locked below ground for a while. We transitioned from the white "painter's coveralls" to the two-piece blue uniform in late 1967 and early 1968. This uniform was around until the late 1980s [when] the one-piece blues came along.

Second, you say that the 10th SMS became operational in February 1963. There was a hurry-up effort to get some Minuteman I missiles—sometimes called "Kennedy's Ace in the Hole"—on alert during the Cuban crisis in October 1962.

Col. Charles G. Simpson,
USAF (Ret.)
Assn. of Air Force Missileers
Breckenridge, Colo.

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Col. Quentin M. Thomas,
USAF (Ret.)
Las Vegas

Dangerous World

James Kitfield's article *["The Dangerous World of 2015," March, p. 60]* on the trends of 2015 seems a bit weak in the agricultural data side. The UN Food and Agriculture Organization's database indicates that while coarse grains may be decreasing in mt/1,000 from 1.66 to 0.89 between 1970–98, the calories per person, worldwide, have increased from 1,224 to 1,365. So it appears that while his facts may be correct, the conclusion may not be correct.

Fred Stovel
Portland, Ore.

The WASPs

Just finished reading your very interesting article about the WASPs in World War II. *[See "The WASPs," April, p. 68.]*

Col. Philip Cochran, having used the newly formed air commando group in Burma, decided to form two more such groups. I was one of the many grease monkeys assigned to the 3rd Air Commando Group, 3rd Fighter Squadron. We were sent to Lakeland, Fla., to a new air base to await the delivery of our new P-51 Mustangs.

The big day came, as I stood out on the revetment to await my new bird. Soon a new, shiny P-61 taxied over to my raised arms. Having lined the ship up, I signed the pilot to cut the engine. Throwing chocks under the landing gear, I hopped up on the wing to help the pilot out.

Lo and behold, this pretty female head popped out from under her helmet. I smiled at her and welcomed her to the 3rd Air Commandos. She returned my smile and scribbled something into the Form 1 log.

After I helped her down from the airplane and gave her her chute, she slowly started walking to join the other WASPs who had ferried in the new birds. I took a look at the Form 1 log to see if she had had any problems with the ship. There, in large letters, she had scribbled, "Used the relief tube."

As she looked back over her shoulder at me and saw the stunned look on my face, she gave me a big smile and blew me a kiss.

Irving Distenfeld
Baltimore

In the very beginning of the story [the author] made a statement: "In October 1943 the Army Air Forces checked out several women ferry pilots in the B-26 bomber. Women also flew P-38 fighters and the B-29 bomber, both of which had bad reputations when they were introduced, so bad that some male pilots balked at flying them." I was highly irritated when I read that stupid, idiotic, and untrue remark. As a matter of fact in pure GI talk, I was pissed off.

I flew the P-38 from April 1942 through 1945. I put in 50 missions in North Africa and returned back to the States as a combat instructor in Santa Rosa, Calif. I had 1,500 hours in the P-38, so I am a good judge of one of the best fighters in World War II. I don't feel that I'm prejudiced because I also had approximately 1,100 hours in the P-51 and 1,100 hours in the P-47. They were both great planes. The P-47 was great for strafing and the P-51 was great all around.

In backing up my bold statement, I give you these points. Tricycle gear [was] much faster for scrambling takeoffs, also less prone to accidents. The P-38 had counterrotating props which in turn gave you no torque. I can't begin to tell you the value of that. No snap rolls, no spins, especially on the deck in tight turns. Talk about gun patterns, four 50-caliber guns and a 20 mm cannon all in the nose in a 7-foot pattern. In the single engine fighters the guns were in the wings so they had to cross at a point at 600 feet (approximately). Do I have to explain the difficulty as to the straight pattern of the P-38? In all my years I never heard of a P-38 losing both engines at the same time. I can't begin to tell you how many pilots came home on one engine whether it was engine failure or shot out. Who knows how many single engine pilots did not return because of engine failure?

Or shot out? I personally got away from two Me-109s that shot out my right engine. As far as speed and maneuverability [were] concerned, the difference was not that great to override all the points I gave you. To further prove my point, look into the history of the three fighter groups in the North African Campaign. And don't [forget] the Pacific Campaign with Maj. [Richard I.] Bong and his 40 kills in a P-38. The only reason the Air Force backed down on the P-38 was because the

maintenance was double the work and more expensive. I could go on and on.

One more thing I would like to tell you. I was stationed in Long Beach, Calif., when Evelyn Sharp, a WASP, was killed when she lost an engine on takeoff. I saw it. She either panicked or was not properly briefed as to what to do in case of a loss of an engine. The proper procedure is to throttle back the good engine, retrim, and then come back with the power. Evidently she applied more power to the good one and it turned over on her back and unfortunately crashed.

Lt. Col. Philip Taback,
USAF (Ret.)
Union, N.J.

Bruce Callander's article served to further emphasize the wonderful job those women did during World War II. It's a shame the recognition they so well deserve was so late coming.

"Kaddy" Landry's account of her tour at Biggs Field, El Paso, Tex., caught my attention. I was instructing B-17 and B-24 crews there in 1943–44, after returning from my combat tour in B-24s in the Solomon Islands. Those "green crews" had just been formed up at Biggs and needed training in everything. Part of their drill was air-to-air gunnery using real ammo at high altitude. Our lovely WASPs towed the targets, flying Martin B-26s. Ask any old-timer about the airplane's reputation and you'll learn it was a wonderful aircraft—fast but unforgiving. Anyone who flew it successfully for any length of time was known to have "the right stuff."

Our WASPs not only flew that bird skillfully in and around our formations, but they also should have had credit for combat missions. To aid the gunners in perfecting their aim, a high percentage of the .50-caliber rounds were tracers. I recall quite a few complaints coming from the ladies in the B-26s, concerning tracers zooming by too damn close to their tow ship. I don't think they ever got hit, but the tow cables were cut numerous times.

Lt. Col. John H. Ralph,
USAF (Ret.)
Enid, Okla.

Deutch vs. Lee

I read your notice in the March issue about how "Former CIA Director Deutch Cops Plea, Then Gets Pardon," which got me to thinking about the parallels with Wen Ho Lee. They were both accused of doing the same thing. Was Lee considered for a pardon?

I think Lee's treatment is totally uncalled for. Following all the rules for handling classified makes it almost impossible to do your work, especially if you deal with classified on a daily basis like Lee did. The fact is that the knowledge that Lee has makes him a national resource. There is no evidence that he ever attempted to provide classified information to anyone (at least so far). Considering that, I think it would be far smarter to reprimand him and perhaps keep a closer eye on him and leave him at Los Alamos. Security procedures at Los Alamos need to be tightened and everyone needs to be retrained in how to handle classified.

I could be wrong, but I don't think Lee is guilty of giving secrets to anyone. He apparently is guilty of security violations, but then so are a lot of other employees at Los Alamos and they haven't been charged, and so was Deutch and he was pardoned. I think the safest and smartest approach would be to send Lee back to Los Alamos with training on how to handle classified. What he has already been through should be more than enough punishment for his security breaches. (Actually, I think he is owed a big apology for this fiasco.)

Gary Chamberlain
Warner Robins, Ga.

It Wrinkled

I was pleased to see the photo of the YC-125 aircraft in the April issue. *[See "Flashback: Odd Little Bird," p. 67.]* I would like to add some info and correct an error. The three aircraft that I remember being at Sheppard AFB [Tex.] in the 1950–51 years were flown in by Master Sergeant Holtzheiser who was on leave and functioned as a commercial pilot. He also had flown in at least one of the war weary B-29s from Keesler AFB [Miss.]. (That's another interesting story.) I later served with the sergeant at Etain AB, France, in 1957–59.

The YC-125 was not dropped due to insufficient power but because of fuselage wrinkling caused when subjected to loading. If you observe closely you can see the wrinkling in the photo just forward of the star emblem on the fuselage. What a shame! These were actually great aircraft, easy to fly, and great in an engine-out situation. Another example of a good idea not fully carried to function.

W.R. Gardiner
Zacata, Va.

India's First Fighter

I would like to make a correction to an otherwise very informative "Aerospace World" section in your March issue *[p. 19]*. One of the items in this section states that "India ... flew its first indigenously produced fighter

airplane Jan. 4." This is not true. India's first domestically designed and built airplane was the HF-24 Marut jet, manufactured by Hindustan Aeronautics, Ltd. It was operational in the 1980s but has since been withdrawn from service.

Todd Bulgarelli
Olivet, Mich.

More Than Two

In "Pieces of History," March issue *["The Fisher Spad," p. 80],* your caption states that the aircraft is a two-seater. This may have been true as far as how many could sit up front. It could also seat and carry 10 under the blue canopy in back, five seated side by side along each side of the aircraft.

MSgt. Donald G. Kinzie,
USAF (Ret.),
Lake Havasu City, Ariz.

U-2 at Sea

I read the article on attempts to employ the U-2 from aircraft carriers. *[See "When the U-2 Went to Sea," February, p. 60.]* That brought back memories from many years ago, when a crew from the squadron I was then in (KC-135s assigned to the 28th [Air Refueling Squadron]) was sent out on some supersecret mission. They never, ever told anyone what they were doing (as far as I know), but I recall hearing one of them discussing, in oblique terms, some of the experiences they had.

From the conversation, I surmised that they were conducting the air refueling of a U-2 as it crossed the Pacific Ocean. It would seem that the U-2 pilot would take on fuel and then go on up to a respectable U-2 cruise altitude. Presumably, it kept track of the KC-135 through its navigation optics.

Gerald P. Hanner
Papillion, Neb.

Glitzy Ads Don't Equal Dedication

Advertising execs have taken the military by storm, with a wave of new slogans sold to armed services desperate to maintain recruiting goals. *[See "The Chart Page: USAF People: Recruiting, Retention, and Demographics," January, p. 10.]*

First, there was the ambiguous Air Force "No One Comes Close" campaign, then a series by the Navy best subtitled, "Ships? What ships? We joined to party overseas." Now the Army has bought into the "Army of One" miasma.

One of the senior advertising executives for the Army's contract firm told the nation the old "Be all you can be" slogan was seen as too authoritarian. Potential new recruits didn't like the idea of regimentation, order, or discipline. The new "Army of One" slogan appealed to their "me-oriented" natures.

Interpretation of some good and much not-so-good research of the legendary Generation X has yielded an impressive array of such pitches. Most focus on the Xers' limited attention span and perceived egocentric orientation. However, analysis of such an approach also delivers an important caveat. You get what you aim at!

The bright light in all this is that Generation X is not nearly so self-centered, and not all services have gone so far in pandering to this age group's baser side. Xers have also shown a surprising desire to see things accomplished beyond what they are capable of by their own effort. They want to believe in people and in organizations, despite the great deal of cynicism they've developed, given very public failures of leaders and institutions alike.

One service has seen this side of the studies and exploited it. The Marines have taken a harder line, actually challenging potential recruits to see if they can make it. All the while, the underpinnings of service before self are reinforced—this from a service that doesn't want to keep many recruits after the first or second term. Amazingly, many who leave serve as the best salesmen for the service.

The bottom line is simple. Glitzy ads, base appeals, bonuses, and Madison Avenue do not make a dedicated force of professionals. Honesty, hard work, and high standards make the difference. In fact, they have made the difference throughout our history. Let's not forget those hard won lessons for the sake of expediency.

Maj. Brett Morris
Maxwell AFB, Ala.

As a member of the Air Force Association, I'm concerned about lagging enlistments. [News articles] have detail[ed] how the Air Force chose its new advertising agency.

[They pointed] up the risk of relying on focus groups to make advertising decisions. Focus groups are only one of many resources, and they are aptly summed up in the words of direct marketing legend Andrew Byrne: "Focus groups know what they like and they know what they hate, but they don't know what sells."

Unfortunately, focus groups are seductive. Nothing impresses prospective clients more than seeing or hearing a dozen ordinary citizens dissect their product. There is a terrible urge to accept their recommendations and plunge in. So for $350 million the Air Force will get a creative television campaign and a new slogan that may or may not increase enlistments.

Too bad a direct marketing agency didn't make the final cut. It would have told the Air Force that the purpose of its ads was not to sell the Air Force but to get a phone call. Next, it would have developed an incentive to call (perhaps a monograph that laid out, in scrumptious detail, the benefits of joining).

Then it would have tested several TV and print ads on a small scale. The ads would have offered the monographs free to those who respond (quick and dirty title, "How the Air Force Will Teach You Computers, Give Purpose to Your Life, and Pay for Your College Education"). Then the agency would have measured response through 800 numbers, e-mail, or coupons to find the ad or ads that delivered the best response at the lowest cost. Finally, the agency would have picked a winner and run the hell out of it.

It makes more sense to let the marketplace decide which ads are to be used instead of letting the creative people decide. The logical, businesslike approach to the problem of slumping enlistments (that would have produced a better-educated group) never had a turn at bat.

But I wasn't surprised. In an advertising presentation, especially to a board that contains no hard-nosed, bottom line salespeople, emotion always outsells logic. Direct marketing's lead-generating techniques are just not very jazzy. My prediction: The Air Force's image-based $350 million TV–based campaign will make little, if any, difference in enlistments. Sorry about that.

John Quiroga
Denver

Corrections

In the March issue on p. 45: The B-17 mass flight, including B-17 *Swoose,* flew from the continental US to reinforce Clark AB, Philippines, with a stopover in Hawaii.

In the April issue, we introduced an error to the letter from retired Col. Robert F. Hegenberger on p. 7. The circa 1924 Luke Field was in Hawaii.

SOME MORNINGS

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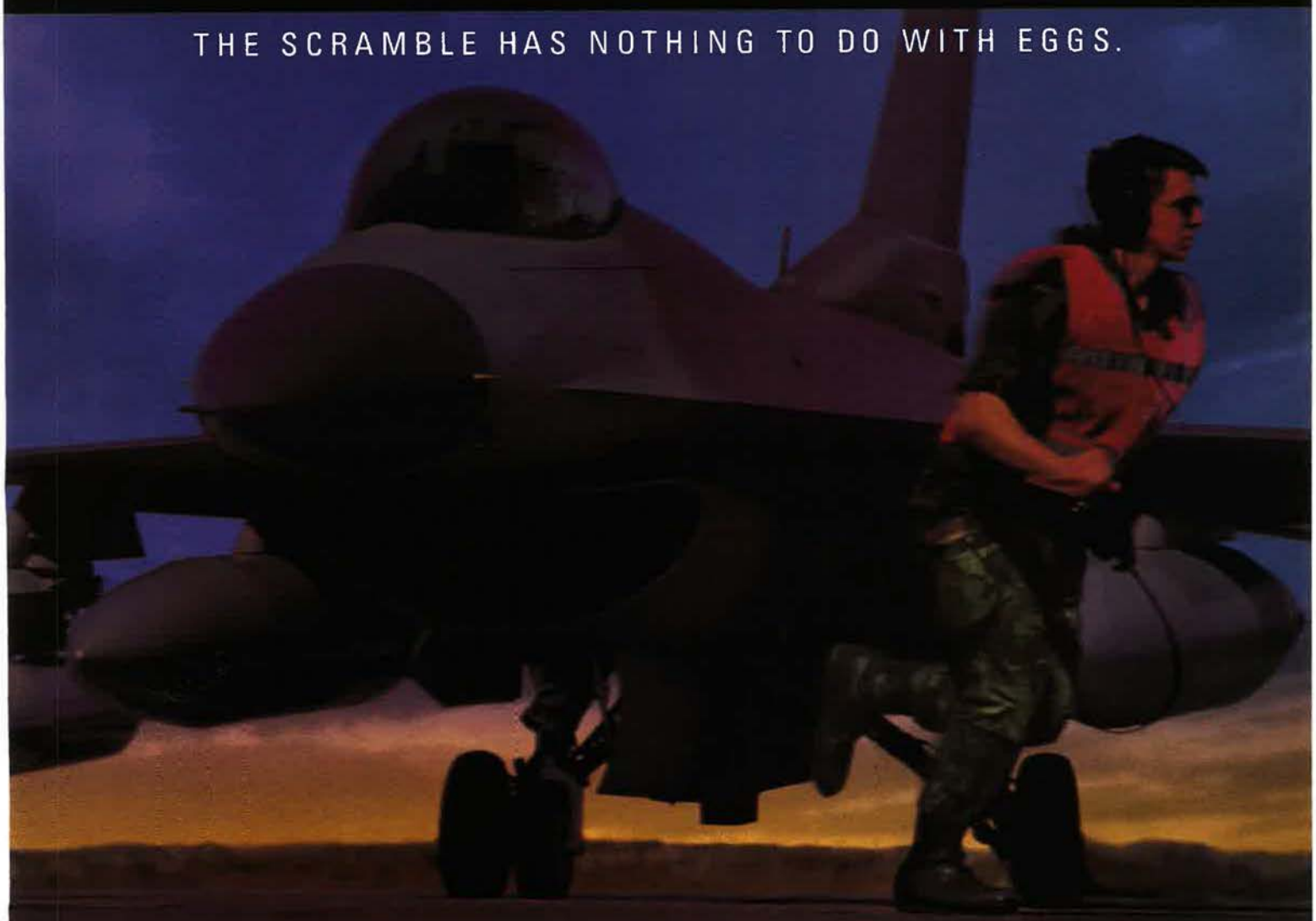

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Aerospace World

By Peter Grier

Congress Sustains F-22 Program

With a final decision on F-22 production bogged down in a Pentagon review, Congress agreed to an accounting trick that made available enough money to sustain the fighter program for six more months.

The late March decision was a bookkeeping maneuver. The lawmakers allowed DOD to shift $675 million out of this year's F-22 "procurement" account (which could not be spent) to "advance procurement" (which could be tapped). USAF was not able to spend "procurement" money because the Defense Department had not officially authorized production.

The effect of Congress' reprogramming was to allow the contractor, Lockheed Martin, to keep the fighter program on track while Secretary of Defense Donald Rumsfeld completed a review of defense programs and strategies.

Rumsfeld put off any production decision until he finished the review, but he requested the funds transfer to prevent an F-22 cost increase and serious erosion of the supplier base.

The new funding was expected to last through September.

Once, DOD planned to make a production decision in December 2000, but delays and a change of administrations prevented it. The Air Force convinced Congress to provide $353 million in special "bridge funding," which ran out March 31.

USAF photo

A B-52H flown by the 419th Flight Test Squadron, Edwards AFB, Calif., releases a Joint Direct Attack Munition in a recent test. The unit develops operational improvements for B-1Bs, B-2s, and B-52s. "We want to find any potential problems or hang-ups in a controlled environment," said Lt. Col. Arnie Bunch, 419th commander. Currently, the unit is planning to test a B-52H situational awareness defensive upgrade to face emerging threat systems.

USAF photo by A1C Joanna E. Reihle

A local mountain rescue team gives TSgts. Elbert Arnold and Anthony King II and SSgt. Brian Blais, from the 48th Fighter Wing, RAF Lakenheath, UK, a weather update. They were part of the search-and-rescue teams working in severe winter weather in late March to find the two F-15 pilots who crashed in the Cairngorm Mountains in Scotland.

Two USAF F-15s Crash in Scotland

The Air Force on March 26 lost two F-15C fighters that had been conducting low-level flight training over Scotland.

The pilots of both aircraft died in the accident. According to the Air Force, they were Lt. Col. Kenneth Hyvonen of the 48th Operations Support Squadron and Capt. Kirk Jones of the 493rd Fighter Squadron. The F-15s were based at RAF Lakenheath, UK.

The two fighters left Lakenheath on what was expected to be a three-hour sortie. About an hour into the mission, ground controllers lost contact as the jets passed over the Cairngorm Mountains in the Scottish Highlands.

Search-and-rescue teams had to suspend operations that evening because of severe winter weather; however, on March 27, they found the body of one pilot near the wreckage of his aircraft. Medical officials identified the pilot as Hyvonen.

It took another day for rescue crews to spot the second aircraft, as bad weather continued to hamper search efforts in the rugged mountains. It was March 29 when the search resumed for the second pilot and March 30 when the body was found.

RAF and civilian mountain rescue crews, as well as USAF forces, participated in the search.

A board of USAF officers will investigate the cause of the crashes.

Crash Claims Lives of 18 ANG Members

The loss of 18 Virginia Air National Guard civil engineers and a three-person Florida Army National Guard flight crew in the March 3 crash of a C-23 Sherpa near Macon, Ga., represents one of the worst peacetime tragedies in the history of America's National Guard.

The aircraft crashed in heavy rain after taking off from Hurlburt Field, Fla., en route to Oceana, Va. There were no survivors.

"This tragic loss on a routine training mission reminds us of the sacrifices made each and every day by all of our men and women in uniform," said President Bush in a White House statement.

The Virginia guardsmen were all members of the 203rd Rapid Engineer Deployable, Heavy Operational Repair Squadron, Engineer (RED HORSE) Flight. They were returning home after two weeks of laying water, sewer, and electrical lines in the Fort Walton Beach area as part of their two weeks of annual training.

Their deaths wiped out 10 percent of the 203rd RED HORSE unit.

The C-23's Army aircrew was assigned to Det. 1, 1st Battalion, 171st Aviation, Lakeland, Fla.

"Both organizations have taken a very hard blow that will impact the members, their families, and their communities," said Lt. Gen. Russell C. Davis, chief of the National Guard Bureau.

For the Future Air Force, 14 Critical Capabilities

Maj. Gen. (sel.) David A. Deptula, director, Air Force national defense review, has unveiled what USAF sees as the future force's must-have capabilities.

He told a March 28 session of the House Armed Services Military Procurement Subcommittee that USAF will need to possess 14 "critical" capabilities, giving it the power to:

1. Rapidly dominate (within days) adversary air defenses to allow freedom to maneuver, freedom to attack, and freedom from attack.
2. Render an adversary's cruise and ballistic missiles ineffective before launch or soon after.
3. Protect US space assets and deny adversary space capability.
4. Create desired effects within hours of tasking, anywhere on the globe, including locations deep within an adversary's territory.
5. Provide deterrence against Weapons of Mass Destruction attack and coercion by maintaining a credible, land-based nuclear and flexible conventional strike.
6. Create precise effects rapidly, with the ability to retarget quickly, against large, mobile, hidden, or underground target sets anywhere, anytime, in a persistent manner.
7. Assess, plan, and direct aerospace operations anywhere in near-real time, tailored across the spectrum of operations and levels of command.
8. Provide continuous, tailored information within minutes of tasking with sufficient accuracy to engage any target in any battlespace worldwide.
9. Ensure US use of the information domain, unhindered by all attempts to deny, disrupt, destroy, or corrupt it, and ensure US ability to attack and affect an adversary's information in pursuit of military objectives.
10. Provide the airlift, aerial refueling, and en-route infrastructure capability to respond within hours of tasking to support peacetime operations or crisis operations.
11. Build an aerospace force that enables robust, distributed military operations with time-definite sustainment.
12. Build a professional cadre to lead and command expeditionary aerospace and joint forces.
13. Implement innovative concepts to ensure we recruit and retain the right people to operate our aerospace force in the future.
14. Achieve an unrivaled degree of innovation founded on integration and testing of new concepts, innovations, technologies, and experimentation.

NATO Allies Would Accept US Missile Defense, Says Ralston

America's NATO allies are not opposed to missile defenses per se, Air Force Gen. Joseph W. Ralston, commander in chief of European Command, told a Senate panel on March 21.

They are most focused instead, he said, on the worry that the United States will unilaterally withdraw from the Anti-Ballistic Missile Treaty and erect defenses in a climate of hostility with Russia.

If the US can work with Russia on the missile defense issue, NATO allies would accept the defenses themselves.

"If the United States has a defense so that you are not subject to blackmail and the President is not subject to blackmail, ... then we will be a stronger alliance, not a weaker one," said Ralston.

Three Airmen Die in Helo Crash

Three of the 16 people who died in a helicopter crash April 7 in Vietnam were Air Force personnel, all part of Joint Task Force–Full Accounting.

They were TSgt. Robert M. Flynn, Maj. Charles E. Lewis, and MSgt. Steven L. Moser.

There were four other American service members—three Army and one Navy—and nine Vietnamese civilians killed when the Russian–made Mi-17 transport helicopter crashed into a mountain in central Vietnam. Three of the Vietnamese made up the flight crew and four were aircraft technicians.

The group was doing preliminary work for a recovery and investigation team scheduled to arrive in Vietnam in late April to continue the search for unaccounted-for Americans from the Vietnam War.

Secretary of Defense Donald Rumsfeld said that since joint recovery searches began in 1985, this accident presented the first loss of life.

He called the work a "noble calling" and pledged that the "mission will continue, even in the face of this tragedy."

Since its inception in 1992, JTF–FA has conducted more than 3,400 case investigations and 590 recovery operations. According to the Pentagon, the remains of more than 600 Americans have been recovered and identified.

USAF photo by SrA. Scottie T. McCord

As part of a simulation during an operational readiness inspection at Osan AB, South Korea, Capt. Carri Waltz (at right), from the 51st Mission Support Squadron, informs firefighters that the unit cannot account for two airmen.

Congressional EW Caucus Calls for Many F-22s

The Congressional Electronic Warfare Working Group released an issue brief March 13 that calls for increasing the planned purchase numbers of the F-22 to 750 from 339.

Such a move would restore the planned F-22 fleet to the size the Air Force envisioned before "arbitrary budget compromises" halved its numbers, said EW Working Group member Rep. Jim Gibbons (R) of Nevada. The numbers were cut after the 1997 Quadrennial Defense Review.

"It is important that members of Congress and the Bush Administration understand the critical need for the F-22 aircraft," said Gibbons, a former combat pilot, in a statement. "The United States must not underestimate the importance of maintaining air superiority during times of conflict."

The issue brief argues that restoring the original number of 750 would have four benefits.

First, it would give the Global Strike Task Force concept "real teeth." Gen. John P. Jumper, commander of Air Combat Command, envisions GSTF as a way to "kick down the door" and push back enemy air defenses, creating room for nonstealthy US "persistence forces."

Second, it would reduce the F-22's flyaway cost to about $74 million per aircraft—approximately the cost of an F-15.

Third, by buying enough F-22s to outfit all 10 Aerospace Expeditionary Forces with two squadrons of 24 aircraft, the Air Force could retire the F-15 and F-117 while allocating Block 50 F-16s to the Guard and Reserve. Three airframes would thus be effectively replaced with one.

Fourth, with 750 F-22s the Air Force could afford to outfit the aircraft with generation-skipping air-to-ground technology, such as an onboard synthetic aperture radar.

"Armed with eight small diameter bombs, carried internally, this F-22X could effectively 'kick down the door' and provide an all-encompassing air dominance capability," states the EW Working Group brief.

CINCPAC Calls North Korea No. 1 Foe

The Commander in Chief of US forces in the Pacific is comfortable using the "e" word—as in "enemy"—to describe North Korea.

"I define North Korea as the No. 1 enemy state when I look across my area of responsibility," said Adm. Dennis C. Blair, CINC, Pacific Command, in a meeting with South Korean reporters on March 20, according to an Associated Press report carried by the *Korea Herald.*

That does not mean he believes Pyongyang is poised for attack. The chances of war on the Korean peninsula are low, he said, because North Korea knows it would be defeated by the combined strength of US and Republic of Korea forces.

DOD Probes Fatal Kuwait Training Accident

US military officials are launching a full-scale investigation into the March 12 Kuwait training accident in

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which an errant rack of bombs from a Navy F/A-18 killed five US service members and one military officer from New Zealand.

Four of the fatalities were US Army personnel. One was a member of the Air Force—SSgt. Jason M. Faley, a tactical air controller with the 19th Air Support Operations Squadron, Ft. Campbell, Ky.

Seven others were injured in the incident, which took place during a night exercise at the often-used Udairi live-fire range some 30 miles from Kuwait's border with Iraq.

The casualties were all in an observation post, a small tower about 10 feet high, when at least two Mk 82 unguided bombs struck nearby.

Preliminary reports indicated that the forward air controller directing the F/A-18 made an unsuccessful attempt to call off the bombing run at the last moment. Among the questions that the Pentagon's investigation team—headed by Marine Lt. Gen. Michael P. DeLong, deputy commander in chief of Central Command—hopes to answer is whether the forward air controller misdirected the airplane or the pilot made an error in tactical navigation.

The forward air controller on the mission was an Air Force enlisted man—SSgt. Timothy B. Crusing. He was seriously injured in the accident.

USAF photo by A1C Bradley C. Church

1st Lt. Ed Markie (center), navigator for a HALO, or High-Altitude Low-Opening drop, discusses the drop zone at Benguerir Airfield, Morocco, with a Moroccan airman. They were participating in a Blue Sands training exercise in March.

Cadets Charged in Academy Drug Scandal

On March 14, Air Force officials charged five US Air Force Academy cadets with the use or sale of illegal drugs, bringing the number of cadets charged in one of the school's biggest scandals to seven. Two of the seven have already been convicted and sentenced.

The drug investigation, which began Oct. 16, initially placed 35 cadets under suspicion. In January, academy officials announced that the investigation had narrowed to 14. They had exonerated 12 and disciplined nine for knowing about and failing to report the alleged illegal activity.

The sentence of the first cadet convicted, who pleaded guilty to use of cocaine, LSD, Ecstasy, and methamphetamine and distribution of Ecstasy and LSD, included dismissal and confinement at Ft. Leavenworth, Kan., for 3.5 years. The second cadet pleaded guilty to making a false statement and using LSD. His sentence included dismissal and confinement for five months.

For the latest cadets charged—two seniors, two juniors, and one sophomore—confinements could range from up to five years to up to 57 years, according to the academy.

Officials said the investigation is continuing. Although the cadets currently under investigation represent less than one-half of one percent of the cadet wing, the academy has increased the number and frequency of random urinalysis drug tests, including weekends and after holidays.

"We expect our cadets to meet higher standards, and 99-plus per-

Boeing Plans Move From Seattle

Boeing announced March 21 that it plans to move its corporate headquarters out of Seattle to either Chicago, Dallas, or Denver.

The aerospace giant's top managers will be leaving the area with which Boeing has long been associated to emphasize a corporate shift toward leaner operations focused on a broader array of businesses, said CEO Philip M. Condit at a Washington news conference.

Those new areas include the provision of Internet services to aircraft, commercial aircraft servicing, and even satellite communications.

"Boeing has a wealth of opportunities in our new definition of the aerospace industry," said Condit. "Our new corporate architecture will help us capture them."

Boeing will still have a presence in the Northwest. The company has not announced how or if the proposed reorganization will affect the firm's massive manufacturing facilities in the Seattle suburbs of Renton and Everett.

But with competition in its core aircraft business intensifying, Boeing must look further afield for growth, said firm officials. Europe's Airbus is a rising star in airliners; Lockheed Martin is a tough foe in the military aircraft field.

Against this background, Boeing has been uncharacteristically bold in diversification moves in recent months. In January 2000 it bought Hughes Electronics satellite manufacturing division for almost $4 billion from GM. A few months later it paid $1.5 billion for Tribune Co.'s aviation mapping unit.

The goal, said Condit, is to become a diverse provider of "aerospace solutions," as opposed to a pure manufacturing firm.

Now, It's Just "Missile Defense"

The US effort to develop and deploy anti-missile weaponry, formerly known as National Missile Defense, will henceforth be named simply Missile Defense, Secretary of Defense Donald Rumsfeld said at a March 8 Pentagon news conference.

A minor change? Not hardly, in the eyes of Bush officials. Eliminating the reference to "national" is meant to reassure European allies that the US missile shield effort is not intended to leave them unprotected.

Similarly, the word "theater" has been banished from the former "theater missile defense" effort to protect deployed US forces.

" 'National' and 'theater' are words that aren't useful," said Rumsfeld. "What's 'national' depends on where you live, and what's 'theater' depends on where you live."

"My interest is in seeing if we can't find ways to develop defenses against ballistic missiles where we have interests," Rumsfeld continued.

Earlier, an Administration official confirmed that the Bush Administration plans to add at least a billion dollars to the Fiscal 2002 missile defense research and development budget. Exactly what programs that money will support, Rumsfeld said, remains undetermined.

cent of them do, day in and day out," stated Col. Brian Binn, USAFA vice superintendent.

Accident Report May Spur Flight-Rule Change

The Air Force is considering changes in several categories of flight rules, including those governing the operation of military aircraft in civilian airspace, following the March 6 release of an official accident report on the collision of an F-16 and Cessna 172 over Florida last Nov. 16.

The changes could involve flight speed, instrument flying, and methods of descent, officials told the *Chicago Tribune.*

A critical combination of avionics glitches, procedural errors, and human mistakes lay behind the Bradenton, Fla., accident, according to the report. The F-16 pilot ejected safely following the midair collision. The Cessna pilot was killed.

The first direct cause of the mishap was the failure of the two aircraft to see and avoid each other, according to Air Force investigators. The second was the failure of Tampa air traffic controllers to alert the Cessna after their radar system generated "conflict alert" warnings some 30 seconds prior to impact.

Of greater interest to future Air Force operations, however, were the three factors that placed the F-16 in an area where it could cause an accident to begin with. Investigators identified each of these other links in the chain of events as "a substantially contributing factor."

The F-16 was part of a two-ship formation preparing to begin a surface-attack training mission over a marked military training space at the Avon Park Air Force Range. The first factor was that the lead F-16 pilot lost situational awareness while descending under visual flight rules.

Second, the lead F-16 had a malfunction in its inertial navigation unit that the pilot failed to recognize and which put both aircraft about 10 miles off course. And third, the lead F-16 pilot also made an inadvertent cursor input to his navigation system during the flight, sending both aircraft farther off course when he switched into ground-attack steering mode.

These mistakes caused both aircraft to descend into controlled civilian airspace without the required communications with air traffic controllers. Below them, the Cessna was climbing after takeoff from Sarasota–Bradenton International Airport.

Technological advances, training

Army Retreats, Compromises on Beret Issue

Army Rangers will still wear headgear that is distinctively different from that of other US soldiers. But that headgear will be tan berets, not the black ones that the elite corps has sported for nearly 20 years.

Pentagon officials hope this compromise, announced March 16, will quell the controversy that has roiled the Army since October, when Chief of Staff Gen. Eric K. Shinseki announced his intention to issue black berets to everyone in the service, whether they had undergone grueling Ranger training or not.

Ranger leaders said they accepted the tan beret offer as a means of maintaining their separate identity.

"Rangers have never been measured by what they have worn in peace or combat, but by commitment, dedication, physical and mental toughness, and willingness to lead the way," said Col. P.K. Keen, commander of the 75th Ranger Regiment, Ft. Benning, Ga. "The beret has become our most visible symbol. It will remain so."

The original black beret decision sparked widespread resistance, primarily from retired Rangers who believed it was an insult to the sacrifices of elite soldiers past.

Several ex–Rangers walked 750 miles from Ft. Benning to Washington, D.C., in protest, with dozens more joining in on the final leg. Sen. John Warner (R–Va.), chairman of the Senate Armed Services Committee, sent Secretary of Defense Donald Rumsfeld a letter asking him to reconsider the move. Minnesota Gov. Jesse Ventura—himself a former Navy SEAL—even raised the issue with President Bush at a White House social occasion.

In the end the Army bent under the political pressure. But Shinseki continued to defend his original black beret order on the grounds that he was trying to infuse the Army with new spirit.

"This is an Army that's going to be transforming for the next 10 years," he said. "Change is difficult and this is somewhat symbolic, in that aspect."

The Army Chief had wanted 1.3 million new black berets ready for issue on June 14, the service's birthday. The pressure of producing so many caps so fast led the Defense Logistics Agency to waive "buy American" provisions and order a large percentage of berets from firms that have plants in Third World nations and China.

That's another aspect of the beret controversy that is "being reviewed," noted Shinseki in the March 16 press briefing.

improvements, and airspace structure refinements on the part of both military and civilian aviation have made the skies safer over the past decades, concluded the accident report. On occasion, equipment malfunctions, and people make mistakes—usually with few or no consequences.

"There are, however, times when several such events occur in close sequence to each other and in a synergistic way to produce tragic results—this mishap is one such case," concluded the accident investigation board.

Recruiter Assistance Program Deemed a Success

The Air Force's expansion of its Recruiter Assistance Program has been a smashing success, say personnel officials. Since the beginning of this fiscal year it has sent 5,454 active duty airmen into the field to tell their service story to potential recruits.

RAP now allows all Air Force personnel up to 12 days of nonchargeable leave for recruiting assistance. Before this change, which was made in April 2000, only technical school graduates were eligible for the program—and they could only return to their hometowns.

Participants in the new expanded program have logged a total of 56,287 leave days so far.

"Feedback is excellent," says MSgt. Lewis Luster, noncommissioned officer in charge of production analysis at Air Force Recruiting Service, Randolph AFB, Tex. "I'm a recruiter and I've used the program myself. The recruiters definitely like it and want to keep it."

USAF photo by SSgt. Angela Stafford

Lt. Col. Red Millander (left), 17th Airlift Squadron commander at Charleston AFB, S.C., talks about the C-17 with UK Minister of Defense Geoffrey Hoon (seated). British pilots and loadmasters have been at Charleston to receive operational training. RAF No. 99 Squadron will be the first non–US unit to maintain and operate the C-17 transport.

Pentagon Watches China Military Spending

Department of Defense officials said on March 6 that they are studying the implications of China's reported 17.7 percent increase in military spending—but at the same time they downplayed the significance of Beijing's budget move.

"Is it something that we pay attention to? You bet," Pentagon spokesman Navy Rear Adm. Craig Quigley told reporters. "Is it all by itself going to have a profound impact on US defense policy and defense spending? I don't think so. I think that is too strong a description."

China announced the increase in the armed forces official budget early in March, likely in an attempt to send a message to the world that it is serious about modernizing its 2.5-million-man military.

Western analysts believe some of the spending may go toward modernizing missile forces, with an eye to countering a possible US missile defense. But most is thought destined for purchase of modern fighters, precision guided munitions, amphibious landing craft, and other weapons intended to intimidate Taiwan.

Whether China's military budget is in fact $17.2 billion, as Beijing holds, remains an open question. Some Western analysts say it is twice that amount or more. China's hard-currency purchases of weapons on the open international market are not always publicly disclosed.

Personnel Info System Gets Major Update

The Air Force's new Military Personnel Data System Modernization program, or MilMod, was set to be turned on May 1—providing service personnel specialists with their first state-of-the-art system in 20 years.

MilMod will replace a system that has long relied on 1970s technology.

"We've been working hard for nearly

RAND: Only UK Will Stand With US in the Gulf

A new RAND study holds that Britain will increasingly be the only NATO ally to fully cooperate with the US in military efforts to force Iraq to comply with United Nations resolutions.

Most of the US' European allies are more focused on their own continent and on developing military capabilities for European peace operations. This withdrawal from involvement in the Gulf might produce strains that could jeopardize "NATO's future and America's continuing engagement in Europe," says the study.

For this and other reasons the US military is beginning to develop a go it alone mentality, according to RAND. The advantages of such an approach seem obvious: Unilateral military operations are easier to conduct.

But the US still needs allies' aid, says RAND. This is particularly true in areas where the US military has key capability shortfalls, such as in electronic warfare and tactical reconnaissance aircraft.

"The United States should encourage its allies to maintain and improve these 'niche' capabilities," says the report.

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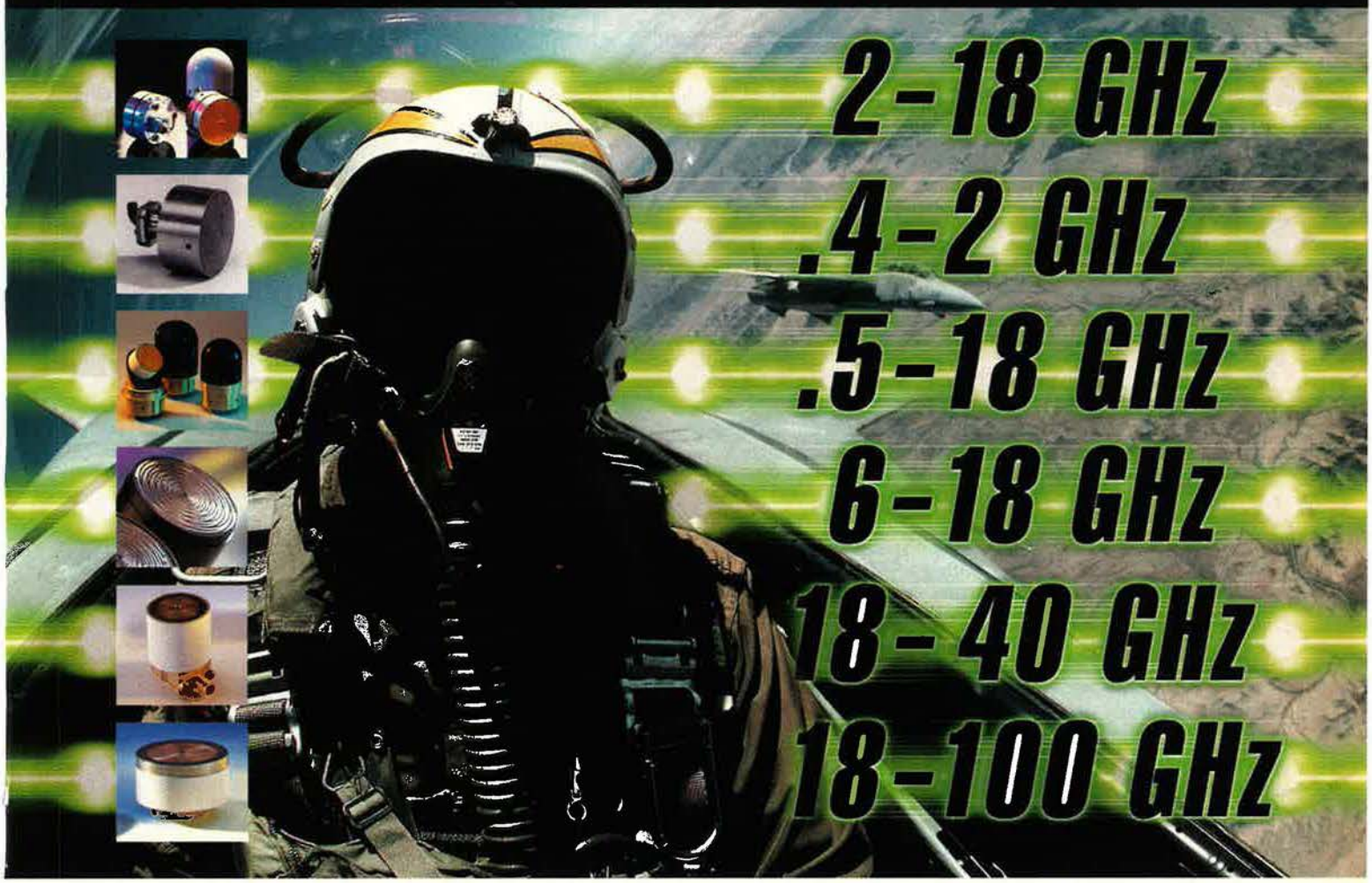

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five years, building this modernized system to take Air Force personnel processing into the next century," said Lt. Col. Ed Oliver, MilMod program manager at the Air Force Personnel Center, Randolph AFB, Tex.

The new system will support all personnel management functions, from recruitment to separation. It will provide real-time updating not available in the old system.

For users the most obvious im-

Fogleman: Exit Was "Early Retirement," Not Protest ...

In July 1997, Gen. Ronald R. Fogleman abruptly retired, vacating the position of Chief of Staff of the Air Force one year early. This act was interpreted at the time as a resignation in protest over DOD's assignment of blame for the June 1996 Khobar Towers terrorist attack in Saudi Arabia.

Not so, says a story in the spring 2001 *Aerospace Power Journal*. In the article, Fogleman describes his exit as an "early retirement," requested by him out of frustration with Pentagon politics and the unwillingness of senior officials to heed his advice. "I simply lost respect and confidence in the leadership that I was supposed to be following," said the former Chief.

Fogleman made his remarks in an interview with Richard H. Kohn, former Air Force historian and now a professor at University of North Carolina at Chapel Hill. The two spoke five months after Fogleman retired, but the general had "grave misgivings" about the interview and asked that it never be published. Eventually, he agreed that publication could proceed once the Clinton Administration had left office.

Fogleman told Kohn that, by mid-1997, he had "become ineffective" as spokesman and advocate for the Air Force. His duties included providing military advice to the nation's civilian leadership, he said, but it was proving to be advice which that leadership "did not value, for whatever reason."

Fogleman referred specifically to Secretary of Defense William S. Cohen and his senior staff. "This was a crowd that took any kind of military advice that ran counter to Administration policy or desires as a sign of disloyalty on the part of the person providing the advice," said Fogleman. He was concerned that his counsel was alienating the civilian leadership to the point where "the service [might have been] punished." He added, "That's one reason to leave."

Moreover, Fogleman soured on fellow members of the Joint Chiefs of Staff, characterizing some closed-door debates in the JCS "Tank" meeting area as "just absolutely absurd." Some, he added, were "at fairly high levels of classification."

He was "shocked" by an episode that occurred as DOD kicked off the 1997 Quadrennial Defense Review. An Army two-star general (unnamed) came to his office, bearing a message from Gen. John M. Shalikashvili, the JCS Chairman, who was reacting to Fogleman's public call for DOD to acknowledge the Revolution in Military Affairs and explore "how we could and should fight future wars" with a "smaller, better-focused" force.

"No Billy Mitchells"

"In the QDR," the Army officer told Fogleman, "we want to work hard to try and [stay] as close to the status quo as we can. In fact, the Chairman says we don't need any Billy Mitchells during this process."

Fogleman told the messenger he found the phrasing "unfortunate" but he understood the message. "From that point on, I really did not have much hope for the QDR," Fogleman said. He felt that only William J. Perry, Cohen's predecessor, had the "stature" to compel the services to transform.

Something else weighed on Fogleman. He recently had read *Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies That Led to Vietnam*, a blockbuster written by Army Maj. H.R. McMaster. Based on newly released documents, the book offered a devastating portrait of a mid-1960s senior uniformed leadership as being composed of weak, compliant, log-rolling, and politically attuned Chiefs.

Fogleman discerned troubling parallels between his own experience and events in the McMaster book. He said, "Seeing some of the things that were going on in the Tank ... maybe not on the same scale, but the same sickness ... service parochialism, the willingness to collectively go along with something because there was at least some payoff for your service [branch] somewhere in there." This galled him.

Mauling of the F-22

The 1997 QDR turned into an exercise to avoid new thinking about the post–Cold War world and also a budget scrape-up to find $60 billion for modernization that the service chiefs had told Congress was urgently needed. In this budgetary free-for-all, the F-22 fighter program was unjustifiably mauled by the Office of the Secretary of Defense, Fogleman asserted.

"The folks at OSD decided to make major disruptions in this program for no good reason at all," Fogleman said. USAF advice—which, in his view, was the advice of the airpower professionals based on legitimate intelligence about the threat—was contested by "a bunch of number crunchers."

In the end, DOD cut the program from 438 to 339 aircraft. Cohen made his decision "on political grounds more than anything else," said Fogleman. The F-22, Fogleman said, would be a "quantum jump" in fighter technology and enable the US to "cease worrying about air superiority for the first 35 years" of this century. However, OSD "fundamentally ... ignored the military rationale" for it.

Fogleman also charged that Adm. William A. Owens, JCS vice chairman, unnecessarily "inflamed" the tactical aviation debate with erroneous public comments that fighters were consuming an inordinate amount of the defense budget. Owens had "incorrectly quoted some statistics" about tactical aviation, said Fogleman, which then were taken up by Congress and media.

The Problem With Amateurs

"This line of argument took on a life of its own," Fogleman said. He felt "the nature of the presentation" had disrupted what had been a logical and integrated

provement will be a graphical user interface.

"We've also standardized the support we're providing to the Total Force," said Oliver. "This will improve system support to the Air National Guard and Air Force Reserve personnel processes."

Bush Toughens Stance Toward North Korea

Bush Administration officials are taking a markedly more skeptical approach to relations with North Korea than did their Clinton White House predecessors.

On March 8, Secretary of State Colin Powell suggested that Pyong-

... And Cohen's Actions Were "Purely Political"

multiservice air modernization program. "If you look at the history of Tacair, anytime the amateurs mess with it, it gets screwed up," Fogleman charged.

Fogleman also was steamed about the 1st Lt. Kelly Flinn affair, a tempestuous public fight which strained what until then had been a positive relationship between him and Secretary of the Air Force Sheila Widnall.

Flinn—a B-52 copilot billed as a pioneer for women in combat aviation—had disobeyed orders, carried on an affair with the husband of an enlisted woman, and lied to her superiors. The Flinn case was "a cut-and-dried thing as far as I was concerned," said Fogleman, but Widnall, likely pressured by superiors to quickly end the embarrassing and politically charged, nationally infamous case, suggested granting Flinn an honorable discharge to get her out of the headlines.

"I said, 'Madam Secretary, if you give her an honorable discharge, you can also select a new Chief of Staff,' " the former Chief recalled. "That was the only time I ever talked that way to any direct supervisor or leader, because I felt so strongly about it."

In the end, Flinn left the Air Force with a general discharge.

Backfire

Fogleman was frustrated that one of his own moves had backfired on him. Early in his tenure, he taped a video message to be shown to personnel throughout the Air Force; in the tape, he emphasized personal responsibility and accountability in the ranks. The tape was intended to set a new tone in the wake of the April 1994 shootdown of two Army Black Hawks by F-15s in Iraq and the June 1994 crash of a B-52 whose pilots were hotdogging with the huge bomber.

While the video did achieve the desired effect to some degree, Fogleman acknowledged that "it may have started to go too far." By that, he meant "commanders were deferring to lawyers rather than taking [nonjudicial] action" to deal with subordinates who had behaved improperly.

Disappointment with fellow Chiefs. Conflict with Widnall over a matter of basic discipline and integrity. Confrontation with Cohen and OSD's political agenda. Fallout from the Khobar Towers incident. Taken together, these events engendered in Fogleman a feeling that he was "out of step." He noted, "After a while, you look around and experience some serious doubts about whether you can be right and everybody else is wrong."

He said he had taken the job, planning to stay only so long as he was effective and not to "hang on" through the fourth year of the assignment if he was only marking time. Worried that he had become persona non grata with the Chiefs and his civilian bosses, Fogleman left rather than see the service "punished" on his account.

"In my heart," he said, "I concluded that my continued service was not in the best interest of the Air Force."

Fogleman's exit came just before Cohen decided to deny promotion to Brig. Gen. Terryl J. Schwalier, commander of the 4404th Composite Wing in Saudi Arabia when a terrorist bomb destroyed Khobar Towers housing complex and killed 19 airmen.

Fogleman told Kohn that Schwalier, "at the tactical and operational levels, [had] done everything reasonable—and beyond—to protect his troops." Fogleman worried that making Schwalier a scapegoat would have a chilling effect on commanders, who would interpret the move as a signal that they should make protecting troops more important than carrying out the mission.

Fogleman said that, in the aftermath of the attack, he watched "with great interest" as "people in Washington" uttered statements "on the basis of no factual knowledge whatsoever." Fogleman went to Saudi Arabia to meet Schwalier, who offered his retirement to "remove any kind of a target for people to attack both the institution and individuals." Fogleman assured Schwalier that his objective was "to get the facts out." He told him that, if he had "screwed up," he could "expect to be held accountable." If not, he emphasized, "then I will support you."

"Fundamentally Wrong"

In the investigations that followed, the Air Force and Schwalier were treated in a manner that was "fundamentally wrong" for "purely political reasons." Fogleman said, "I think a hell of a lot of other people came to that same conclusion."

Fogleman, already deeply disenchanted, confided to members of the press that a public punishment for Schwalier might just be the straw to break the camel's back and that he might step down.

He elected to do so in advance of Cohen's final decision on Schwalier, "so that my leaving would not be in response to the decision on General Schwalier, to defuse that conflict," Fogleman asserted. There had by then been press accounts that Fogleman had threatened to resign if Cohen stopped Schwalier's promotion, reports which Fogleman called "simply untrue."

Instead, "I wanted to take that off the table and give him one last opportunity to act on the Schwalier case on the merit and facts ... rather than the issue of the Secretary of Defense's power vis-a-vis some service chief."

Three days after Fogleman's request for retirement, Cohen made it official: Schwalier would not be promoted and was deemed responsible for the Khobar Towers casualties if for no other reason than that, as commander, he should have done more to protect his troops. *[See Schwalier Letter to Editor, p. 4.]*

Did his act have any effect? Fogleman said it perhaps "alerted people to remember to pay attention, every now and then, to the military judgment of the Chiefs, because those guys over there have other options than to sit still and take their licks." After he left, Fogleman said, he believed "the politicians were reluctant to take on the Chiefs because they didn't want somebody else to step over the side."

USAF photo by A1C Ruth Leannarda

"Survivors" from a simulated aircraft crash move through the Apalachicola National Forest, near Tallahassee, Fla., toward a rescue point during exercise Panhandle Rescue 2001. The exercise allows various types of Air Force units to train together in search-and-rescue situations.

Taiwan Appeals for US Arms

On March 8 Taiwanese officials publicly appealed to the United States to maintain or increase its arms sales to Taiwan in the face of diplomatic pressure from China to do otherwise.

"Hopefully the US government would properly take into consideration our needs," Gen. Huo Shou-yeh, vice chief of the Taiwan's General Staff, told reporters.

Among the US weapons on Taiwan's annual shopping list this spring: four Aegis destroyers for anti-air defense; P-3 submarine-hunting aircraft; high-speed anti-radiation and AIM-120 air-launched missiles; and Joint Direct Attack Munitions.

The *Washington Times* reported that a new US Senate Foreign Relations Committee staff report concludes that Taiwan urgently needs the advanced military capabilities represented by these weapons.

"Specifically, Taiwan desperately needs more advanced, longer-range weaponry, early warning capabilities, and better [command-and-control] capabilities," the report states.

yang might need to reduce the size of its million-man armed forces as the price of continued engagement with the West. He also suggested that the US might re-evaluate a 1994 nuclear deal in which the US, South Korea, and Japan promised North Korea two modern nuclear power plants in exchange for which North Korea must freeze its nuclear weapons program.

"We're going to take our time, we're going to put together a comprehensive policy, and in due course, at a time and at a pace of our choosing, we will decide and determine how best to engage with the North Korean regime," Powell said in an appearance before the Senate Foreign Relations Committee. In response, North Korea is again issuing the sort of tough rhetoric that marked its diplomatic responses prior to its recent thaw in relations with South Korea and the US.

An editorial disseminated in state-controlled media March 14 called the US a "cannibals' nation" and accused the Bush Administration of a "provocative and reckless diatribe."

E-6 Tenure High Year Goes to 22

Effective July 1 the High Year of Tenure for technical sergeants will increase from 20 to 22 years of service.

Ten years ago the maximum length of service for an E-6 was reduced from 23 to 20 years, the same as staff sergeants. The then-impending force drawdown was a major factor in the change.

That era is now behind the force. A review of HYT rates indicated that some fine-tuning for technical sergeants was in order, according to personnel officials.

"First, it's an opportunity to reward tech sergeants for career advancement and let them stay in the service longer. Second, it establishes a natural HYT bridge between staff sergeant HYT of 20 years and master sergeant HYT of 24 years' service," said SMSgt. Larry Welch, superintendent of force structure plans at the Air Staff.

US Scores Russia–Iran Ties

Russia's growing diplomatic and financial relationship with Iran could put the level of US aid to Moscow in question, Secretary of State Colin Powell said March 14.

Iranian officials have said they plan to purchase upward of $7 bil-

Does Tricare Siphon Money From Direct Care System?

The rapidly escalating costs of managed care support contracts are siphoning money away from another key area of military health: the direct care network of military treatment facilities.

That is the message the surgeons general of the Army, Navy, and Air Force delivered to a Senate panel Feb. 28.

"There is constant pressure to find relief by reducing the direct care program funding in our military treatment facilities to pay for the managed care contracts," said Vice Adm. Richard A. Nelson, Navy surgeon general.

Emergency supplemental funding approved last year had allocated $696 million for the direct care system and $616 million for Tricare contracts.

Rising costs meant that almost all the money went to Tricare, instead.

"There is nothing left in construction, in real property maintenance," said Lt. Gen. Paul K. Carlton, Air Force surgeon general. "Our equipment is literally well beyond its life expectancy. Our facilities are falling down."

Public Wants To Stop Nukes, Secure Oil Supplies

The US public sees preventing the spread of nuclear weapons as the nation's most important foreign policy task, according to a Gallup poll released March 8.

Running a close second is ensuring US energy supplies.

Gallup presented Americans with a list of several foreign policy goals and asked them to rank their importance. Two of the goals emerged as the most important—preventing the spread of nuclear weapons (identified as very important by 82 percent of the public) and securing adequate energy supplies (79 percent).

Americans also supported defending allies (62 percent say it is very important), maintaining superior military power worldwide (59 percent), and promoting and defending human rights in other countries (51 percent).

lion worth of arms from Russia in coming years. During a Moscow summit in early March, Russian President Vladimir Putin warmly received Iranian President Mohammed Khatami.

"We have to be concerned when we see suggestions that [Russia] may be investing in weapons sales or accomplishing weapons sales with regimes such as Iran," Powell said in an appearance before the Senate Budget Committee.

Powell put Russia on notice that in general the new White House team will be more reluctant to open its checkbook for bilateral or multilateral aid program support.

"Our goal should be not to see if we can make Russia our best friend or to try to see if we can make it an enemy again but to help it through our examples, through support where support is merited, but not by throwing money down [on] programs and in ways that don't make sense," he said.

Base Closings Redux

The base closings issue is back.

Six years ago, Congress abruptly halted the work of an independent base closure commission, charging that Bill Clinton had unfairly politicized the closing process. Now the Bush Administration is asking lawmakers to rev that process up again—as is Sen. John McCain (R–Ariz.), the new President's former GOP primary nemesis.

"We have too many military bases," McCain, a senior member of the Armed Services Committee, said on introducing new closure legislation. "The Cold War is over. We will never have a requirement for as many bases as we have today."

In its budget submission to Congress, the Bush White House said that while the Secretary of Defense is still reviewing the existing force structure, the current number of bases and other facilities represents "23 percent in estimated excess infrastructure."

A new round of base closings, following on the heels of rounds carried out in 1988, 1991, 1993, and 1995, will be necessary to make the military run efficiently, according to Bush budget documents.

Meanwhile, McCain's legislation would authorize two rounds of closings, in 2003 and 2005. Savings would total $20 billion by 2015, he said.

USAF Helps Snag Hacker "Coolio"

On March 9, a New Hampshire teen hacker who went by the online nickname of "Coolio" was sentenced to a year in prison and a $15,000 fine for unauthorized entry into computer systems—in part because of the efforts of computer-crime investigators from the Air Force Office of Special Investigations.

The teen, whose real name is Dennis Moran, pled guilty in county superior court to hacking into several computer systems, including one at Patrick AFB, Fla. Moran eventually gained "superuser-level privileges" at Patrick, enabling him to read files, write files, even make changes to the system.

"He even set up a backdoor so that he could come back and connect again without a password," said OSI Special Agent Ken Koch.

Koch, a computer specialist at Det. 802 at Patrick, traced the intrusion back through two Internet providers before learning Moran's identity. Comparing notes with the FBI, he found that Moran was already under investigation for suspected damage to a Department of Commerce computer system, among others.

The Patrick incident eventually added another count to the prosecutor's charges.

"It's amazing how much havoc a teenager can wreak from his bedroom with nothing more than a computer and a telephone line," said OSI Special Agent Jesse Kornblum, who also worked on the case.

DOD May Need More Money for Health Care

Defense Department health officials say they are facing a cash crunch that could leave them as much as $1.4 billion short for Fiscal 2001.

Among the causes: The $200 million appropriation to implement improved prescription drug coverage for military retirees 65 and over is less than half what is needed.

"There is no way that we could take enough money out of the [military treatment facilities] to take care of that unfunded shortfall," said J. Jarrett Clinton, acting assistant secretary of defense for health affairs, at a March 14 House hearing. "There is no way that we can ... cover a shortfall of that magnitude," he added.

The 65-and-over drug benefit, mandated last year by Congress, was slated to take effect April 1.

New Study Finds More Accept Tricare

A newly finished study found increased satisfaction with the military health care system among users, according to the Pentagon.

The Center for Naval Analyses/ Institute for Defense Analyses report found that 74 percent of Tricare Prime enrollees surveyed in 1998 were satisfied with their access to health care, as opposed to 63 percent prior to Tricare implementation. Eighty-two percent said they were satisfied with the quality of their care, as opposed to 73 percent prior to Tricare.

"This is what we really expect to

State of NSA Is Top Intelligence Worry

The steadily weakening condition of the National Security Agency has become "the No. 1 concern" for US intelligence.

So contends Rep. Porter Goss (R–Fla.), chairman of the House Intelligence Committee that oversees US spy agencies.

The NSA, famed for its Cold War signals-intelligence and code-breaking exploits, no longer holds an overwhelming technical lead over foreign spy agencies—or even commercial entities. In Goss's words: "Every part of the NSA is a problem that needs to be fixed."

Goss, a 10-year veteran of the CIA clandestine services, said that, during the Cold War, NSA held a commanding lead in the all-important field of computing power, allowing it to carry out remarkable feats of collection and analysis.

"It was the 800-pound gorilla that only the United States had," Goss told the Defense Writers Group in Washington, D.C., on March 22. "But today, you have a bunch of 400-pound gorillas running around Silicon Valley and offshore."

Goss said "it is true" that NSA today cannot cover all targets because of great advances in denial/deception techniques around the world.

What is needed, said Goss, is an infusion of money to help modernize the agency, but it is not likely to be forthcoming.

see as Tricare matures," said J. Jarrett Clinton, acting assistant secretary of defense for health affairs. "We have great confidence in our military health personnel and our managed care support contractors."

However, he added, "There are many areas where we still need to work."

Pilot Error Cited in Collision of F-16s

Pilot error caused two F-16s to collide in midair over the Sea of Japan on Nov. 13, USAF announced March 12. One pilot died in the crash.

Both aircraft sustained major damage and were uncontrollable. Col. Michael Lepper ejected safely from his F-16 and was pulled from the water. No one in the four-aircraft flight saw Capt. Warren B. Sneed eject from his fighter. USAF and Japanese forces, including 30 aircraft, searched for Sneed for more than 48 hours, with no success.

An investigating board concluded that the aircraft of the two pilots collided during an in-place 180-degree left turn, during a G-awareness maneuver. The maneuver is a standard air-to-air gravity awareness exercise for aircrews that are likely to experience more than 5 Gs during a mission.

The board found that pilot Sneed, who flew the lead aircraft, failed to see Lepper's F-16 during the turn. Investigators also found that Lepper misperceived his distance from Sneed's aircraft, thus contributing to the accident. They also believe that conducting the 180-degree G-awareness turn while aircraft are in a trailing formation limited the pilots' ability to avoid the collision.

Both pilots were assigned to the 35th Fighter Wing at Misawa, AB, Japan.

Reservist Employers May Get Tax Break

Congress is considering legislation that would allow employers of reservists tax credit compensation for employees called to active duty for a contingency operation.

The bill, introduced by Rep. George R. Nethercutt Jr. (R–Wash.), would allow employers a credit of up to $2,000 for each reservist employed.

The total tax credit per employer per year would be capped at $7,500.

The Reserve Employer Tax Credit Act would allow self-employed reservists to claim the benefit as well.

DOE Seeks $5 Billion for Nuclear Plants

Full repair of the nation's nuclear weapons production infrastructure would cost upward of $5 billion in coming years. "We need to spend an additional $300 million to $500 million a year over currently planned levels for the next 17 years, according to the best analysis, to refurbish the weapons complex to perform just its basic mission," stated Sen. Pete Domenici at an appropriations subcommittee hearing in March.

Retired Air Force Gen. John A. Gordon, who became head of the National Nuclear Security Administration last year, agreed with, as he phrased it, "the recommendations upon recommendations to begin to reinvest."

"It's time to get on with the work," he emphasized. "We don't need any more studies."

He stated that the problem is long-term underfunding of infrastructure maintenance and recapitalization, plus, "in the recent past, the priority has been given to the science side of the nuclear stockpile stewardship program."

He pegged the necessary funding

USAF photo by SSgt. Steven Pearsall

SrA. Shaw Weston, 820th RED HORSE Squadron, Nellis AFB, Nev., helps construct a barracks for Marines at Castries, St. Lucia. Approximately 100 Air Force, Army, and Marine personnel deployed to the Caribbean island for the readiness training and humanitarian assistance exercise, New Horizons.

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at $500 million a year for at least the next 10 years. He said the NNSA has a priority list for that money. "We know where we'd spend our first dollar, we know where we'd spend our last dollar."

Aside from the problem of decaying infrastructure, the NNSA has struck a tentative agreement with the Pentagon to refurbish the B61 nuclear bomb and W76 warhead. Together those two warheads account for 60 percent of the US arsenal, said Gordon. Facilities also need to be consolidated, he said, citing Los Alamos as an example.

"I need to pull together ... the nuclear operation so that we can do the safety and the protection of those facilities in one place," said Gordon, instead of moving material back and forth between areas or buildings at Los Alamos.

Skelton Gets Down to Brass Tacks

Rep. Ike Skelton (D–Mo.) says he is "disappointed" with President Bush's 2002 Pentagon budget of $311 billion because it provides only a tiny increase over this year's spending level.

In a March 22 floor speech, the senior Democrat on the House Armed Services Committee noted that $311 billion is "a whole lot of money, to be sure." However, he noted, one needs to factor out new retiree health care costs and inflation.

"Guess what?" said Skelton. "The actual increase in the defense budget is $100 million."

Skelton helpfully provided a list of what $100 million buys these days. It would pay for:

- One-forty-fifth of an aircraft carrier.
- Repairs to the gymnasium at the US Military Academy.
- A $1.85 pay boost per troop per pay period.
- Six days of the missile defense program.
- One-and-a-half F-15 fighters.

He concluded: "A $100 million increase in the defense budget is not really too much to write home about."

USAF photo by SrA. James Davis

Gen. Gregory Martin, USAFE commander, parachutes to the touch down point at Hurlburt Field, Fla., during a visit to learn about the base's special tactics mission. Martin was a collegiate parachuting champion in 1969.

Crash Kills USAF, USN Pilots

A Feb. 21 crash of a T-45 Goshawk trainer into the Atlantic off the coast of Florida claimed the lives of one Air Force and one Navy pilot.

The body of Capt. Justin Sanders of the 33rd Training Squadron, Vance AFB, Okla., was recovered. Navy Lt. Gregory Fulco, a VT-22 instructor pilot at NAS Kingsville, Tex., was presumed dead when the search was called off because of darkness.

The T-45 was temporarily assigned to a detachment based at NAS Jacksonville, Fla., where aircrews were undergoing aircraft carrier landing qualifications. Sanders and Fulco were performing safety observer duties about one nautical mile from the carrier USS *Eisenhower* when the accident occurred.

The Navy is investigating the accident.

News Notes

- Paul Wolfowitz was sworn in as the 28th deputy secretary of defense in a Pentagon ceremony March 2. Wolfowitz has previously served the Department of Defense as undersecretary of defense for policy and deputy assistant secretary of defense for regional programs.
- On March 7 the White House announced that President Bush has nominated Pete Aldridge, a former Secretary of the Air Force, to serve as undersecretary of defense for acquisition, technology, and logistics.
- On Feb. 19 an Air Force HH-

Condoleezza Rice Calls for More Cyber-Security

US high-tech firms need to join with the US government to fight a fast-growing threat: cyber-terrorism.

That was the main point of National Security Advisor Condoleezza Rice's first major policy address as a member of the Bush Administration.

"We are talking about a collaborative partnership between the public and private sectors that is unprecedented in our history," she said.

Security exercises have long shown that a few skilled computer hackers could disrupt everything from electrical utilities to US 911 emergency networks, Rice said at an Internet security forum held in Washington on March 22.

Computer reliance is the "soft underbelly" of US security, she said.

60G Pave Hawk rescue helicopter assigned to Det. 1, 33rd Rescue Squadron, Osan AB, South Korea, likely saved the life of a pregnant woman and her unborn child with a daring evacuation from Bek Ryung Island. The Korean woman had developed complications during labor and needed to be airlifted to a major hospital.

■ Secretary of Defense Donald Rumsfeld has named retired Air Force Lt. Gen. Brent Scowcroft to direct a comprehensive review of the US nuclear command-and-control system.

■ The US Air Force Museum at Wright–Patterson AFB, Ohio, is in

USAF–Sponsored Nonlethal Beam Weapon Makes Debut

On March 1 the Air Force and Marine Corps unveiled a joint technology demonstration project designed to produce a nonlethal energy beam weapon that scatters adversaries without injuring them.

The Vehicle Mounted Active Denial System emits a narrow beam of millimeter-wave electromagnetic energy that penetrates less than 1/64th of an inch into a target's skin, quickly heating the surface and forcing retreat.

The Marines started the project, while two Air Force Research Laboratory teams—one from the Directed Energy Directorate at Kirtland AFB, N.M., and one from the Human Effectiveness Directorate at Brooks AFB, Tex.—led the research.

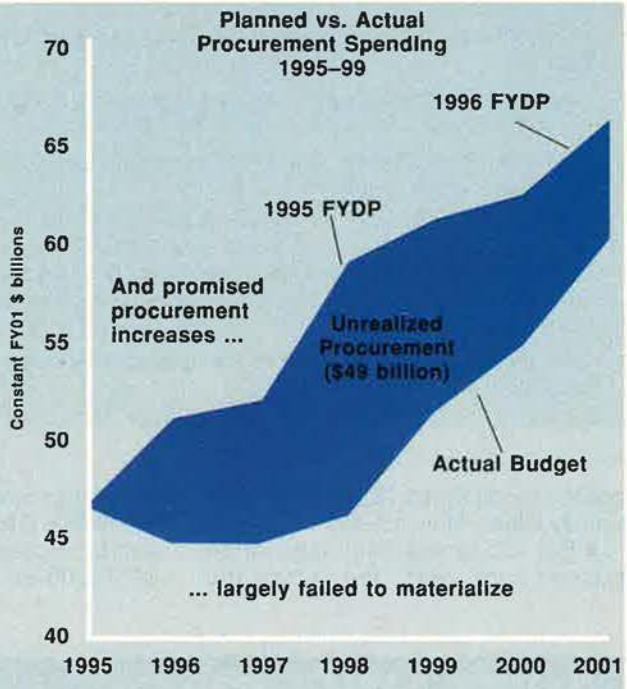
"A weapon like this could be particularly useful when adversaries are mixed with innocent [people]," said Marine Col. George P. Fenton, director of the Joint Nonlethal Weapons Program, Quantico, Va.

Promise Big, Deliver Small

This figure and the following text come from "A Blueprint for Action: Final Report," a paper presented at the Feb. 14–15 Defense Reform 2001 conference of the American Institute of Aeronautics and Astronautics.

"Aggravating the effects of the overall decline in defense investment has been the inability of the Defense Department to budget realistically for acquisition programs and other key accounts. The DOD's own Future Years Defense Plan (FYDP), which projects midterm defense spending and forms a basis for industry's strategic planning, is emblematic of this shortcoming.

"The out-year budgetary and programmatic objectives ... cannot be taken seriously by anyone because they are consistently undermined by budgetary constraints. For example, President Clinton's Fiscal Year 2001 budget message hailed the achievement of a $60 billion procurement level as meeting 'a critical ... goal.' What is not stated, however, is that the Fiscal 1995 FYDP forecast this $60 billion procurement mark [for] Fiscal Year 1998, three years earlier; in fact, the Fiscal Year 1998 budget recorded only a $47 billion procurement level. Indeed, from Fiscal Year 1995 through Fiscal Year 2000, out-year procurement plans not realized amounted to more than $49 billion."



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the process of reassembling a dismantled B-2 stealth bomber formerly employed in ground-based stress testing. Museum officials hope to make the B-2 a centerpiece of their commemoration of the 100th anniversary of flight in 2003.

■ Heather Burke, daughter of Air Force TSgt. Robert Burke, Hickam AFB, Hawaii, won the sixth annual Armed Services YMCA art contest with a pencil drawing of her family's reunion on the flight line following a deployment. Heather's art will be reproduced on a poster recognizing National Military Family Week, Nov. 18–25.

■ Per Congressional legislation passed last year, the automatic maximum coverage for the Servicemembers' Group Life Insurance was set to increase from $200,000 to $250,000 on April 1. Total cost for the maximum coverage will be $20 a month.

■ A fatigue break in a metal rod in the flight-control mechanism caused a USAF T-38 to crash Dec. 5 near Sheppard AFB, Tex., according to an accident board report released in March. The pilots of the aircraft ejected and suffered only minor injuries in the incident.

■ Online registration is now open for the fifth annual US Air Force Marathon, to be held at Wright–Patterson AFB, Ohio, on Sept. 22. The Web address is http://afmarathon.wpafb.af.mil/.

■ The Pentagon Renovation Program had a ribbon-cutting ceremony March 8 to open the doors to Wedge 1, the first section of the venerable building to re-open under a $1.22 billion renovation project.

■ On March 15 a number of mobility support groups and squadrons within

From Europe, Stand-Up Comedy

In a March 26 story, "Storm Clouds Over US–Europe Relations," the *New York Times* said Europe was fretting over America's lack of enthusiasm for South Korean detente with Communist North Korea.

Some European nations even planned to stand up to Washington and send their own mediators to the peninsula.

"It's becoming clear that the new US Administration wants to take a more hard-line approach toward North Korea," said Anna Lindh, foreign minister of Sweden. "This means that Europe must step in."

CAP Logs Safest-Ever Year

In 2000 the Civil Air Patrol logged its safest year ever, CAP officials announced Feb. 26.

Last year's accident rate per 100,000 flying hours was 0.94. The previous record, set in 1992, was 1.54 accidents per 100,000 hours.

"The best news, however, is no lives were lost," said CAP National Commander Brig. Gen. James C. Bobick.

CAP volunteers, who fly more than 85 percent of the inland search-and-rescue missions originated by the Air Force Rescue Coordination Center, often operate in more difficult conditions than civilian pilots typically face. To ensure safety in such circumstances CAP has instituted such measures as a mountain flying course and a video on mountain and sea survival topics.

New survival equipment, such as life rafts and electronic signaling devices, will complement this survival training.

Senior Staff Changes

NOMINATIONS: To be **General:** William J. **Begert.**

To be **Lieutenant General:** Brian A. **Arnold,** Timothy A. **Kinnan,** Donald A. **Lamontagne,** Richard V. **Reynolds.**

To be **Major General:** Kevin P. **Chilton,** John D.W. **Corley,** Tommy F. **Crawford,** Charles E. **Croom Jr.,** David A. **Deptula,** Gary R. **Dylewski,** Michael A. **Hamel,** James A. **Hawkins,** Gary W. **Heckman,** Jeffrey B. **Kohler,** Edward L. **LaFountaine,** Dennis R. **Larsen,** Daniel P. **Leaf,** Maurice L. **McFann Jr.,** Richard A. **Mentemeyer,** Dale W. **Meyerrose,** Paul D. **Nielsen,** Thomas A. **O'Riordan,** Wilbert D. **Pearson Jr.,** Quentin L. **Peterson,** Lorraine K. **Potter,** James G. **Roudebush,** Mary L. **Saunders,** Joseph B. **Sovey,** John M. **Speigel,** Craig P. **Weston,** Donald J. **Wetekam,** Gary A. **Winterberger.**

To be **Brigadier General:** William P. **Ard,** Rosanne **Bailey,** Bradley S. **Baker,** Charles C. **Baldwin,** Mark G. **Beesley,** Ted F. **Bowlds,** John T. **Brennan,** Roger W. **Burg,** Patrick A. **Burns,** Kurt A. **Cichowski,** Maria I. **Cribbs,** Andrew S. **Dichter,** Jan D. **Eakle,** David M. **Edgington,** Silvanus T. **Gilbert III,** Stephen M. **Goldfein,** David S. **Gray,** Charles B. **Green,** Wendell L. **Griffin,** Ronald J. **Haeckel,** Irving L. **Halter Jr.,** Richard S. **Hassan,** William L. **Holland,** Gilmary M. **Hostage III.**

PROMOTIONS: To **ANG Major General:** Dennis A. **Higdon,** John A. **Love,** Clark W. **Martin,** Martha T. **Rainville,** Michael H. **Tice.** To **ANG Brigadier General:** Bobby L. **Brittain,** Charles E. **Chinnock Jr.,** John W. **Clark,** Roger E. **Combs,** John R. **Croft,** John D. **Dornan,** Howard M. **Edwards,** Mary A. **Epps,** Harry W. **Feucht Jr.,** Wayne A. **Green,** Gerald E. **Harmon,** Clarence J. **Hindman,** Herbert H. **Hurst Jr.,** Jeffrey P. **Lyon,** James R. **Marshall,** Edward A. **McIlhenny,** Edith P. **Mitchell,** Mark R. **Ness,** Richard D. **Radtke,** Albert P. **Richards Jr.,** Charles E. **Savage,** Steven C. **Speer,** Richard L. **Testa,** Frank D. **Tutor,** Joseph B. **Veillon.**

CHANGES: Brig. Gen. Michael A. **Collings,** from Dir., Log., PACAF, Hickam AFB, Hawaii, tc Cmdr., 82nd Tng. Wg, AETC, Sheppard AFB, Tex. ... Brig. Gen. (sel.) Perry L. **Lamy,** from Cmdr., 412th Test Wg, AFMC, Edwards AFB, Calif., to Spec. Asst. to Cmdr., AFMC, Wright–Patterson AFB, Ohio ... Maj. Gen. (sel.) Lorraine K. **Potter,** from Dep. Chief, Chaplain Service, Hq. USAF, Bolling AFB, D.C., to Chief, Chaplain Service, Hq., USAF, Bolling AFB, D.C. ... Maj. Gen. Victor E. **Renuart Jr.,** from Cmdr., JTF Southwest Asia, CENTCOM, Riyadh, Saudi Arabia, to Dir., Ops., CENTCOM, MacDill AFB, Fla. ... Maj. Gen. James E. **Sandstrom,** from Dir., Ops., CENTCOM, MacDill AFB, Fla., to Spec. Asst. to Cmdr., AETC, Randolph AFB, Tex. ■

Air Mobility Command were redesignated as air mobility operations groups and air mobility squadrons. The change affected the 615th Air Mobility Support Group at Hickam AFB, Hawaii, and its Pacific squadrons and the 621st AMSG at Ramstein AB, Germany, and its squadrons throughout Europe. The 615th is now the 715th Air Mobility Operations Group, and the 621st is the 721st AMOG.

■ The Department of Defense's 50th Anniversary of the Korean War Commemoration Committee wants vets to know that the Korean War Service Medal is still available. The Air Force Personnel Center at Randolph AFB, Tex., is processing requests and distributing the Republic of Korea–sponsored award to all who qualify, regardless of branch of service.

■ The Air Force recently named its 2000 safety achievement award winners. Among them: SSgt. Steven J. Borton, Safety Career Professional of the Year, and MSgt. Benjamin Salter, Explosives Safety Outstanding Achievement Award, both from the 39th Wing, Incirlik AB, Turkey; and MSgt. Charles E. Canoy, Nuclear Surety Outstanding Achievement Award, from the Air Force Safety Center, Kirtland AFB, N.M.

■ A C-130J from the 135th Airlift Group, Maryland Air National Guard, recently helped avert a tragedy by finding a disoriented student pilot in a Piper Tomahawk over the Atlantic Ocean and guiding him back to a safe landing in Atlantic City, N.J. The crew credited the J model's sophisticated avionics for helping them quickly locate the transponder signal from the single-engine airplane.

■ The final three members have been appointed to the Civil Air Patrol's new Board of Governors. They are Benjamin F. Payton, president of Tuskegee University; Bruce P. Baughman, director, FEMA Operations and Planning Division; and Bruce Nairn Whitman, executive vice president of FlightSafety International, Inc.

■ The Air Force has reactivated the 960th Airborne Air Control Squadron, Tinker AFB, Okla., giving the 552nd Air Control Wing its fourth operational Airborne Warning and Control System flying squadron.

■ Department of Defense civilian employees who also serve in the National Guard or Reserve are getting an added health benefit. Under a new personnel policy, DOD will pay the employee's share, as well as the government's share, of the Federal Employees Health Benefits Program premium when the employee is called to active duty for more than 30 days in support of a contingency operation.■

USAF Almanac

ac 2001

Edited by **Tamar A. Mehuron,** Associate Editor

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

Eagle photo © Tom and Pat Leeson / B-2 photo by Ted Carlson

USAF Almanac

The Air Force in Facts and Figures

Structure of the Force

How the Air Force Is Organized

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

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

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

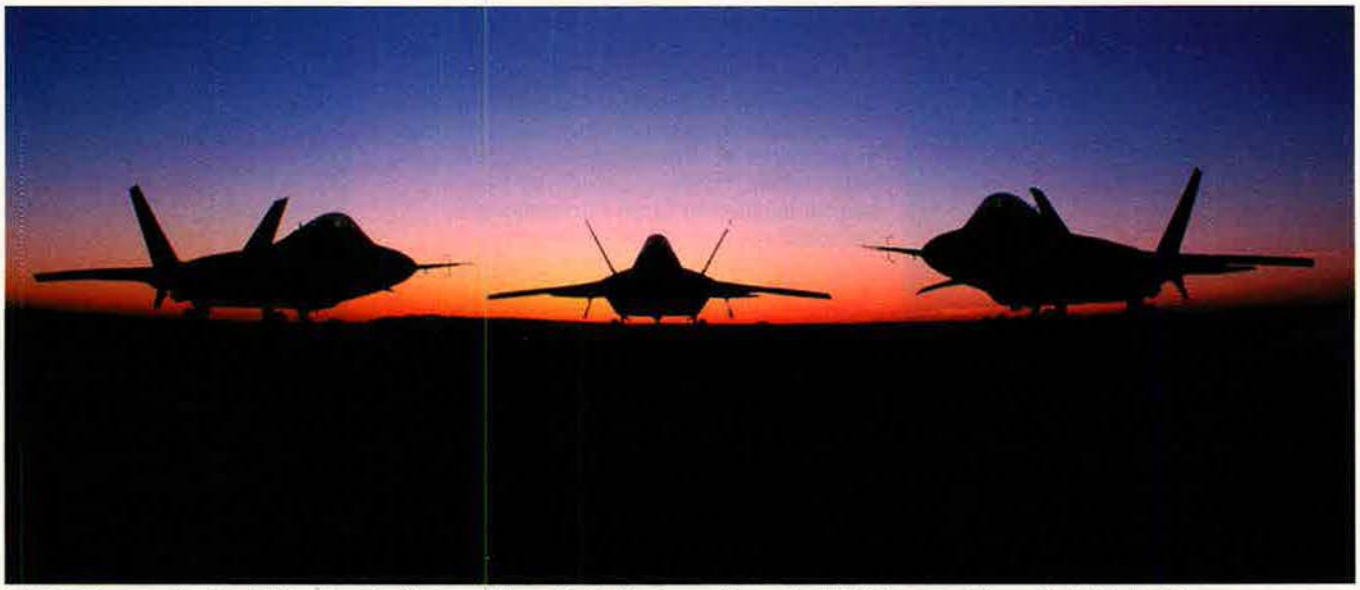
The **Department of the Air Force** is headed by the Secretary of the Air Force, who is supported by a staff called the Secretariat. The Chief of Staff, USAF, heads the Air Staff, and the military heads of the major commands report to the Chief of Staff.

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

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

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

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



F-22 Team photo

USAF air superiority fighter for the future: Three F-22 Raptors sit on the flight line at Edwards AFB, Calif.

A trio of legendary leaders: Gen. H.H. "Hap" Arnold, Commanding General of the Army Air Forces, is joined at a ceremony in Luxembourg in 1945 by Gen. Carl A. Spaatz (center) and Maj. Gen. Hoyt Vandenberg (right). Spaatz went on to become the first Chief of Staff of the US Air Force. Vandenberg succeeded him in 1948.

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	

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	

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	

Chief Master Sergeants of the Air Force

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

Air Combat Command

Gen. John Michael Loh	June 1, 1992	June 22, 1995
Gen. Joseph W. Ralston	June 23, 1995	Feb. 27, 1996
Lt. Gen. Brett M. Dula (acting)	Feb. 28, 1996	April 4, 1996
Gen. Richard E. Hawley	April 5, 1996	June 11, 1999
Gen. Ralph E. Eberhart	June 11, 1999	Feb. 8, 2000
Gen. John P. Jumper	Feb. 8, 2000	

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	

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

Air Force Communications Command

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

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

Air Force Intelligence Command

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

See Electronic Security Command.

Air Force Logistics Command

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

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

Air Force Materiel Command

Gen. Ronald W. Yates	July 1, 1992	June 30, 1995
Gen. Henry Viccellio Jr.	June 30, 1995	May 9, 1997
Lt. Gen. Kenneth E. Eickmann (acting)	May 9, 1997	May 29, 1997
Gen. George T. Babbitt Jr.	May 29, 1997	April 20, 2000
Gen. Lester L. Lyles	April 20, 2000	

Air Force Reserve Command

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

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	

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	

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	

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 Ferry ng 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	

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

Strategic Air Command

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

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

Tactical Air Command

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

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

US Air Forces in Europe

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

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

US Air Forces Southern Command/Caribbean

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

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

USAF Academy Superintendents

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

DOD Leaders Through the Years

Secretaries of Defense

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

Chairmen of the Joint Chiefs of Staff

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

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	

US Central Command

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

US European Command

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

US Joint Forces Command

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

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

US Pacific Command

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

US Southern Command

Lt. Gen. Willis Crittenberger, USA	November 1947	June 1948
Lt. Gen. Matthew B. Ridgway, USA	June 1948	October 1949
Lt. Gen. William H.H. Morris, USA	October 1949	April 1952
Lt. Gen. Horace L. McBride, USA	April 1952	June 1954
Lt. Gen. William K. Harrison, USA	June 1954	January 1957
Lt. Gen. Robert M. Montague, USA	January 1957	February 1958
Lt. Gen. Ridgely Gaither, USA	April 1958	July 1960
Lt. Gen. Robert F. Sink, USA	July 1960	January 1961
Lt. Gen. Andrew P. O'Meara, USA	January 1961	June 1963
Gen. Andrew P. O'Meara, USA	June 1963	February 1965
Gen. Robert W. Porter, USA	February 1965	February 1969
Gen. George R. Mather, USA	February 1969	September 1971
Gen. George V. Underwood, USA	September 1971	January 1973
Gen. William B. Rosson, USA	January 1973	July 1975
Lt. Gen. Dennis P. McAuliffe, USA	August 1975	September 1979
Lt. Gen. Wallace H. Nutting, USA	October 1979	May 1983
Gen. Paul F. Gorman, USA	May 1983	March 1985
Gen. John R. Galvin, USA	March 1985	June 1987
Gen. Fred F. Woerner, USA	June 1987	July 1989
Gen. Maxwell R. Thurman, USA	September 1989	November 1990
Gen. George A. Joulwan, USA	November 1990	November 1993
Maj. Gen. W.A. Worthington, USA	December 1993	January 1994
Gen. Barry McCaffrey, USA	February 1994	February 1996
RAdm. James Perkins, USN	March 1996	June 1996
Gen. Wesley K. Clark, USA	July 1996	July 1997
Gen. Charles E. Wilhelm, USMC	August 1997	Sept. 8, 2000
Gen. Peter Pace, USMC	Sept. 8, 2000	

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

US Space Command

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

US Special Operations Command

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

US Strategic Command

Gen. G. Lee Butler, USAF	June 1, 1992	Feb. 13, 1994
Adm. Henry G. Chiles Jr., USN	Feb. 14, 1994	Feb. 21, 1996
Gen. Eugene E. Habiger, USAF	Feb. 22, 1996	June 25, 1998
Adm. Richard W. Mies, USN	June 26, 1998	

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	

NORAD
Leaders Through the Years

North American Aerospace Defense Command

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

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USAF Total Force

(As of Sept. 30, 2000)

	FY95	FY96	FY97	FY98	FY99	FY00	FY01
Air Force active duty							
Officers	78,444	76,388	73,983	71,892	70,318	69,023	70,200
Enlisted	317,938	308,608	299,373	291,590	286,169	282,356	282,800
Cadets	4,027	4,005	4,029	3,988	4,103	4,275	4,000
Total Air Force active duty	**400,409**	**389,001**	**377,385**	**367,470**	**360,590**	**355,654**	**357,000**
Career re-enlistments (second term)	37,200	37,200	34,900	31,300	30,392	32,042	31,327
Rate	88%	87%	86%	85%	84%	84%	85%
First-term re-enlistments	13,500	12,900	12,300	10,400	8,196	9,917	9,696
Rate	65%	59%	56%	54%	49%	52%	53%
Civilian personnel							
Direct hire (excluding technicians)	146,180	143,662	139,517	133,332	126,685	122,312	118,687
ANG	24,174	23,931	23,404	23,388	22,892	22,781	23,472
Technicians: AFRC	9,432	9,436	9,422	9,376	9,470	9,583	9,600
Indirect hire—foreign nationals	6,643	6,695	6,841	6,749	6,693	6,508	6,129
Total civilian personnel	**186,429**	**183,724**	**179,184**	**172,845**	**165,740**	**161,184**	**157,888**
Guard and Reserve							
Air National Guard, Selected Reserve	109,826	110,471	110,023	108,098	105,715	106,366	108,022
AFRC, paid	78,706	76,138	73,311	71,970	71,772	71,357	74,470
AFRC, nonpaid	99,000	71,910	66,827	56,459	54,271	50,307	50,542
Total Ready Reserve	**287,532**	**258,519**	**250,161**	**236,527**	**231,758**	**228,030**	**233,034**
Standby	14,435	14,437	14,500	16,042	17,129	16,470	16,725
Total Guard and Reserve	**301,967**	**272,956**	**264,661**	**252,569**	**248,887**	**244,500**	**249,759**

Numbers are rounded and may not sum to totals. FYs 1995–2000 are actual figures; FY 2001 is an estimate.

Armed Forces Manpower Trends, End Strength in Thousands

(As of Sept. 30, 2000)

	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02
Active duty military								
Air Force	400	389	377	367	361	360	358	360
Army	509	491	492	484	479	480	480	482
Marine Corps	175	175	174	173	173	173	173	173
Navy	435	417	396	382	373	372	372	372
Total	**1,519**	**1,472**	**1,439**	**1,407**	**1,386**	**1,384**	**1,383**	**1,387**
Selected Guard and Reserve								
Air National Guard	110	110	110	108	103	104	105	107
AFRC	78	74	72	72	71	73	74	74
Army National Guard	375	370	370	362	344	329	327	326
Army Reserve	241	226	213	205	222	192	190	191
Marine Corps Reserve	41	42	42	41	39	39	39	38
Naval Reserve	101	98	95	93	89	87	87	85
Total	**946**	**920**	**902**	**881**	**869**	**824**	**821**	**821**
Direct-hire civilian[a]								
Air Force[b]	249	238	237	174	162	156	154	152
Army[b]	249	229	214	237	209	202	197	195
Navy/Marine Corps	182	176	175	211	193	188	182	171
Defense agencies	142	135	135	126	117	116	112	99
Total[c]	**822**	**779**	**760**	**748**	**681**	**661**	**645**	**617**

Numbers are rounded and may not sum to totals.

FY02 numbers are programmed manpower.

[a]Full-time equivalents.

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

USAF Educational Levels

(As of Sept. 30, 2000)

	Number	Percent
Enlisted		
High school	28,236	10
Some college (< 2 years)	201,319	71.3
AA/AS degree or equivalent hours	39,530	14
Bachelor's degree	11,294	4
Master's degree	1,977	0.7
Total	**282,356**	**100**
Officers		
Bachelor's degree	30,370	44
Master's degree	30,370	44
Doctoral degree	1,381	2
Professional degree	6,902	10
Total	**69,023**	**100**

Numbers are rounded. Does not include 4,275 cadets.

USAF Marital Status

(As of Sept. 30, 2000)

Total percent married	62
Percent of enlisted	59
Percent of officers	73
Number of USAF couples	15,884
Number married to members of other services	1,216

Air Force Personnel Strength

(As of Sept. 30, 2000)

Year	Strength	Year	Strength	Year	Strength
1907	3	1939	23,455	1971	755,107
1908	13	1940	51,165	1972	725,635
1909	27	1941	152,125	1973	690,999
1910	11	1942	764,415	1974	643,795
1911	23	1943	2,197,114	1975	612,551
1912	51	1944	2,372,292	1976	585,207
1913	114	1945	2,282,259	1977	570,479
1914	122	1946	455,515	1978	569,491
1915	208	1947	305,827	1979	559,450
1916	311	1948	387,730	1980	557,969
1917	1,218	1949	419,347	1981	570,302
1918	195,023	1950	411,277	1982	582,845
1919	25,603	1951	788,381	1983	592,044
1920	9,050	1952	973,474	1984	597,125
1921	11,649	1953	977,593	1985	601,515
1922	9,642	1954	947,918	1986	608,199
1923	9,441	1955	959,946	1987	607,035
1924	10,547	1956	909,958	1988	576,446
1925	9,670	1957	919,835	1989	570,880
1926	9,674	1958	871,156	1990	535,233
1927	10,078	1959	840,028	1991	510,432
1928	10,549	1960	814,213	1992	470,315
1929	12,131	1961	820,490	1993	444,351
1930	13,531	1962	883,330	1994	426,327
1931	14,780	1963	868,644	1995	400,409
1932	15,028	1964	855,802	1996	389,001
1933	15,099	1965	823,633	1997	377,385
1934	15,861	1966	886,350	1998	367,470
1935	16,247	1967	897,426	1999	360,590
1936	17,233	1968	904,759	2000	355,654
1937	19,147	1969	862,062	2001	357,000
1938	21,089	1970	791,078		

2001 number is programmed.

Active Duty Force Demographics

(As of Sept. 30, 2000)

Grade	Total	Blacks	Women	Other Minorities
Officers				
General	271	9	10	0
Colonel	3,756	173	315	66
Lieutenant Colonel	10,171	689	1,298	227
Major	15,248	875	2,264	629
Captain	24,136	1,590	4,663	1,759
First Lieutenant	6,957	524	1,505	715
Second Lieutenant	8,484	625	1,764	949
Total	**69,023**	**4,485**	**11,819**	**4,345**
Enlisted				
Chief Master Sergeant of the Air Force	1			
Chief Master Sergeant	2,872	540	317	71
Senior Master Sergeant	5,693	1,085	683	188
Master Sergeant	28,806	6,016	3,051	1,281
Technical Sergeant	41,938	8,304	4,978	2,258
Staff Sergeant	68,355	11,513	11,499	3,967
Sergeant/Senior Airman	56,177	10,200	14,104	6,115
Airman First Class	52,616	9,652	12,631	5,726
Airman	10,215	2,160	3,320	1,057
Airman Basic	15,683	2,897	3,770	1,180
Total	**282,356**	**52,367**	**54,353**	**21,843**
Total personnel	**351,379**	**56,852**	**66,172**	**26,188**

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

Total does not include 4,275 cadets.

The Civilian Force

(As of Sept. 30, 2000)

General Schedule/ Other

Grade	Force
1	191
2	298
3	1,042
4	3,335
5	9,726
6	6,118
7	8,834
8	1,197
9	11,767
10	731
11	14,971
12	16,856
13	10,396
14	3,152
15	1,243
16	0
17	0
18	0
ST[a]	45
SES[b]	164
Other	309
Total	**90,375**

Wage Grade

Grade	Force
1	132
2	359
3	422
4	223
5	1,696
6	1,064
7	1,747
8	3,070
9	2,928
10	12,445
11	3,319
12	1,597
13	190
14	52
15	2
16	0
17	0
18	0
Total	**29,246**

Wage Grade Leader

Grade	Force
1	0
2	9
3	5
4	2
5	16
6	36
7	38
8	84
9	204
10	586
11	110
12	53
13	4
14	0
15	0
16	0
17	0
18	0
Total	**1,147**

Wage Grade Supervisory

Grade	Force
1	18
2	37
3	20
4	39
5	66
6	112
7	161
8	201
9	856
10	1,011
11	396
12	233
13	115
14	186
15	95
16	39
17	25
18	12
Total	**3,622**

Air Force Civilian Personnel: Average Age and Length of Service

Average length of service (overall)	**16 years**
General schedule	**47 years**
Federal wage system	**46 years**
Average age	**46 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, 2000)

	Military	Civilian	Total
Major commands			
Air Combat Command (ACC)	84,473	10,075	94,548
Air Education and Training Command (AETC)	68,452	14,122	82,574
Air Force Materiel Command (AFMC)	26,115	58,286	84,401
Air Force Reserve Command (AFRC)	410	14,519	14,929
Air Force Space Command (AFSPC)	17,347	4,350	21,697
Air Force Special Operations Command (AFSOC)	8,965	585	9,550
Air Mobility Command (AMC)	49,930	7,798	57,728
Pacific Air Forces (PACAF)	32,019	8,358	40,377
United States Air Forces in Europe (USAFE)	25,724	4,864	30,588
Total major commands	**313,435**	**122,957**	**436,392**
Field Operating Agencies (FOAs)			
Air Force Agency for Modeling and Simulation	21	13	34
Air Force Audit Agency	0	822	822
Air Force Base Conversion Agency	0	261	261
Air Force Center for Environmental Excellence	44	375	419
Air Force Civil Engineer Support Agency	83	115	198
Air Force Communications Agency	300	349	649
Air Force Cost Analysis Agency	20	26	46
Air Force Flight Standards Agency	114	30	144
Air Force Frequency Management Agency	20	31	51
Air Force Historical Research Agency	9	63	72
Air Force History Support Office	4	25	29
Air Force Inspection Agency	110	21	131
Air Force Legal Services Agency	400	111	511
Air Force Logistics Management Agency	49	18	67
Air Force Manpower & Innovation Agency	115	85	200
Air Force Medical Operations Agency	81	60	141
Air Force Medical Support Agency	48	21	69
Air Force News Agency	309	93	402
Air Force Office of Special Investigations	1,435	459	1,894
Air Force Operations Group	219	11	230
Air Force Pentagon Communications Agency	452	283	735
Air Force Personnel Center	968	965	1,933
Air Force Personnel Operations Agency	44	22	66
Air Force Program Executive Office	33	12	45
Air Force Real Estate Agency	0	11	11
Air Force Review Boards Agency	11	43	54
Air Force Safety Center	66	50	116
Air Force Security Forces Center	432	14	446
Air Force Services Agency	81	174	255
Air Force Studies and Analyses Agency	64	17	81
Air Force Technical Applications Center	532	0	532
Air Force Weather Agency	622	190	812
Air Intelligence Agency*	10,735	2,043	12,778
Air National Guard Readiness Center	111	457	568
Total FOAs	**17,532**	**7,270**	**24,802**
Direct Reporting Units (DRUs)			
Air Force Doctrine Center	66	13	79
Air Force Operational Test and Evaluation Center	510	204	714
United States Air Force Academy	2,501	1,972	4,473
11th Wing	1,582	811	2,393
Total DRUs	**4,659**	**3,000**	**7,659**
Other			
Other active duty	15,753	27,957	43,710
USAFA cadets	4,275	0	4,275
Total for all categories	**355,654**	**161,184**	**516,838**

*Air Intelligence Agency now falls under Air Combat Command.

USAF Personnel by Geographic Area

(As of Sept. 30, 2000)

Total military personnel	**355,654**
US territory and special locations	**289,529**
Total in foreign countries	**66,125**
Western and southern Europe	**32,826**
Germany	14,661
UK	9,410
Turkey	1,759
Italy	4,026
Spain	260
All other countries	2,710
East Asia and Pacific	**23,759**
Japan/Okinawa	13,194
South Korea	8,669
Guam	1,731
All other countries	165
Africa, Near East, South Asia	**8,973**
Saudi Arabia	5,895
Egypt	70
All other countries	3,008
Western hemisphere	**323**
Panama	0
Canada	83
All other countries	240
Other areas	**244**

Active Duty Force by Grade

(As of Sept. 30, 2000)

Grade	Number
Officers	
General	11
Lieutenant General	35
Major General	87
Brigadier General	138
Colonel	3,756
Lieutenant Colonel	10,171
Major	15,248
Captain	24,136
First Lieutenant	6,957
Second Lieutenant	8,484
Total	**69,023**
Cadets	4,275
Enlisted	
Chief Master Sergeant of the Air Force	1
Chief Master Sergeant	2,872
Senior Master Sergeant	5,693
Master Sergeant	28,806
Technical Sergeant	41,938
Staff Sergeant	68,355
Sergeant/Senior Airman	56,177
Airman First Class	52,616
Airman	10,215
Airman Basic	15,683
Total	**282,356**
Total strength	**355,654**

Specialties in the Enlisted Force

(As of Sept. 30, 2000)

Code	Career Field	Assigned	Percent
1A	Aircrew Operations	6,253	2.2
1C	Command Control Systems Operations	11,974	4.2
1N	Intelligence	11,396	4.0
1S	Safety	411	0.1
1T	Aircrew Protection	2,672	0.9
1W	Weather	2,458	0.9
2A	Manned Aerospace Maintenance	60,710	21.5
2E	Communications–Electronics Systems	13,026	4.6
2F	Fuels	3,565	1.3
2G	Logistics Plans	769	0.3
2M	Missile & Space Systems Maintenance	2,483	0.9
2P	Precision Measurement	1,166	0.4
2R	Maintenance Management Systems	1,721	0.6
2S	Supply	11,099	3.9
2T	Transportation & Vehicle Maintenance	12,292	4.4
2W	Munitions & Weapons	14,671	5.2
3A	Information Management	11,562	4.1
3C	Communications–Computer Systems	13,290	4.7
3E	Civil Engineering	17,834	6.3
3H	Historian	106	0.0
3M	Morale, Welfare, Recreation, & Services	4,785	1.7
3N	Public Affairs	1,511	0.5
3P	Security Forces	22,390	7.9
3R	Printing Management	0	0.0
3S	Mission Support	9,952	3.5
3U	Manpower	791	0.3
3V	Visual Information	1,407	0.5
4A–V	Medical	20,255	7.2
4Y	Dental	2,550	0.9
5J	Paralegal	979	0.3
5R	Chapel Service Support	420	0.1
6C	Contracting	1,294	0.5
6F	Financial	3,794	1.3
7S	Special Investigation	736	0.3
8	Special Duty Identifiers	6,537	2.3
9	Reporting Identifiers	5,493	1.9
	Unassigned	4	0
	Total	**282,356**	**100**

Percentages have been rounded.

Specialties in the Officer Force

(As of Sept. 30, 2000)

Code	Utilization Field Title	Assigned	Percent
X0	Commander & Director	882	1.3
11	Pilot	11,800	17.1
12	Navigator	4,437	6.4
13	Space, Missile, Command & Control	4,747	6.9
14	Intelligence	2,711	3.9
15	Weather	699	1.0
16	Operations Support	1,583	2.3
21	Aircraft Maintenance & Munitions	3,920	5.7
31	Security Forces	750	1.1
32	Civil Engineering	1,402	2.0
33	Communications–Computer Systems	4,090	5.9
34	MWR & Services	348	0.5
35	Public Affairs	368	0.5
36	Personnel	1,585	2.3
38	Manpower	319	0.5
4X	Medical	12,456	18.0
51	Law	1,302	1.9
52	Chaplain	588	0.9
61	Scientific/Research	911	1.3
62	Developmental Engineering	2,330	3.4
63	Acquisition	2,351	3.4
64	Contracting	954	1.4
65	Financial	922	1.3
71	Special Investigations	367	0.5
8X	Special Duty Identifiers	1,857	2.7
9X	Reporting Identifiers	5,341	7.7
	Other	3	0
	Total	**69,023**	**100**

Total does not include 4,275 cadets. Percentages have been rounded.

USAF photo by SSgt George F. Thompson Jr.

Firefighters are in the Air Force's civil engineering career field. Here, two firefighters from Osan AB, South Korea, work on an injured teammate during a simulated fire in a Restoration of Operations exercise at Osan in February.

Budgets

Terms Explained

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

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

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

Air Force Budget—A 10-Year Perspective

(Budget authority in current and FY02 constant $ millions)

Current dollars	**FY92**	**FY93**	**FY94**	**FY95**	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**
Military personnel	21,381	20,141	18,168	19,602	19,309	19,186	19,111	19,357	20,235	20,892
Operations & maintenance	22,816	22,179	24,525	24,561	23,519	22,728	25,174	27,107	25,830	28,056
Procurement	23,249	21,803	17,716	16,529	15,558	14,247	15,258	18,434	18,330	20,939
RDT&E	12,867	12,979	12,021	11,787	12,427	14,017	14,265	13,807	14,487	13,686
Military construction	1,200	1,053	1,554	816	1,285	1,567	1,537	862	1,424	966
Family housing	1,112	1,212	923	1,106	1,124	1,135	1,114	1,082	1,162	1,050
Rev. & mgmt. funds	n/a	n/a	n/a	n/a	n/a	790	234	1,510	28	0
Trust & receipts	-286	-221	-332	-470	-231	-453	-409	-248	-289	-289
Total	**82,340**	**79,146**	**74,575**	**73,932**	**72,992**	**73,216**	**76,284**	**81,914**	**81,207**	**85,298**
Constant FY02 dollars										
Military personnel	29,046	26,213	23,072	24,298	23,404	22,597	21,816	21,450	21,561	21,565
Operations & maintenance	28,679	27,200	29,277	28,764	26,924	25,483	27,522	29,111	27,273	28,572
Procurement	26,972	24,800	19,795	18,167	16,852	15,257	16,189	19,321	18,941	21,297
RDT&E	15,128	14,991	13,596	13,087	13,540	15,050	15,153	14,510	14,991	13,920
Military construction	1,410	1,215	1,755	907	1,404	1,694	1,644	910	1,478	985
Family housing	1,299	1,386	1,033	1,218	1,215	1,211	1,177	1,132	1,201	1,066
Rev. & mgmt. funds	n/a	n/a	n/a	n/a	n/a	846	253	1,573	0	0
Trust & receipts	-334	-252	-371	-515	-248	-478	-429	-258	-298	-293
Total	**103,054**	**96,285**	**88,738**	**86,248**	**83,381**	**81,879**	**83,553**	**87,938**	**85,319**	**87,137**
Percentage real growth										
Military personnel	-8.7	-9.8	-12.0	5.3	-3.7	-3.4	-3.5	-1.7	0.5	0
Operations & maintenance	-18.7	-5.7	8.1	-0.9	-6.5	-5.8	7.0	5.9	-5.5	3.3
Procurement	-5.6	-8.1	-20.2	-8.4	-7.3	-9.5	6.2	19.5	-1.9	12.5
RDT&E	2.7	-1.3	-9.0	-3.8	3.4	11.1	0.8	-4.3	3.5	-7.1
Military construction	5.0	-13.9	44.8	-48.4	55.3	20.7	-2.8	-44.6	62.8	-33.2
Family housing	22.6	6.5	-25.3	17.9	-0.2	-0.4	-2.8	-3.7	6.2	-11.3
Total	**-10.6**	**-6.8**	**-7.5**	**-2.3**	**-3.4**	**-1.9**	**1.8**	**5.4**	**-2.7**	**1.8**

Numbers do not add due to rounding.

Air Force Major Force Programs

(Total Obligation Authority in FY02 constant $ billions)

	FY92	**FY93**	**FY94**	**FY95**	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**
Forces										
Strategic Forces	13.0	10.2	6.6	5.4	5.4	4.1	4.6	4.5	4.3	4.0
General-Purpose Forces	21.5	19.4	18.6	17.9	17.9	17.5	17.8	19.2	19.5	20.8
Airlift Forces	7.2	8.5	9.0	9.5	9.1	9.0	9.4	11.0	10.5	10.3
Guard and Reserve Forces	7.5	7.8	7.8	8.1	7.8	7.6	7.9	8.3	8.4	8.2
Special Operations Forces	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.5	0.5
Total	**49.6**	**46.2**	**42.5**	**41.3**	**40.5**	**38.7**	**40.2**	**43.2**	**43.0**	**43.7**
Support										
Intelligence & Communications	22.1	21.9	21.2	18.6	19.0	18.8	19.5	20.3	19.8	20.9
Research & Development	9.2	8.6	7.7	8.6	8.7	8.3	8.3	7.4	7.5	6.7
Central Supply & Maintenance	7.5	6.7	4.7	4.7	4.4	4.2	4.2	4.6	4.9	4.8
Training, Medical, & Personnel	10.2	9.9	9.1	9.5	9.3	8.8	8.9	8.9	9.0	9.0
Administration & Other	1.8	1.7	1.7	1.8	1.6	1.7	1.8	1.8	1.8	1.8
Total	**50.9**	**48.9**	**44.6**	**42.9**	**43.0**	**41.8**	**42.6**	**42.9**	**43.0**	**43.1**

Defense Department Budget Topline

(In current and FY02 constant $ billions)

	FY00	FY01	FY02	FY03	FY04	FY05	FY06
Budget authority (current $)	291	295	309	318	327	336	346
Budget authority (constant FY02 $)	306	301	309	311	312	313	—
Outlays (current $)	281	284	304	306	317	331	338
Outlays (constant FY02 $)	295	290	304	300	303	309	—

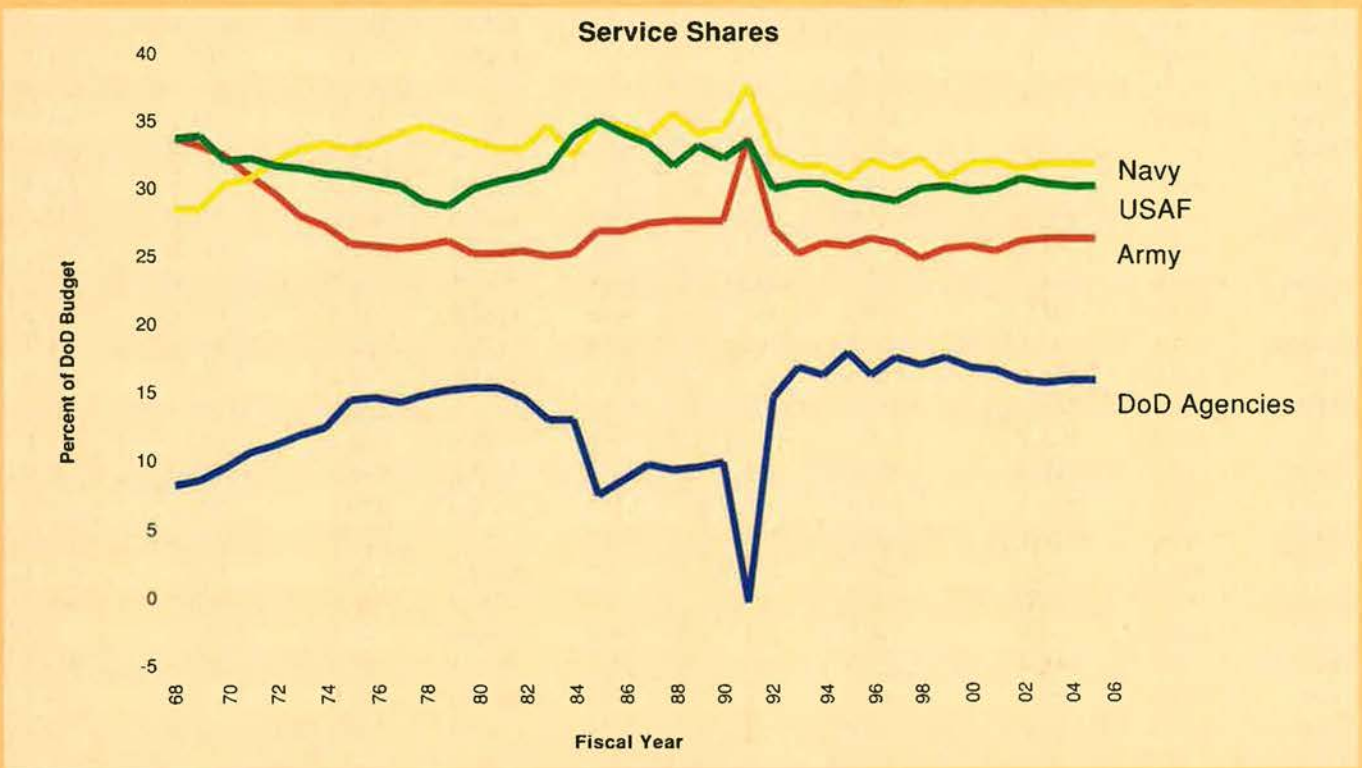
Note: At press time, DOD had released no FY2006 deflator, preventing conversion of 2006 amounts into 2002 dollars. Numbers have been rounded.

Service Shares

(In FY02 constant $ billions)

Budget authority	FY00	FY01	FY02	FY03	FY04	FY05	FY06
Air Force	89	87	93	93	94	94	—
Army	77	72	77	78	78	78	—
Navy	95	96	96	96	97	97	—
Defense agencies, DoD–wide	46	45	43	44	44	44	—
Total	306	301	309	311	312	313	—
Percent of budget authority							
Air Force	29%	29%	30%	30%	30%	30%	—
Army	25%	24%	25%	25%	25%	25%	—
Navy	31%	32%	31%	31%	31%	31%	—
Defense agencies, DoD–wide	15%	15%	14%	14%	14%	14%	—

Note: At press time, DOD had provided no FY2006 service amounts or percentages. Outyear data are those contained in the most recent 2001–05 FYDP, converted to 2002 dollars. Numbers have been rounded.



Explanatory Note

Data for 1962–2000 are historical. Data for 2001–02 are projections. These four tables are based on "The Economic and Budget Outlook: Fiscal Years 2002–11," published by the Congressional Budget Office, January 2001. (Constant dollar figures are derived.)

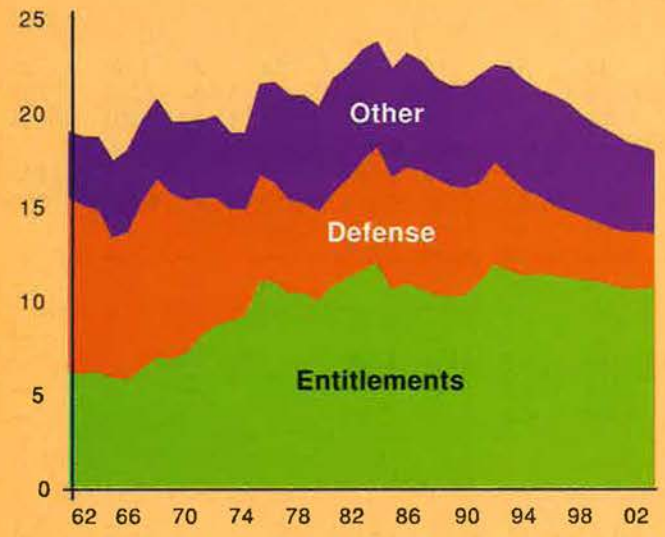
Federal Budget Categories
Current $ billions

Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	$106.8	$5.9	$34.7	$52.6
1963	111.3	4.0	36.2	53.7
1964	118.5	6.5	38.9	55.0
1965	118.2	1.6	39.7	51.0
1966	134.5	3.1	43.4	59.0
1967	157.5	12.6	50.9	72.0
1968	178.1	27.7	59.7	82.2
1969	183.6	0.5	64.7	82.7
1970	195.6	8.7	72.5	81.9
1971	210.2	26.1	86.9	79.0
1972	230.7	26.4	100.8	79.3
1973	245.7	15.4	116.0	77.1
1974	269.4	8.0	130.9	80.7
1975	332.3	55.3	169.5	87.6
1976	371.8	70.5	189.2	89.9
1977	409.2	49.8	203.8	97.5
1978	458.7	54.9	227.5	104.6
1979	504.0	38.7	247.1	116.8
1980	590.9	72.7	291.4	134.6
1981	678.2	74.0	339.4	158.0
1982	745.8	120.1	370.8	185.9
1983	808.4	208.0	410.6	209.9
1984	851.9	185.7	405.6	228.0
1985	946.4	221.7	448.3	253.1
1986	990.5	238.0	461.8	273.8
1987	1,004.1	169.3	474.2	282.5
1988	1,064.5	194.0	505.1	290.9
1989	1,143.7	205.2	549.6	304.0
1990	1,253.2	277.8	627.0	300.1
1991	1,324.4	321.6	702.3	319.7
1992	1,381.7	340.5	716.1	302.6
1993	1,409.5	300.5	736.5	292.4
1994	1,461.9	258.9	783.6	282.3
1995	1,515.8	226.4	817.7	273.6
1996	1,560.6	174.1	856.9	266.0
1997	1,601.3	103.4	896.3	271.7
1998	1,652.6	30.0	938.6	270.2
1999	1,703.0	+0.7	976.8	275.5
2000	1,789.0	+86.4	1,029.0	295.0
2001	1,853.0	+125.0	1,089.0	301.0
2002	1,923.0	+142.0	1,157.0	319.0

Federal Budget Categories
Constant FY02 $ billions

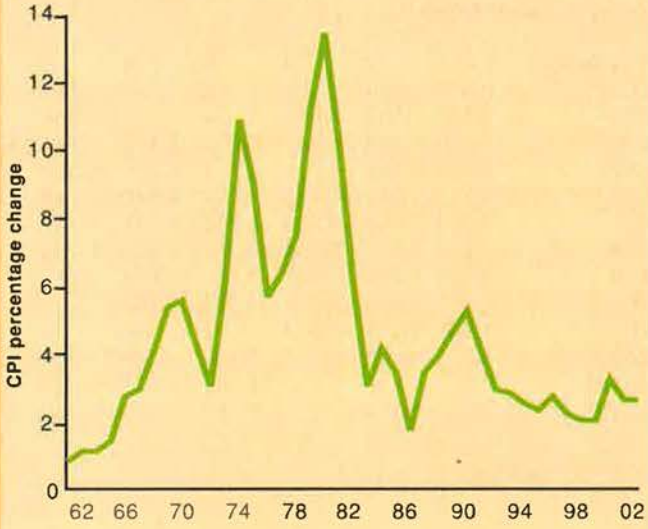
Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	647.0	35.7	210.2	318.7
1963	665.7	23.9	216.5	321.2
1964	699.6	38.4	229.7	324.7
1965	686.9	9.3	230.7	296.4
1966	759.6	17.5	245.1	333.2
1967	862.7	69.0	278.8	394.4
1968	936.2	145.6	313.8	432.1
1969	914.8	2.5	322.4	412.1
1970	922.0	41.0	341.8	386.1
1971	949.1	117.8	392.4	356.7
1972	1009.4	115.5	441.0	347.0
1973	1012.2	63.4	477.9	317.6
1974	999.9	29.7	485.8	299.5
1975	1130.5	188.1	576.6	298.0
1976	1195.5	226.7	608.4	289.1
1977	1235.5	150.4	615.3	294.4
1978	1287.1	154.0	638.4	293.5
1979	1270.6	97.6	623.0	294.5
1980	1312.5	161.5	647.3	299.0
1981	1365.8	149.0	683.5	318.2
1982	1414.2	227.7	703.1	352.5
1983	1485.4	382.2	754.5	385.7
1984	1500.8	327.1	714.5	401.7
1985	1609.3	377.0	762.3	430.4
1986	1652.9	397.2	770.6	456.9
1987	1617.4	272.7	763.8	455.0
1988	1647.1	300.2	781.6	450.1
1989	1688.6	303.0	811.5	448.8
1990	1755.5	389.1	878.3	420.4
1991	1780.5	432.3	944.1	429.8
1992	1801.6	444.0	933.7	394.6
1993	1784.4	380.4	932.4	370.2
1994	1802.0	319.1	965.9	348.0
1995	1822.9	272.3	983.4	329.0
1996	1823.9	203.5	1,001.5	310.9
1997	1827.6	118.0	1,023.0	310.1
1998	1845.5	33.5	1,048.2	301.7
1999	1860.9	+0.8	1,067.4	301
2000	1890.6	+91.3	1,088.3	311.8
2001	1904.9	+128.5	1,119.5	309.4
2002	1,923.0	+142.0	1,157.0	319.0

Federal Budget Outlay Categories
Percentages of GDP



Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	18.8	1.0	6.1	9.2
1963	18.5	0.7	6.0	8.9
1964	18.5	1.0	6.1	8.6
1965	17.2	0.2	5.8	7.4
1966	17.8	0.4	5.7	7.8
1967	19.4	1.6	6.3	8.9
1968	20.5	3.2	6.9	9.4
1969	19.3	0.1	6.8	8.7
1970	19.3	0.9	7.1	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	10.3	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	11.1	3.5
1997	19.6	1.3	11.0	3.3
1998	19.1	0.3	10.9	3.1
1999	18.7	0.0	10.7	3.0
2000	18.2	+0.9	10.5	3.0
2001	18.0	+1.2	10.5	3.0
2002	17.7	+1.3	10.6	2.8

Inflation Rates



CPI=Consumer Price Index

Year	% change
1962	1.0
1963	1.3
1964	1.3
1965	1.6
1966	2.9
1967	3.1
1968	4.2
1969	5.5
1970	5.7
1971	4.4
1972	3.2
1973	6.2
1974	11.0
1975	9.1
1976	5.8
1977	6.5
1978	7.6
1979	11.3
1980	13.5
1981	10.3
1982	6.2
1983	3.2
1984	4.3
1985	3.6
1986	1.9
1987	3.6
1988	4.1
1989	4.8
1990	5.4
1991	4.2
1992	3.1
1993	3.0
1994	2.7
1995	2.5
1996	2.9
1997	2.4
1998	2.2
1999	2.2
2000	3.4
2001	2.8
2002	2.8

Monthly Military Basic Rates of Pay

(Effective Jan. 1, 2001)

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]	8,519	8,819	—	—	—	9,157	—	9,664	—	10,356	—	11,049	11,104	11,335	11,737
O-9[a]	7,550	7,748	7,913	—	—	8,114	—	8,452	—	9,157	—	9,664	9,803	10,005	10,356
O-8[a]	6,838	7,062	7,211	7,252	7,437	7,748	7,820	8,114	8,199	8,452	8,819	9,157	9,383	—	—
O-7[a]	5,682	6,068	—	6,113	6,341	6,515	6,716	6,916	7,117	7,748	8,281	—	—	—	8,323
O-6	4,211	4,627	4,930	—	4,949	5,161	5,189	—	5,361	6,005	6,311	6,617	6,791	6,968	7,310
O-5	3,369	3,955	4,229	4,280	4,451	4,451	4,584	4,832	5,156	5,482	5,637	5,790	5,965	—	—
O-4	2,839	3,457	3,688	3,740	3,953	4,128	4,410	4,629	4,782	4,935	4,987	—	—	—	—
O-3	2,638	2,991	3,228	3,489	3,656	3,840	3,993	4,190	4,292	—	—	—	—	—	—
O-2	2,301	2,621	3,019	3,120	3,185	—	—	—	—	—	—	—	—	—	—
O-1	1,998	2,079	2,513	—	—	—	—	—	—	—	—	—	—	—	—
O-3E[b]	0	0	0	3,489	3,656	3,840	3,993	4,190	4,356	4,451	4,580	—	—	—	—
O-2E[b]	0	0	0	3,129	3,185	3,286	3,457	3,590	3,688	—	—	—	—	—	—
O-1E[b]	0	0	0	2,513	2,684	2,783	2,884	2,984	3,120	—	—	—	—	—	—

Enlisted Members

E-9	—	—	—	—	—	—	3,127	3,197	3,287	3,392	3,498	3,602	3,743	3,883	4,061
E-8	—	—	—	—	—	2,622	2,698	2,768	2,853	2,945	3,041	3,138	3,278	3,417	3,613
E-7	1,831	1,999	2,075	2,150	2,227	2,303	2,379	2,455	2,530	2,607	2,684	2,759	2,891	3,035	3,251
E-6	1,575	1,740	1,817	1,892	1,970	2,046	2,123	2,197	2,273	2,328	2,368	—	2,370	—	—
E-5	1,382	1,549	1,624	1,701	1,778	1,856	1,931	2,008	—	—	—	—	—	—	—
E-4	1,289	1,424	1,501	1,576	1,653	—	—	—	—	—	—	—	—	—	—
E-3	1,215	1,307	1,384	1,385	—	—	—	—	—	—	—	—	—	—	—
E-2	1,169	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1 4 mos.+	1,043	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1<4 mos.	964.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Amounts have been rounded to the nearest dollar.

[a]Basic pay for pay grades O-7 through O-10 is limited to $10,850.10, regardless of cumulative years of service.

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

Basic pay while serving as Chairman of the Joint Chiefs of Staff or Chief of Staff of the Air Force is $12,488.70, regardless of cumulative years of service, but the general officer cap of $10,850.10 applies, as well.

Basic pay while serving as Chief Master Sergeant of the Air Force is $4,719, regardless of cumulative years of service.

Aviation Career Incentive Pay

(Effective Jan. 1, 2001)

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

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

Provided to qualified rated officers and flight surgeons.

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. Grades O-6 and below with more than 25 years of service may receive $250 per month for continued operational flying.

Hazardous Duty Pay

(Effective Jan. 1, 2001)

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, 2001)

General Schedule

Grade	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10
GS-1	$14,244	$14,719	$15,193	$15,664	$16,139	$16,418	$16,884	$17,356	$17, 375	$17,819
GS-2	16,015	16,395	16,926	17,375	17,571	18,088	18,605	19,122	19,639	20,156
GS-3	17,474	18,056	18,638	19,220	19,802	20,384	20,966	21,548	22,130	22,712
GS-4	19,616	20,270	20,924	21,578	22,232	22,886	23,540	24,194	24,848	25,502
GS-5	21,947	22,679	23,411	24,143	24,875	25,607	26,339	27,071	27,803	28,535
GS-6	24,463	25,278	26,093	26,908	27,723	28,538	29,353	30,168	30,983	31,798
GS-7	27,185	28,091	28,997	29,903	30,809	31,715	32,621	33,527	34,433	35,339
GS-8	30,107	31,111	32,115	33,119	34,123	35,127	36,131	37,135	38,139	39,143
GS-9	33,254	34,362	35,470	36,578	37,686	38,794	39,902	41,010	42,118	43,226
GS-10	36,621	37,842	39,063	40,284	41,505	42,726	43,947	45,168	46,389	47,610
GS-11	40,236	41,577	42,918	44,259	45,600	46,941	48,282	49,623	50,964	52,305
GS-12	48,223	49,830	51,437	53,044	54,651	56,258	57,865	59,472	61,079	62,686
GS-13	57,345	59,257	61,169	63,081	64,993	66,905	68,817	70,729	72,641	74,553
GS-14	67,765	70,024	72,283	74,542	76,801	79,060	81,319	83,578	85,837	88,096
GS-15	79,710	82,367	85,024	87,681	90,338	92,995	95,652	98,309	100,966	103,623

Senior Executive Service

ES-1	ES-2	ES-3	ES-4	ES-5	ES-6
$109,100	$114,200	$119,400	$125,500	$125,700	$125,700

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

Housing Allowance

(Effective Jan. 1, 2001)

Pay Grade	With Dependents	Without Dependents
O-10	$1,152.60	$936.60
O-9	1,152.60	936.60
O-8	1,152.60	936.60
O-7	1,152.60	936.60
O-6	1,037.70	859.20
O-5	1,000.50	827.40
O-4	881.70	766.50
O-3	729.30	614.70
O-2	622.80	487.50
O-1	557.10	410.70
O-3E	783.90	663.60
O-2E	707.40	564.00
O-1E	653.70	485.40
E-9	748.80	568.20
E-8	690.60	521.70
E-7	641.10	445.50
E-6	592.50	403.20
E-5	532.80	372.00
E-4	462.90	323.40
E-3	431.10	317.40
E-2	410.70	257.70
E-1	410.70	230.10

Subsistence Allowance

(Effective Jan. 1, 2001)

	Cash/In-Kind
Officers	$160.42/month

Enlisted Members	E-1 <4 Months	All Other Enlisted
When on leave or authorized to mess separately	$7.07/day	$7.66/day
When rations in-kind are not available	$7.97/day	$8.63/day
When assigned to duty under emergency conditions where no US mess facilities are available	$10.56/day	$11.43/day

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METRIC SYSTEMS

AN INTEGRATED DEFENSE TECHNOLOGIES COMPANY

Equipment

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

Active Duty Inventory

(As of Sept. 30, 2000)

Type	TAI	PAI
Bomber		
B-1	75	63
B-2	21	16
B-52	85	49
Total	**181**	**128**
Fighter/Attack		
A-10	129	114
OA-10	84	66
F-15	614	514
F-16	773	670
F-22	3	3
F-117	52	44
YF-117	3	3
Total	**1,658**	**1,414**
Helicopter		
HH-60	63	43
TH-53	5	4
UH-1	62	47
Total	**130**	**94**
Reconnaissance/BM/C³I		
E-3	32	24
E-4	4	3
E-8	8	8
EC-18	3	3
EC-130	22	16
EC-135	3	1
NC-135	1	0
OC-135	2	2
RC-135	21	16
RQ-1	8	5
U-2	31	29
WC-135	2	0
Total	**137**	**107**
Special Ops Forces		
AC-130	21	16
MC-130	48	40
MH-53	38	35
Total	**107**	**91**
Tanker		
HC-130	12	10
KC-10	59	54
KC-135	254	229
NKC-135	3	3
Total	**328**	**296**
Trainer		
AT-38	93	80
T-1	180	152
T-3	110	110
T-6	13	10
T-37	417	352
T-38	416	284
T-39	3	3
T-41	3	3
T-43	11	10
TC-18	4	0
TC-135	2	2
TE-8	1	0
TG-3	3	2
TG-4	14	10
TG-7	9	8
TG-9	4	4
TG-10	1	0
TG-11	2	2
TU-2	4	4
UV-18	3	2
Total	**1,293**	**1,038**
Transport		
C-5	81	70
C-9	23	22
C-12	30	30
C-17	67	55
C-20	13	12
C-21	75	73
C-32	4	4
C-37	3	2
C-130	192	164
C-135	4	4
C-137	2	2
C-141	69	52
NC-130	2	2
VC-25	2	2
Total	**567**	**494**
Total Active	**4,401**	**3,662**

Air National Guard Inventory

(As of Sept. 30, 2000)

Type	TAI	PAI
Bomber		
B-1	18	16
Fighter/Attack		
A-10	76	72
OA-10	26	18
F-15	126	93
F-16	569	460
Total	**797**	**643**
Helicopter		
HH-60G	18	15
Reconnaissance/BM/C³I		
EC-130	8	4
Special Ops Forces		
MC-130	4	4
Tanker		
HC-130	10	7
KC-135	223	204
Total	**233**	**211**
Transport		
C-5	13	12
C-21	2	2
C-22	3	2
C-26	12	11
C-38	2	2
C-130	234	215
C-135	1	0
C-141	17	16
Total	**284**	**260**
Total ANG	**1,362**	**1,153**

Air Force Reserve Command Inventory

(As of Sept. 30, 2000)

Type	TAI	PAI
Bomber		
B-52	9	8
Fighter/Attack		
A-10	44	39
OA-10	8	6
F-16	70	55
Total	**122**	**100**
Helicopter		
HH-60	23	21
Reconnaissance/BM/C³I		
WC-130	14	10
Special Ops Forces		
MC-130	14	12
Tanker		
HC-130	8	8
KC-135	69	64
Total	**77**	**72**
Transport		
C-5	32	28
C-130	107	99
C-141	44	40
Total	**183**	**167**
Total AFRC	**442**	**390**

Total Number of USAF Aircraft in Service Over Time

(As of Sept. 30, 2000)

Type of aircraft	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Bomber	178	183	185	177	179	179	181
Tanker	326	325	314	310	317	317	316
Fighter/interceptor/attack	1,781	1,750	1,637	1,631	1,613	1,594	1,595
Reconnaissance/electronic warfare	225	318	257	252	211	211	209
Transport	733	690	654	612	610	592	570
Search & rescue (fixed wing)	34	12	9	9	9	10	12
Helicopter (includes rescue)	189	123	174	178	165	165	168
Trainer	1,188	1,205	1,193	1,234	1,247	1,247	1,261
Utility/observation/other	107	104	98	98	96	98	89
Total active duty	**4,761**	**4,710**	**4,521**	**4,501**	**4,447**	**4,413**	**4,401**
Air National Guard	1,586	1,461	1,426	1,375	1,351	1,360	1,362
AFRC	468	462	447	454	430	430	442
Total active duty, ANG, and AFRC	**6,815**	**6,633**	**6,394**	**6,330**	**6,228**	**6,203**	**6,205**
Total aircraft, including foreign-government-owned	7,028	6,725	6,476	6,412	6,327	6,302	6,304

Age of the Active Duty Fleet

(As of Sept. 30, 2000)

	Age in Years										
	0–3	3–6	6–9	9–12	12–15	15–18	18–21	21–24	24+	Total	Average
A/OA-10						50	159	4		213	18.8
B-1					73	2				75	13.3
B-2	1	11	6	3						21	6.1
B-52									85	85	38.8
C-5				11	39				31	81	18.8
C-9									23	23	29.5
KC-10				1	23	24	11			59	15.7
C-12					4	8		4	14	30	20.5
C-17	31	20	15	1						67	3.6
C-18[a]			2				5			7	15.0
C-20		1	1		8	3				13	12.9
C-21					4	71				75	15.7
C-25				2						2	9.9
C-32	4									4	2.0
C-37	3									3	1.4
C-130[b]		3	15	15	18	1		8	237	297	28.0
C-135[b]									293	293	38.7
C-137[b]			1						1	2	18.3
C-141[b]									69	69	33.9
E-3						5	9	14	4	32	20.8
E-4									4	4	26.3
E-8	6	2		1						9	2.8
F-15	17		72	132	95	101	165	31	1	614	14.4
F-16	8	40	222	314	126	48	9	6		773	10.1
F-22	2	1								3	2.0
F-117[c]				55						55	9.4
G-3				3						3	9.6
G-4		4		1	1	1	3	4		14	15.0
G-7					4	5				9	15.0
G-9					4					4	13.6
G-10		1								1	5.6
G-11		2								2	5.2
H-1[b]									62	62	29.7
H-53[b]				1	4				38	43	28.1
H-60[b]	7		14	23	9	10				63	10.4
RQ-1	6	2								8	2.1
T-1	1	90	89							180	5.9
T-3		78	32							110	5.6
T-6	13									13	0.3
T-37									417	417	37.2
T-38									509	509	33.5
T-39									3	3	39.6
T-41									3	3	30.5
T-43									11	11	26.5
U-2				2	12	14	3		4	35	17.0
UV-18		1						2		3	16.5
Total	99	256	469	565	424	343	364	73	1,809	4,402	21.2
Percent[d]	**2%**	**6%**	**11%**	**13%**	**10%**	**8%**	**8%**	**2%**	**41%**		

[a]Includes EC-18. [b]Includes all types. [c]Includes YF-117. [d]Percentages are rounded.

Age of the Air National Guard Fleet

(As of Sept. 30, 2000)

	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	19.8
B-1					18					18	13.3
C-5									13	13	29.4
C-21					2					2	13.0
C-22						3				3	15.7
C-26		6	5	1						12	6.6
C-38	2									2	2.5
C-130	9	27	34	34	24	17	15	8	88	256	19.7
C-135									223	223	40.4
C-141									17	17	34.2
F-15						3	5	109	9	126	22.3
F-16		12	12	133	251	126	33	2		569	13.5
H-60			7	11						18	9.9
Total	11	45	58	179	295	160	121	142	350	1,361	20.6
Percent	**1%**	**3%**	**4%**	**13%**	**22%**	**12%**	**9%**	**10%**	**26%**		

Percentages have been rounded.

Age of the Air Force Reserve Command Fleet

(As of Sept. 30, 2000)

	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	48	3		52	20.0
B-52									9	9	38.5
C-5									32	32	29.3
C-130	7	15	17	15	24	7	1		57	143	19.9
C-135									69	69	39.7
C-141									44	44	33.9
F-16				17	51	2				70	12.8
H-60				23						23	10.1
Total	7	15	17	55	75	10	49	3	211	442	23.8
Percent	**2%**	**3%**	**4%**	**12%**	**17%**	**2%**	**11%**	**0.7%**	**48%**		

Percentages have been rounded.

ICBMs and Spacecraft in Service

(As of Sept. 30, 2000)

Type of system	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Minuteman II ICBM	0	0	0	0	0	0	0
Minuteman III ICBM	500	530	530	530	530	500	500
Peacekeeper ICBM	50	50	50	50	50	50	50
Total ICBMs	**550**	**580**	**580**	**580**	**580**	**550**	**550**
DMSP satellite	2	3	2	2	2	2	2
DSCS satellite	5	5	5	5	5	5	5
DSP satellite (data classified)	—	—	—	—	—	—	—
GPS satellite	24	25	26	26	26	26	24
Milstar	1	2	2	2	2	2	2
Total satellites	**32**	**35**	**35**	**35**	**35**	**35**	**33**

DMSP: Defense Meteorological Satellite Program **DSCS:** Defense Satellite Communications System **DSP:** Defense Support Program **GPS:** Global Positioning System
As of FY00, satellite data show the number of satellites that are primary mission capable.

USAF Aircraft Flying Hours

(In thousands, as of Sept. 30, 2000)

	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Active duty	1,750	1,709	1,657	1,680	1,644	1,633	1,555
ANG	412	403	380	375	361	357	342
AFRC	155	141	144	150	149	142	139
Total	**2,317**	**2,253**	**2,181**	**2,205**	**2,154**	**2,132**	**2,036**

USAF Squadrons by Mission Type

(As of Sept. 30, 2000)

	FY96	FY97	FY98	FY99	FY00
Active forces					
Bomber	10	10	10	10	10
Air refueling	23	23	25	24	26
Strategic command & control	1	1	2	2	2
Fighter	54	54	47	46	46
Reconnaissance	4	4	0	0	1
Electronic warfare	3	3	3	3	3
Special Operations Forces	16	16	13	13	14
Ground theater air control	5	5	8	8	7
Airborne theater air control	7	9	8	8	8
Weather	1	0	0	0	0
Rescue	7	7	7	7	7
Theater airlift	12	13	11	12	12
Long-range airlift	15	17	20	20	20
Special mission	2	2	2	2	2
Aeromedical airlift	3	3	3	3	3
ICBM	14	14	14	14	14
Space operations	10	10	10	10	8
Space communications	2	1	1	1	1
Space warning	9	8	8	8	7
Space surveillance	7	6	6	6	6
Space launch	5	5	5	5	3
Range	2	2	2	2	2
Total	**212**	**213**	**205**	**204**	**202**
Reserve forces					
ANG Selected Reserve	87	88	88	88	88
AFRC	48	60	62	62	68
Space operations	1	1	3	3	4
Space warning	0	0	0	0	2
Total	**136**	**149**	**153**	**153**	**162**
Grand total	**348**	**362**	**358**	**357**	**364**

Aircraft per Active Duty USAF Squadron

(As of Sept. 30, 2000)

Aircraft	Number
A/OA-10	12
B-1B	16
B-2	10
B-52	20
C-5	16
C-9A	6
C-17	5
C-130	15
AC-130	12
EC-130H	11
HC-130P/N	8
MC-130	9
MH-53J	18
MH-60G	8
KC-10A	15
KC-135	27
C-141B	11
E-3	5
E-8	3
F-15	21
F-15E	10
F-16	28
F-117A	15
U-2	2
HH-60G	11

Air National Guard Air Defense Unit Fin Flashes

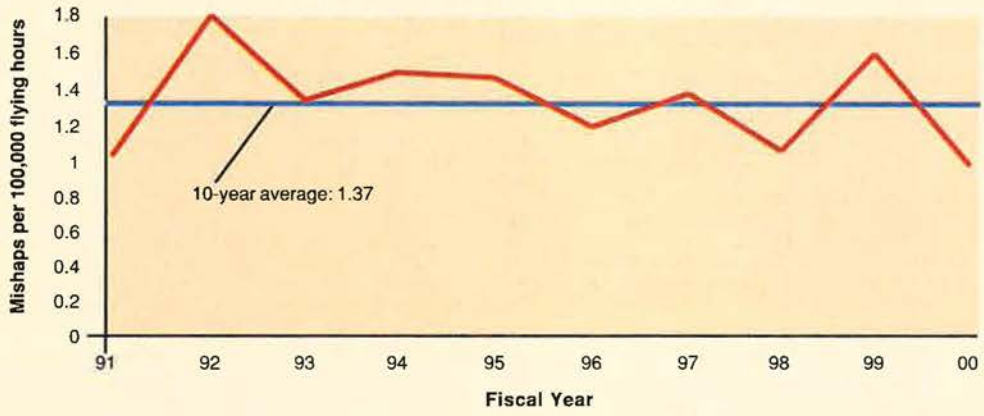
Description	Aircraft	Unit and Location
Minuteman over Massachusetts	F-15A/B	102nd FW, Otis ANGB, Mass.
Red stripe with "Happy Hooligans" logo	F-16A/B	119th FW, Hector IAP, N.D.
Dark gray bison's skull against prairie/mountain profile	F-16A/B	120th FW, Great Falls IAP, Mont.[a]
Subdued hawk with banner in talons	F-15A/B	123rd FS (142nd FW), Portland IAP, Ore.
Gray lightning bolt	F-15A/B	125th FW, Jacksonville IAP, Fla.
Black falcon with talons extended and "California" logo	F-16C/D	144th FW, Fresno Yosemite IAP, Calif.
Texas star on subdued jagged stripes with "Houston" logo	F-16C/D	147th FW, Ellington Field, Tex.[a]
Stars of Little Dipper constellation and "Duluth" logo	F-16A/B	148th FW, Duluth IAP, Minn.
Subdued "Vermont" on top of tail with figure of Ethan Allen	F-16C/D	158th FW, Burlington IAP, Vt.[a]
Subdued "Atlantic City" at top of tail	F-16C/D	177th FW, Atlantic City IAP, N.J.[a]
Subdued eagle and "Oregon" logo	F-15A/B	114th FS (173rd FW), Klamath Falls IAP, Ore.[b]
Starburst state flag and "Arizona" logo	F-16A/B	162nd FW, Tucson IAP, Ariz.[b]

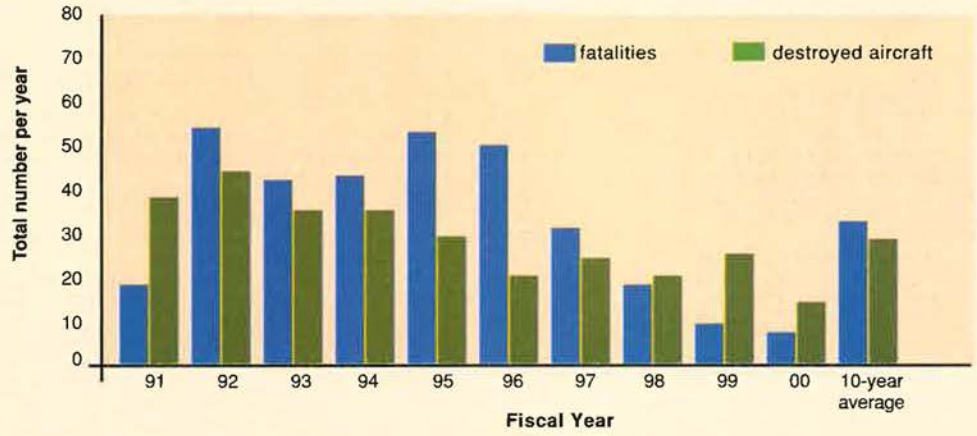
[a]General-purpose units (no longer air defense only).
[b]ANG training units.

Class A Aircraft Mishaps

(As of Sept. 30, 2000)

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





Data provided by USAF.

Among the Air National Guard aircraft fin flashes are the subdued-eagle emblems displayed on these F-15s from the Oregon ANG.

Photo by Erik Hildebrandt

USAF Aircraft Tail Markings

Code	Aircraft	Unit and Location
AC	F-16	177th FW (ANG), Atlantic City IAP, N.J.
AF	C-150, gliders, T-41, UV-18	34th OG, USAF Academy, Colo.
AK	C-12, C-130H, F-15C/D/E	3rd Wing, Elmendorf AFB, Alaska
AK	A/OA-10A, F-16C/D	354th FW, Eielson AFB, Alaska
AL	F-16C/D	187th FW (ANG), Dannelly Fld, Ala.
AN	C-130H, HC-130N, HH-60G	176th Wing (ANG), Kulis ANGB, Alaska
AV	F-16C/D	31st FW, Aviano AB, Italy
AZ	F-16A/B/C/D	162nd FW (ANG), Tucson IAP, Ariz.
BB	T-38A, U-2	9th RW, Beale AFB, Calif.
BC	A/OA-10A	110th FW (ANG), W.K. Kellogg Arpt, Mich.
BD	B-52H, A/OA-10A	917th Wing (AFRC), Barksdale AFB, La.
CA	HC-130P, HH-60G	129th RQW (ANG), Moffett Fed Afld, Calif.
CB	T-1, T-37B, T-38A	14th FTW, Columbus AFB, Miss.
CC	F-16C/D	27th FW, Cannon AFB, N.M.
CI	C-130E	146th AW, Channel Islands ANGS, Calif.
CO	F-16C/D	140th Wing, Buckley AFB, Colo.
CT	A/OA-10A	103rd FW (ANG), Bradley IAP, Conn.
DC	F-16C/D	113th Wing (ANG), Andrews AFB, Md.
DE	C-130H	166th AW (ANG), New Castle Co. Arpt, Del.
DM	A/OA-10A, EC-130E/H	355th Wing, Davis–Monthan AFB, Ariz.
DR	HH-60G	305th RQS (AFRC), Davis–Monthan AFB, Ariz.
DY	B-1B	7th BW, Dyess AFB, Tex.
ED	Various	412th TW, Edwards AFB, Calif.
EF	F-16C/D	147th FW (ANG), Ellington Fld, Tex.
EG	F-15C/D	33rd FW, Eglin AFB, Fla.
EL	B-1B	28th BW, Ellsworth AFB, S.D.
EN	AT-38B, T-37B, T-38A	80th FTW, Sheppard AFB, Tex.
ET	A-10A, F-15A/B/C/D/E, F-16A/B/C/D, UH-1N	46th TW, Eglin AFB, Fla.
FC	UH-1N	336th TG, Fairchild AFB, Wash.
FE	UH-1N	90th SPW, F.E. Warren AFB, Wyo.
FF	F-15C/D	1st FW, Langley AFB, Va.
FL	C-130E, HC-130P/N, HH-60G	920th RQG (AFRC), Patrick AFB, Fla.
FM	F-16C/D	482nd FW (AFRC), Homestead ARS, Fla.
FS	F-16A/B	188th FW (ANG), Fort Smith MAP, Ark.
FT	A/OA-10A	23rd FG, Pope AFB, N.C.
FW	F-16C/D	122nd FW (ANG), Fort Wayne IAP, Ind.
GA	B-1B	116th BW (ANG), Robins AFB, Ga.
GA	C-130H	165th AW (ANG), Savannah IAP, Ga.
HA	F-16C/D	185th FW (ANG), Sioux Gateway Airport, Iowa
HD	QF-4	53rd WEG, Holloman AFB, N.M.
HH	C-130H, F-15A/B, KC-135R	154th Wing, Hickam AFB, Hawaii
HI	F-16C/D	419th FW (AFRC), Hill AFB, Utah
HL	F-16C/D	388th FW, Hill AFB, Utah
HO	F-117A, T-38A	49th FW, Holloman AFB, N.M.
HO	F-4F	Luftwaffe RTU, Holloman AFB, N.M.
HT	AT-38B, C-12, F-15A	46th TG, Holloman AFB, N.M.
HV	UH-1N	30th SPW, Vandenberg AFB, Calif.
ID	A/OA-10A, C-130E	124th Wing (ANG), Boise Air Term., Idaho
IL	C-130E	182nd AW (ANG), Greater Peoria RAP, Ill.
IS	HH-60G	85th Group (ACC), NAS Keflavik, Iceland
JZ	F-15A/B	159th FW (ANG), NAS New Orleans JRB
KC	A/OA-10	442nd FW (AFRC), Whiteman AFB, Mo.
LA	B-52H	2nd BW, Barksdale AFB, La.
LI	HC-130P, HH-60G	106th RW (ANG), F.S. Gabreski IAP, N.Y.
LN	F-15C/D/E	48th FW, RAF Lakenheath, UK
LR	F-16C/D	944th FW (AFRC), Luke AFB, Ariz.
MA	F-15A/B	102nd FW (ANG), Otis ANGB, Mass.
MA	A/OA-10A	104th FW (ANG), Barnes MAP, 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.
MK	C-130H	440th AW (AFRC), Gen. Mitchell IAP/ ARS, Wis.
MM	UH-1N	341st SPW, Malmstrom AFB, Mont.
MN	C-130H	133rd AW (ANG), Minn.–St. Paul IAP/ARS
MN	F-16A/B	148th FW (ANG), Duluth IAP, Minn.
MO	B-1B, F-15C/D/E, F-16C/D, KC-135R	366th Wing, Mountain Home AFB, Idaho
MT	B-52H	5th BW, Minot AFB, N.D.
MT	UH-1N	91st SPW, Minot AFB, N.D.
MY	HC-130P, HH-60G	347th Rescue Wing, Moody AFB, Ga.
MY	AT-38B, T-6A	479th FTG (AETC), Moody AFB, Ga.
NC	C-130H	145th AW (ANG), Charlotte/Douglas IAP, N.C.
NM	F-16C/D	150th FW (ANG), Kirtland AFB, N.M.
NO	A/OA-10A	926th FW (AFRC), NAS New Orleans JRB
NV	C-130E	152nd AW (ANG), Reno/Tahoe IAP, Nev.
NY	F-16C/D	174th FW (ANG), Syracuse Hancock IAP, N.Y.
OF	Various	55th Wing, Offutt AFB, Neb.
OH	F-16C/D	178th FW (ANG), Springfield–Beckley MAP, Ohio
OH	C-130H	179th AG (ANG), Mansfield Lahm Arpt, Ohio
OH	F-16C/D	180th FW (ANG), Toledo Exp Arpt, Ohio
OK	C-130H	137th AW (ANG), Will Rogers World Arpt, Okla.
OK	F-16C/D	138th FW (ANG), Tulsa IAP, Okla.
OK	E-3B/C, TC-18E	552nd ACW, Tinker AFB, Okla.
OS	A/OA-10A, C-12, F-16C/D	51st FW, Osan AB, South Korea
OT	F-15C/D/E, F-16C/D	85th TES, 53rd Wing (ACC), Eglin AFB, Fla.
OT	A-10A, F-15C/D/E, F-16C/D, HH-60G	422nd TES, 53rd Wing, Nellis AFB, Nev.
OT	F-117	Det. 1, 53rd WEG, Holloman AFB, N.M.
PA	A/OA-10A	111th FW (ANG), Willow Grove ARS, Pa.
PD	HC-130P, HH-60G, C-130E	939th RW (AFRC), Portland IAP, Ore.
PR	C-130E	156th AW (ANG), Luis Munoz Marin IAP, Puerto Rico
RA	AT-38B, T-1A, T-6A, T-37B, T-38A, T-43A	12th FTW, Randolph AFB, Hondo Arpt, Tex.
RI	C-130E	143rd AW (ANG), Quonset State Arpt, R.I.
RS	C-130E	86th AW, Ramstein AB, Germany
SA	F-16C/D	149th FW (ANG), Kelly AFB, Tex.
SC	F-16C/D	169th FW (ANG), McEntire ANGS, S.C.
SD	F-16C/D	114th FW (ANG), Joe Foss Fld, S.D.
SI	F-16C/D	183rd FW (ANG), Capital MAP, Ill.
SJ	F-15E	4th FW, Seymour Johnson AFB, N.C.
SL	F-15A/B	131st FW (ANG), Lambert–St. Louis IAP, Mo.
SP	A/OA-10A, F-16C/D	52nd FW, Spangdahlem AB, Germany
ST	Various	82nd TW, Sheppard AFB, Tex.
SW	F-16C/D	20th FW, Shaw AFB, S.C.
TD	QF-4	53rd Wing, Tyndall AFB, Fla.
TH	F-16C/D	181st FW (ANG), Hulman RAP, Ind.
TX	C-130H	136th AW (ANG), NAS F.W. JRB, Tex.
TX	F-16C	301st FW (AFRC), NAS F.W. JRB, Tex.
TY	F-15C/D	325th FW, Tyndall AFB, Fla.
VA	F-16C/D	192nd FW (ANG), Richmond IAP, Va.
VN	T-1A, T-37B, T-38A	71st FTW, Vance AFB, Okla.
WA	A-10, F-15C/D/E, F-16C/D, HH-60, RQ-1	57th Wing, Nellis AFB, Nev.
WE	E-9A	53rd WEG, Tyndall AFB, Fla.
WI	F-16C/D	115th FW (ANG), Truax Fld, Wis.
WM	B-2A, T-38A	509th BW, Whiteman AFB, Mo.
WP	F-16C/D	8th FW, Kunsan AB, South Korea
WR	E-8C, TE-8A	93rd ACW, Robins AFB, Ga.
WV	C-130H	130th AW (ANG), Yeager Arpt, W. Va.
WV	C-130E	167th AW (ANG), E. W. Va. RAP, W. Va.
WW	F-16C/D	35th FW, Misawa AB, Japan
WY	C-130H	153rd AW (ANG), Cheyenne MAP, Wyo.
XL	T-1A, T-37B, T-38A	47th FTW, Laughlin AFB, Tex.
XP	C-130H	139th AW (ANG), Rosecrans Mem Arpt, Mo.
YJ	C-21A, C-130E/H, UH-1N	374th AW, Yokota AB, Japan
ZZ	E-3B, F-15C/D, KC-135R, HH-60G	18th Wing, Kadena AB, Japan

Source: USAF

USAF Grades and Insignia

Officer

Second Lieutenant
(O-1)

Brigadier General
(O-7)

First Lieutenant
(O-2)

Major General
(O-8)

Captain
(O-3)

Lieutenant General
(O-9)

Major
(O-4)

General
(O-10)

Lieutenant Colonel
(O-5)

Colonel
(O-6)

Enlisted

Airman Basic
(E-1)
No insignia

Airman
(E-2)

Airman First Class
(E-3)

Senior Airman
(E-4)

Staff Sergeant
(E-5)

Technical Sergeant
(E-6)

Master Sergeant
(E-7)

Senior Master Sergeant
(E-8)

Chief Master Sergeant
(E-9)

Chief Master Sergeant of
the Air Force

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

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

Awards and Decorations

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

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

Devices

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

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

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

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

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

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

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

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

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

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

Wings and Badges

Shown here and on p. 64 are current wings and badges. The basic level of wings or badges is illustrated. Most wings and badges have two other categories of accomplishment—senior and either commander, master, or chief. A star centered above the badge indicates the senior level, while a star surrounded by a wreath above the badge represents the master level.

Astronaut

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

Pilot

Navigator/Observer

Enlisted Aircrew

Flight Surgeon

Flight Nurse

Officer Aircrew Member

Air Battle Manager

Missile with Operations Designator

Missile

Berets

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

Combat Control Team

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

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

Pararescue

Tactical Air Control Party

Badges, continued


Acquisition and Financial Management


Air Traffic Control


Band


Chaplain Service Support


Civil Engineer


Command and Control


Communications and Information


Explosive Ordnance Disposal


Force Protection


Historian


Information Management


Intelligence


Judge Advocate


Logistics


Maintenance


Manpower and Personnel


Meteorologist


Operations Support


Parachutist


Paralegal


Public Affairs


Services


Space/Missile


Supply/Fuels


Transportation


Weapons Director

Medical


Biomedical Science Corps


Dental Corps


Enlisted Medical


Medical Corps


Medical Service Corps


Nurse Corps

Chaplain


Buddhist


Christian


Jewish


Muslim

USAF Almanac

Air Force Magazine's Guide to Aces and Heroes

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

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

Air Force historians have kept the official records of aerial victories by USAF pilots and crew members since 1957. The Office of the Air Force Historian initially published four separate listings—for World War I, World War II, the Korean War, and the Vietnam War. The four volumes have been corrected, updated, and combined into one comprehensive volume.

In each war in which its members flew and fought, the Air Force established criteria for awarding aerial victory credits. These criteria varied from war to war, and therefore one cannot make direct comparisons of aces across all wars.

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

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

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

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

Leading American Aces of World War I

(10 or more victories[a])

Rickenbacker, Capt. Edward V.	26
Luke, 2nd Lt. Frank Jr.	18
Vaughn, 1st Lt. George A.	13
Kindley, 1st Lt. Field E.	12
Springs, 1st Lt. Elliott W.	12
Landis, 1st Lt. Reed G.	10
Swaab, 1st Lt. Jacques M.	10

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

2nd Lt. Frank Luke Jr.

Maj. Richard I. Bong

Ranks are as of last victory in World War II.

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

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

Leading Army Air Forces Aces of World War II

(10 or more victories)

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

Capt. Joseph C. McConnell Jr.

USAF Aces of the Korean War

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

[a]In addition to World War II victories.

Capts. Charles B. DeBellevue and Richard S. Ritchie

USAF Aces of the Vietnam War

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

Capt. Jeffrey S. Feinstein

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

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

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

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

Col. John C. Meyer

Maj. James Jabara

Col. Robin Olds

Col. Francis S. Gabreski

Capt. Robert S. Johnson

Leading Air Service/AAF/USAF Aces of All Wars

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

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

USAF Recipients of the Medal of Honor

[a]Living Medal of Honor recipient.

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

USAF Almanac

Major Commands

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

ACC Air Combat Command

Headquarters Langley AFB, Va.

Established June 1, 1992

Commander Gen. John P. Jumper

MISSIONS

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

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

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

COROLLARY MISSIONS

Monitor and intercept illegal drug traffic

Test new combat equipment

FORCE STRUCTURE

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

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

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

25 wings

OPERATIONAL ACTIVITY

Flying hours: 29,200 per month

Major operations

Allied Force (Yugoslavia), Southern/Northern Watch (Iraq)

Major training exercises

Air Warrior, Red Flag (Nellis AFB, Nev.); Air Warrior II (Barksdale AFB, La.); Amalgam Warrior (NORAD); Baltops, TFW (EUCOM); Blue Advance, Fuertas Defensas, New Horizons (SOUTHCOM); Blue Flag (Hurlburt Field, Fla.); Bright Star, Initial Link, Internal Look (CENTCOM); Cooperative Zenith, JTFEX, Linked Seas, Northern Viking, Roving Sands, Strong Resolve (JFCOM); Global Guardian (STRATCOM); Maple Flag (Canada); Rugged Arch (CENTAF)

PERSONNEL

(as of Sept. 30, 2000)

Active duty		84,473
Officers	12,319	
Enlisted	72,154	
Reserve components		57,935
ANG	47,024	
AFRC	10,911	
Civilian		10,075
Total		**152,483**

USAF photo by Scott H. Spitzer

A B-2 from Whiteman AFB, Mo., makes contact with the boom of a KC-10 from McGuire AFB, N.J., during a joint services training mission in October 2000.

THERE IS NO SECTION TITLED,

"THE UNFAIR USE OF TECHNOLOGY"

IN THE GENEVA CONVENTION.

The Joint Strike Fighter represents the next generation of advanced strike aircraft to dominate the skies. Pratt & Whitney is proud to lead the propulsion team on a project that has met or exceeded its performance requirements. The JSF is quicker, more agile and has a greater combat radius than any other strike fighter. It is survivable, it is lethal and it may even be a little unfair. Pratt & Whitney. *SMART ENGINES FOR A TOUGH WORLD.*

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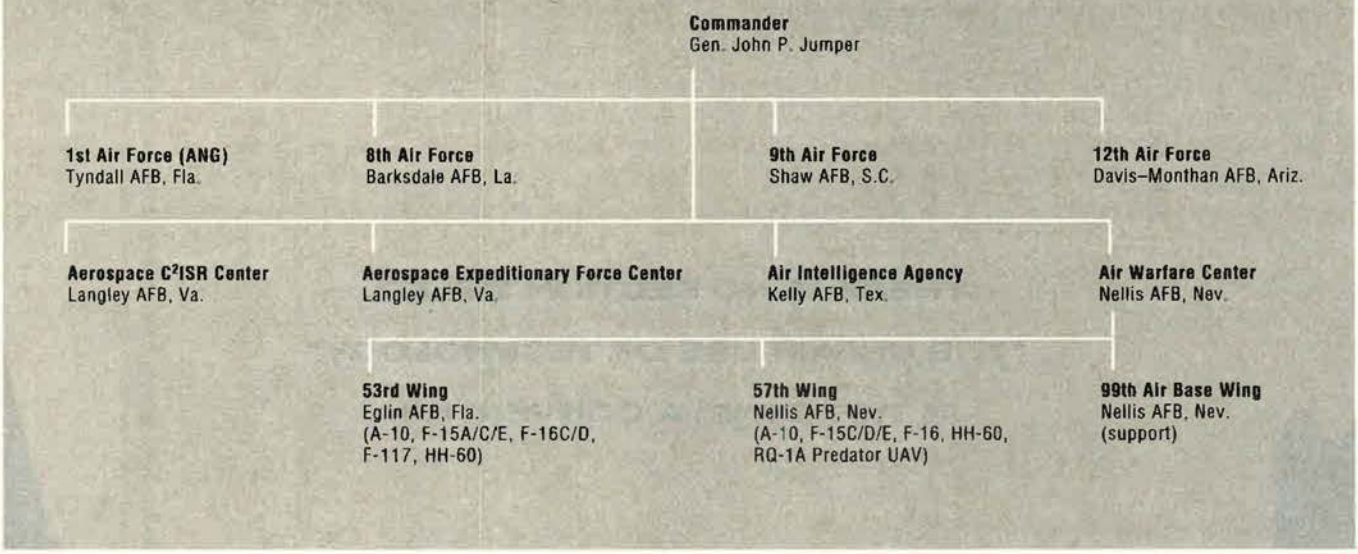
AIR COMBAT COMMAND, LANGLEY AFB, VA.



EQUIPMENT

(Primary Aircraft Inventory as of Sept. 30, 2000)

Bombers (B-1B, B-2, B-52H)	125
Fighter/Attack (A/OA-10, F-15, F-16, F-117)	718
Helicopter (HH-60)	29
Recon/BM/C³I (E-3, E-4, E-8, EC-130, OC-135, RC-135, RQ-1, U-2)	100
Tanker (HC-130, KC-135R)	15
Trainer (T-38, TC-135, TU-2)	40

UNIT	BASE	WEAPONS
1st Fighter Wing	Langley AFB, Va.	F-15C/D
2nd Bomb Wing	Barksdale AFB, La.	B-52H
4th Fighter Wing	Seymour Johnson AFB, N.C.	F-15E
5th Bomb Wing	Minot AFB, N.D.	B-52H
7th Bomb Wing	Dyess AFB, Tex.	B-1B
9th Reconnaissance Wing	Beale AFB, Calif.	T-38, U-2
20th Fighter Wing	Shaw AFB, S.C.	F-16C/D
23rd Fighter Group	Pope AFB, N.C.	A/OA-10
27th Fighter Wing	Cannon AFB, N.M.	F-16C/D
28th Bomb Wing	Ellsworth AFB, S.D.	B-1B
33rd Fighter Wing	Eglin AFB, Fla.	F-15C
49th Fighter Wing	Holloman AFB, N.M.	AT-38B, F-117A, German F-4F
53rd Wing	Eglin AFB, Fla.	A-10, F-15A/C/E, F-16C/D, F-117, HH-60
53rd Weapons Evaluation Group*	Tyndall AFB, Fla.	BQM-34, MQM-107, QF-4
55th Wing	Offutt AFB, Neb.	E-4B, OC-135B, RC-135S/U/V/W, TC-135S/W, WC-135W
57th Wing	Nellis AFB, Nev.	A-10, F-15C/D/E, F-16, HH-60, RQ-1A
65th Air Base Wing	Lajes Field, the Azores (support)	—
67th Information Operations Wing	Kelly AFB, Tex.	—
70th Intelligence Wing	Ft. Meade, Md.	—
85th Group	NAS Keflavik, Iceland	HH-60
93rd Air Control Wing	Robins AFB, Ga.	E-8C
99th Air Base Wing	Nellis AFB, Nev. (support)	—
347th Rescue Wing	Moody AFB, Ga.	HC-130, HH-60
355th Wing	Davis–Monthan AFB, Ariz.	A/OA-10, EC-130E/H
366th Wing	Mountain Home AFB, Idaho	B-1B, F-15C/D/E, F-16C/D, KC-135R
388th Fighter Wing	Hill AFB, Utah	F-16C/D
509th Bomb Wing	Whiteman AFB, Mo.	B-2, T-38
552nd Air Control Wing	Tinker AFB, Okla.	E-3B/C

*Part of 53rd Wing.

Air Combat Mission Systems

AMRAAM
EGBU-15 Guided Bombs
HARM, HARM Targeting System (Export)
Joint Standoff Weapon
Maverick
Paveway Laser Guided Bombs
Sidewinder
Sparrow
Towed Decoys
Airborne Jammers
Missile Warning Systems
F-4 Phantom: Radar Upgrade
RF-4: Navigation Attack Radar
F-15 Eagle: Radars
F-16 Falcon: Mission Computers
F/A-18 Hornet: Radars and Radar Warning Receiver
F-22 Raptor: Radar (Joint Venture) and Processor
F-111: Terrain Following Radar
F-117 Stealth: Targeting System
Joint Strike Fighter: Avionics and Weapons
B-2 Spirit: Radar
C-130 Hercules: Talon-1 Navigation Attack Radar
AC-130 Spectre Gunship: FLIR and Fire Control Radar
CV-22 Osprey: Radar and Infrared Systems
HISAR™ Integrated Surveillance and Reconnaissance System
LANTIRN: Radar and Processor
Tornado: Navigation Attack Radar
Advanced Targeting FLIR for Fighters
Situation Awareness Data Link
Miniaturized Airborne GPS Receiver

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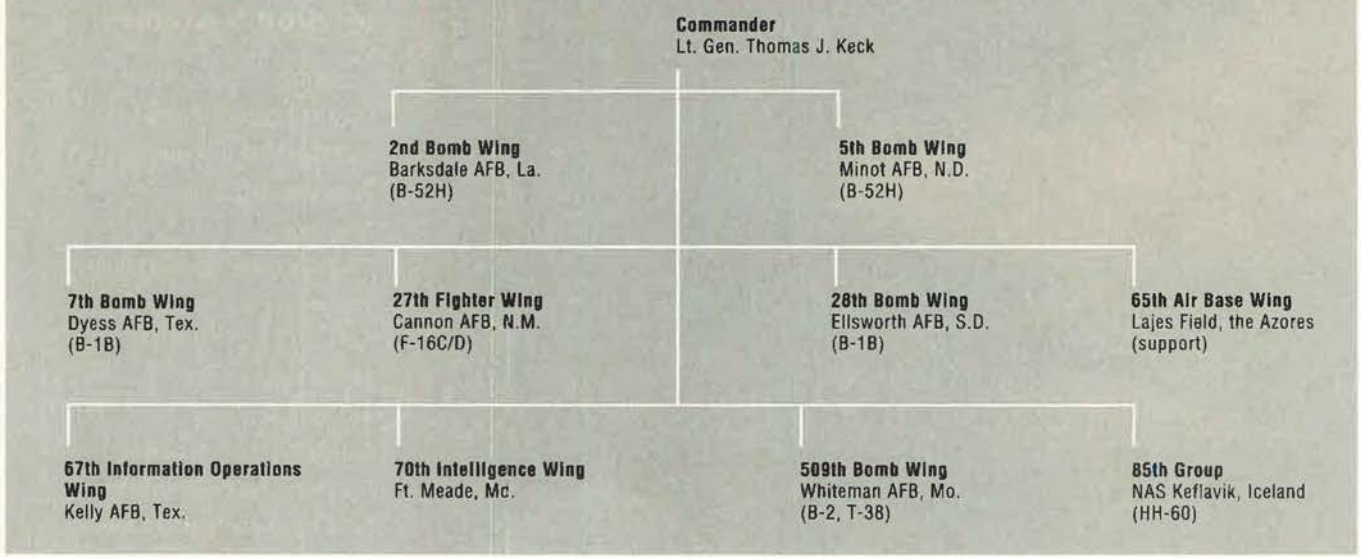
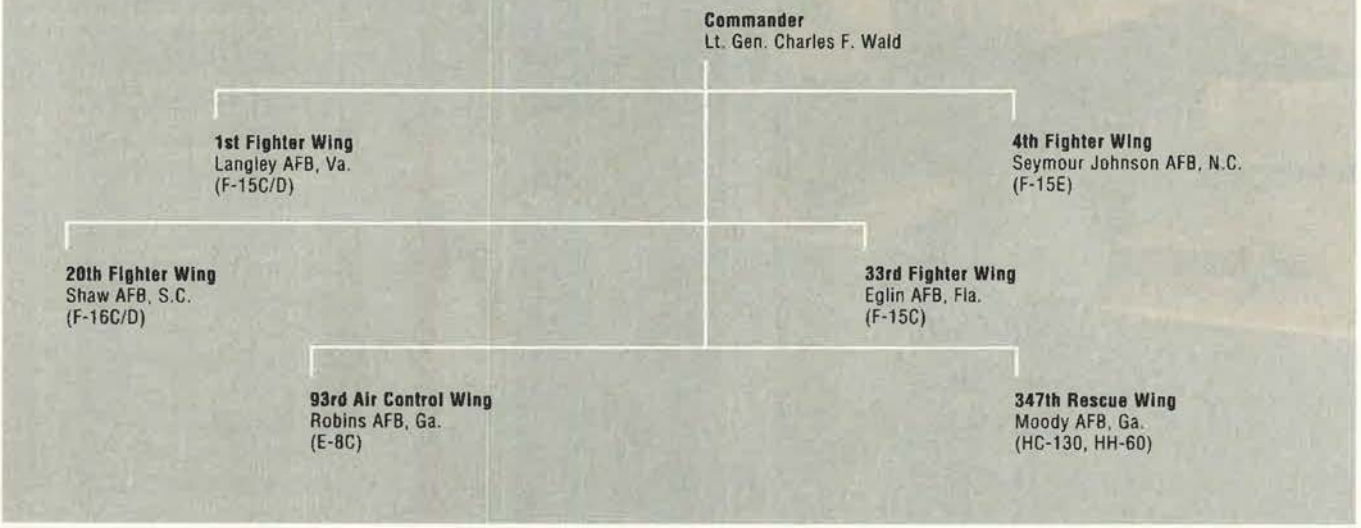
Ready for tomorrow

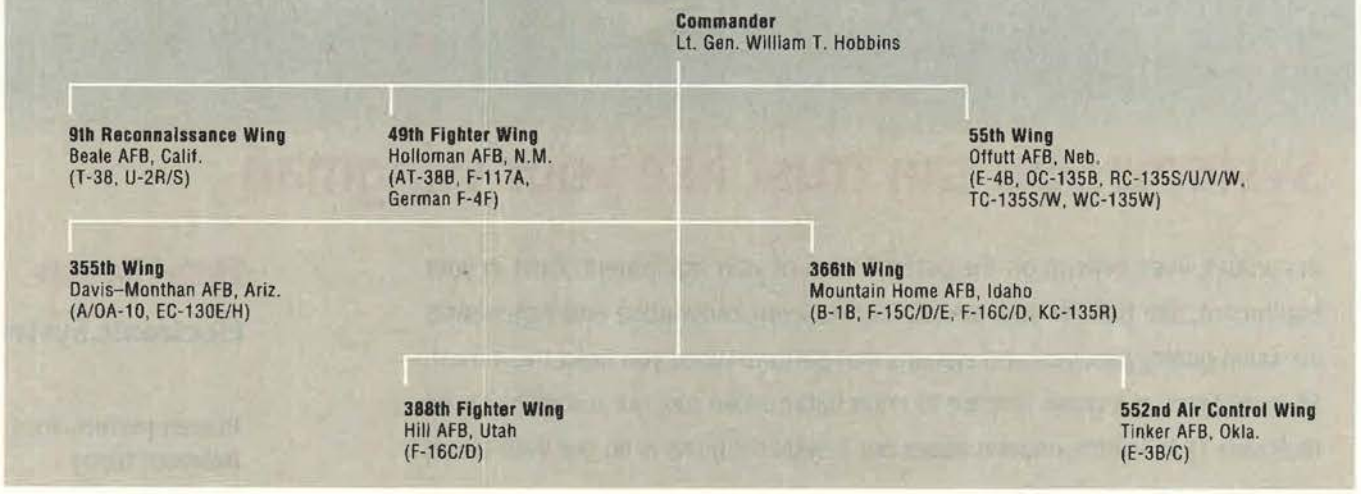
8th AIR FORCE (ACC), BARKSDALE AFB, LA.



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



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



USAF photo by SrA. Greg L. Davis

An F-16CJ runs in full afterburner during a nighttime engine test at Shaw AFB, S.C. SrA. James Kennedy controls the test from the cockpit. At the rear of the aircraft, A1C Justin Cox (left) monitors operations, while SSgt. Bryan Gallo stands by with fire extinguishing equipment.

AETC Air Education and Training Command

Headquarters Randolph AFB, Tex.

Established July 1, 1993

Commander Gen. Hal M. Hornburg

MISSIONS

Recruit, train, and educate quality people

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

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

OTHER RESPONSIBILITIES

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

FORCE STRUCTURE

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

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

16 wings

OPERATIONAL ACTIVITY

Flying hours: 43,397 per month

Photo by Paul Kennedy

Air Education and Training Command recruits airmen and—throughout their entire USAF careers—trains and educates them. For many, the process begins at Lackland AFB, Tex., where training instructors, like this one in the signature "Smokey Bear" hat, have only six weeks to turn raw recruits into professional airmen.

PERSONNEL

(as of Sept. 30, 2000)

Active duty		68,452
Officers	14,532	
Enlisted	53,920	
Reserve components		6,678
ANG	4,386	
AFRC	2,292	
Civilian		14,122
Total		**89,252**

EQUIPMENT

(PAI as of Sept. 30, 2000)

Fighter/Attack (F-15, F-16)	211
Helicopter (HH-60, TH-53, UH-1)	15
Special Operations Forces (H/MC-130, MH-53)	13
Tanker (KC-135)	24
Trainer (AT/T-38, T-1, T-3*, T-6, T-37, T-43)	950
Transport (C-5, C-12, C-17, C-21, C-130, C-141)	61

*T-3 no longer in use.

UNIT	BASE	WEAPONS
Flying/Aircrew Training Units (Active)		
12th Flying Training Wing	Randolph AFB, Tex.	AT/T-38, T-1, T-6, T-37, T-43
14th FTW	Columbus AFB, Miss.	T-1, T-37, T-38
45th Airlift Squadron	Keesler AFB, Miss.	C-21
47th FTW	Laughlin AFB, Tex.	T-1, T-37, T-38
56th Fighter Wing	Luke AFB, Ariz.	F-16
58th Special Operations Wing	Kirtland AFB, N.M.	H/MC-130P, MC-130H, HH-60G, MH-53J, TH-53A, UH-1
71st FTW	Vance AFB, Okla.	T-1, T-37, T-38
80th FTW	Sheppard AFB, Tex.	AT/T-38, T-37
97th Air Mobility Wing	Altus AFB, Okla.	C-5, C-17, C-141, KC-135
314th Airlift Wing	Little Rock AFB, Ark.	C-130
325th Fighter Wing	Tyndall AFB, Fla.	F-15, Undergraduate Controller and Air Battle Manager Training
336th Training Group	Fairchild AFB, Wash.	UH-1, Aircrew Survival Training
479th Flying Training Group	Moody AFB, Ga.	T-6, AT/T-38
Technical Training Units		
17th Training Wing	Goodfellow AFB, Tex.	
37th Training Wing	Lackland AFB, Tex.	
81st Training Wing	Keesler AFB, Miss.	
82nd Training Wing	Sheppard AFB, Tex.	
381st Training Group	Vandenberg AFB, Calif.	
Other Major Units		
Air University	Maxwell AFB, Ala.	
Air Force Recruiting Service	Randolph AFB, Tex.	
42nd Air Base Wing	Maxwell AFB, Ala.	
59th Medical Wing	Lackland AFB, Tex.	

AIR EDUCATION AND TRAINING COMMAND, RANDOLPH AFB, TEX.

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

*Tenant unit.

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

Commander
Maj. Gen. Steven R. Polk

- **12th Flying Training Wing** — Randolph AFB, Tex.
- **14th Flying Training Wing** — Columbus AFB, Miss.
- **47th Flying Training Wing** — Laughlin AFB, Tex. (T-1, T-37, T-38)
- **56th Fighter Wing** — Luke AFB, Ariz. (F-16)
- **58th Special Operations Wing*** — Kirtland AFB, N.M. (H/MC-130P, MC-130H, HH-60G, MH-53J, TH-53A, UH-1)
- **71st Flying Training Wing** — Vance AFB, Okla. (T-1, T-37, T-38)
- **80th Flying Training Wing*** — Sheppard AFB, Tex.
- **97th Air Mobility Wing** — Altus AFB, Okla. (C-5, C-17, C-141, KC-135)
- **314th Airlift Wing** — Little Rock AFB, Ark. (C-130)
- **325th Fighter Wing** — Tyndall AFB, Fla. (F-15)
- **336th Training Group*** — Fairchild AFB, Wash. (UH-1)
- **479th Flying Training Group*** — Moody AFB, Ga. (T-6, AT/T-38)

*Tenant unit.

AIR UNIVERSITY (AETC), MAXWELL AFB, ALA.

Commander
Lt. Gen. Lance W. Lord

- **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.

AFMC Air Force Materiel Command

Headquarters Wright–Patterson AFB, Ohio

Established July 1, 1992

Commander Gen. Lester L. Lyles

MISSIONS

Manage the integrated research, development, test, acquisition, and sustainment of weapon systems

Produce and acquire advanced systems

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

FORCE STRUCTURE

Four major product centers
Two test centers
Five air logistics centers
Two specialized centers
One laboratory

OPERATIONAL ACTIVITY

Flying hours: 1,800 per month

PERSONNEL

(as of Sept. 30, 2000)

Active duty		26,115
Officers	7,555	
Enlisted	18,560	
Reserve components		5,627
ANG	2,210	
AFRC	3,417	
Civilian		58,286
Total		**90,028**

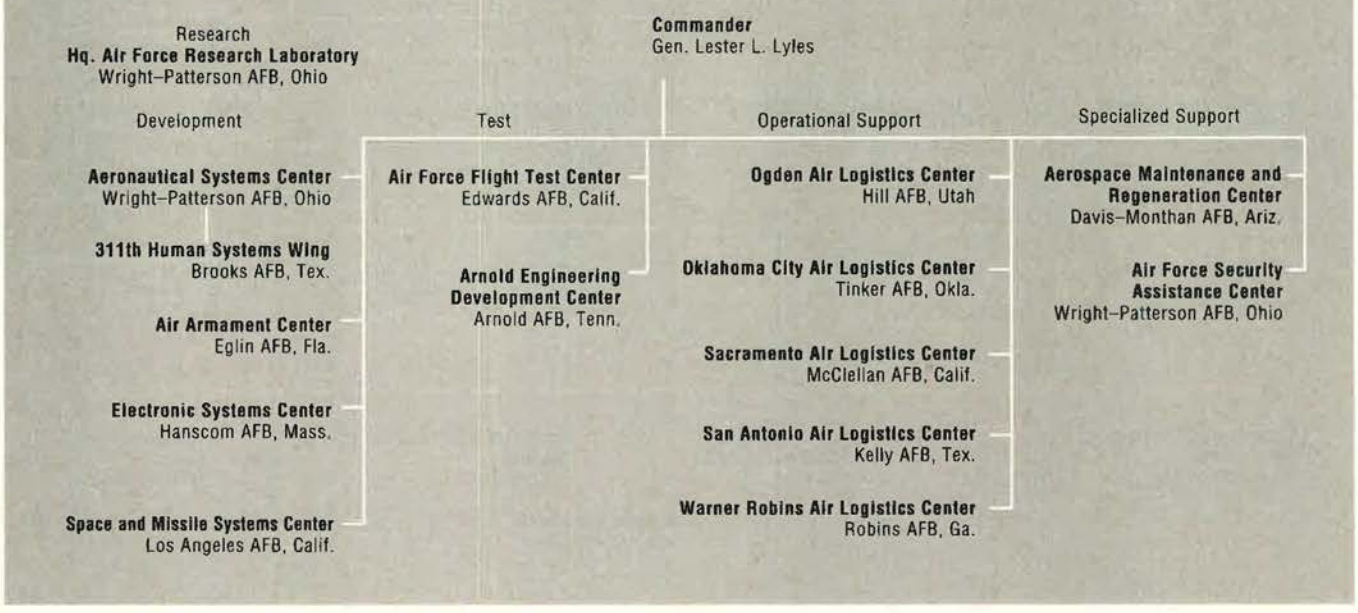
EQUIPMENT

(PAI as of Sept. 30, 2000)

Bomber (B-1B, B-52)	3
Fighter/Attack (A-10, F-15, F-16, F-22, F-117)	48
Helicopter (HH-60, UH-1)	4
Recon/BM/C^{3}I (EC-18, EC-135)	4
Tanker (NKC/KC-135)	4
Trainer (AT/T-38, T-39)	16
Transport (C-12, C-17, C-130, C-135, NC-130)	31

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

AIR FORCE MATERIEL COMMAND, WRIGHT-PATTERSON AFB, OHIO



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Air Force Space Command AFSPC

Headquarters Peterson AFB, Colo.

Established Sept. 1, 1982

Commander Gen. Ralph E. Eberhart

MISSIONS

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

Provide command and control for DOD satellites; ballistic missile warning to NORAD and SPACECOM; space weather support to entire DOD

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 DRU: Space Warfare Center, Schriever AFB, Colo.

Seven space wings

One space group

PERSONNEL

(as of Sept. 30, 2000)

Active duty		17,347
Officers	3,655	
Enlisted	13,692	
Reserve components		1,010
ANG	367	
AFRC	643	
Civilian		4,350
Total		**22,707**

EQUIPMENT

(as of Sept. 30, 2000)

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

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

Helicopters: 18

ICBMs:

Peacekeeper: 50
Minuteman III: 500

Satellite command-and-control system:

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

Satellite systems
(as of Jan. 1, 2001):

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

Space surveillance systems:

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

USAF photo by SSgt. Pamela Taubman

A Titan IVB lifts off from Vandenberg AFB, Calif., to carry a satellite into orbit.

AIR FORCE SPACE COMMAND, PETERSON AFB, COLO.

Commander
Gen. Ralph E. Eberhart

14th Air Force
Vandenberg 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. William R. Looney III

- **21st Space Wing** — Peterson AFB, Colo.
  - **821st Space Group** — Buckley AFB, Colo.
- **30th Space Wing** — Vandenberg AFB, Calif. (UH-1N)
- **45th Space Wing** — Patrick AFB, Fla.
- **50th Space Wing** — Schriever AFB, Colo.

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

Commander
Maj. Gen. Timothy J. McMahon

- **90th Space Wing** — F.E. Warren AFB, Wyo. (Minuteman III, Peacekeeper, UH-1)
- **91st Space Wing** — Minot AFB, N.D. (Minuteman III, UH-1)
- **341st Space Wing** — Malmstrom AFB, Mont. (Minuteman III, UH-1)

UNIT	BASE	WEAPONS/ACTIVITIES
21st Space Wing	Peterson AFB, Colo.	Missile warning and space surveillance
30th Space Wing	Vandenberg AFB, Calif.	Polar-orbiting launches, launch R&D tests, range operations for DOD, NASA, ballistic missile and aeronautical systems, and commercial launches; test support for DOD space and ICBM systems; UH-1, Delta II, Atlas IIAS, Titan II, Titan IV, Pegasus, Taurus
45th Space Wing	Patrick AFB, Fla.	Launch, range operations for DOD, NASA, and commercial space launches; shuttle program support and US Navy Trident test support; Delta II, Atlas II, Titan IV
50th Space Wing	Schriever AFB, Colo.	Command and control of DOD and allied nations' satellites
90th Space Wing	F.E. Warren AFB, Wyo.	Minuteman III and Peacekeeper ICBMs, UH-1
91st Space Wing	Minot AFB, N.D.	Minuteman III ICBM, UH-1
341st Space Wing	Malmstrom AFB, Mont.	Minuteman III ICBM, UH-1
821st Space Group	Buckley AFB, Colo.	Missile warning and space communications

AFSOC
Air Force Special Operations Command

Headquarters Hurlburt Field, Fla.

Established May 22, 1990

Commander Lt. Gen. Maxwell C. Bailey

MISSIONS

Serve as the Air Force component of SOCOM

Deploy specialized airpower, delivering special operations combat power anywhere, anytime

Provide Air Force Special Operations Forces for worldwide deployment and assignment to regional unified commands to conduct unconventional warfare, direct action, special reconnaissance, counterterrorism, foreign internal defense, counterproliferation, civil affairs, humanitarian assistance, psychological operations, personnel recovery, and counternarcotics operations

FORCE STRUCTURE

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

***M**oving the Space Based Infrared System (SBIRS) Low from concept to operation takes the know-how and proven performance of an experienced industry team — a team that can turn the complex requirements of critical national systems into reality.*

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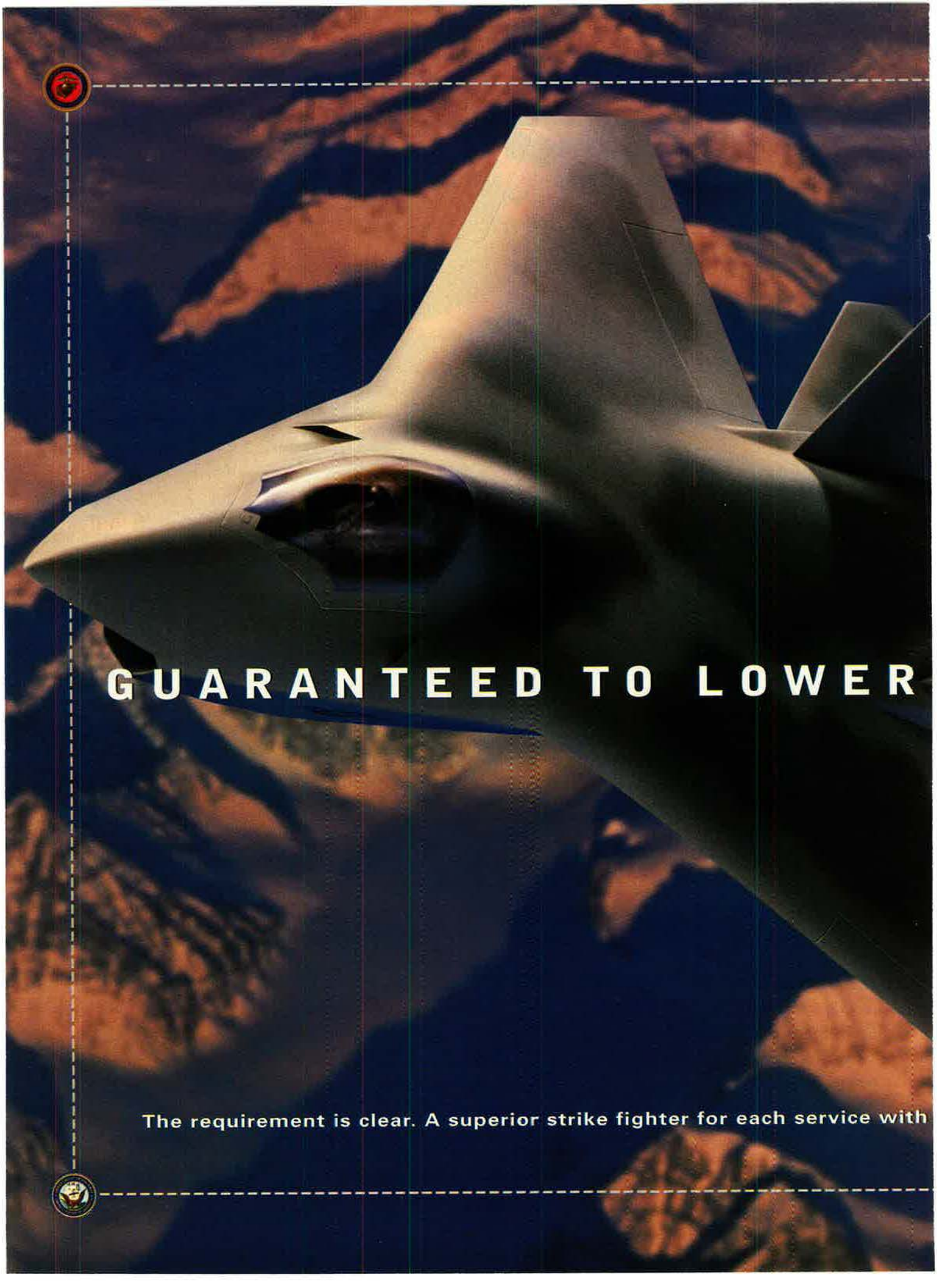
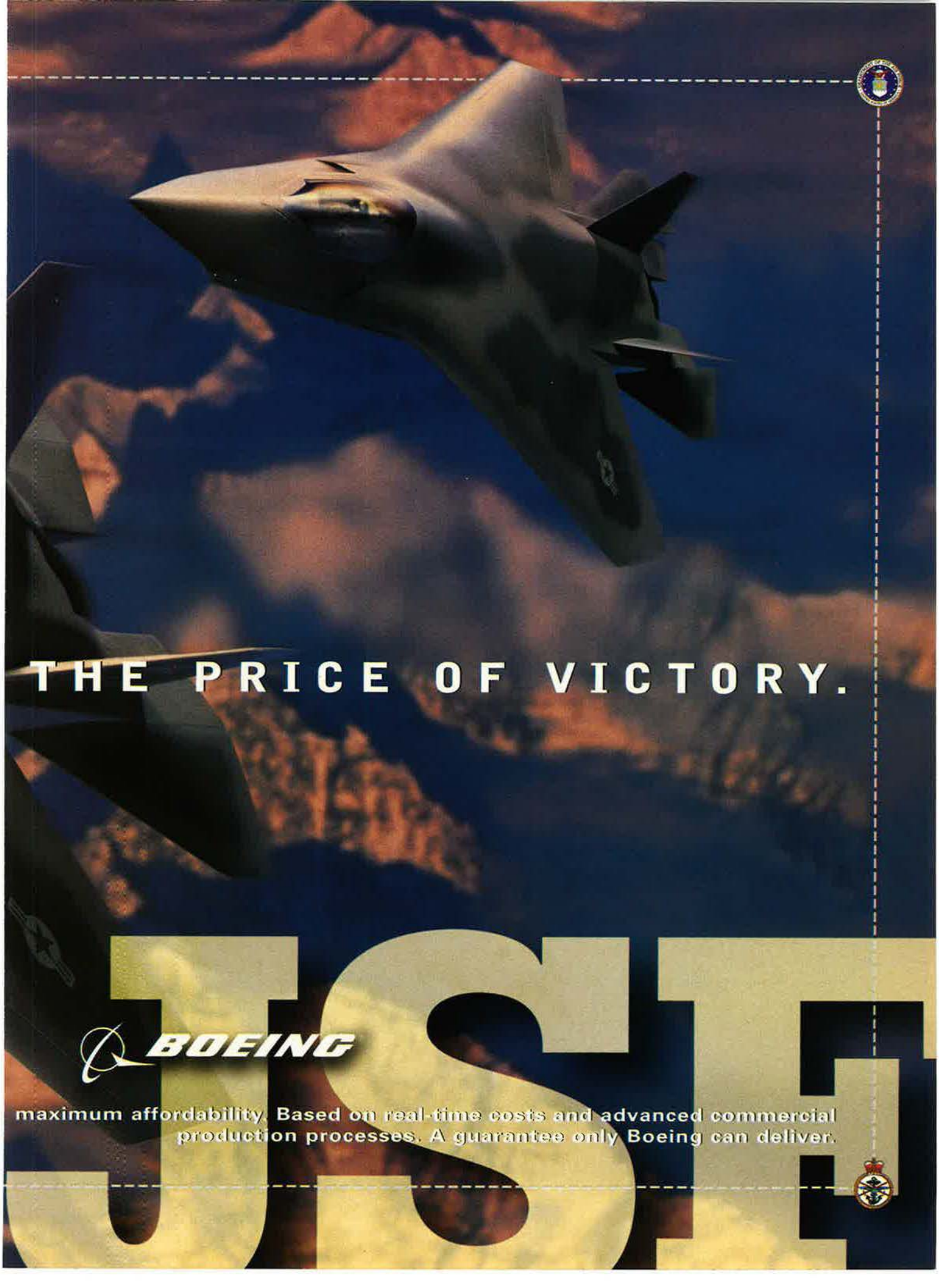

GUARANTEED TO LOWER
The requirement is clear. A superior strike fighter for each service with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USAF photo by TSgt. Cary Humphries

Special Operations MH-53 helicopters from Osan AB, South Korea, sit on the flight line at Taegu, South Korea, during an exercise last fall.

tions, one special tactics)
USAF Special Operations School

OPERATIONAL ACTIVITY
Flying hours: 4,350 per month

PERSONNEL
(as of Sept. 30, 2000)

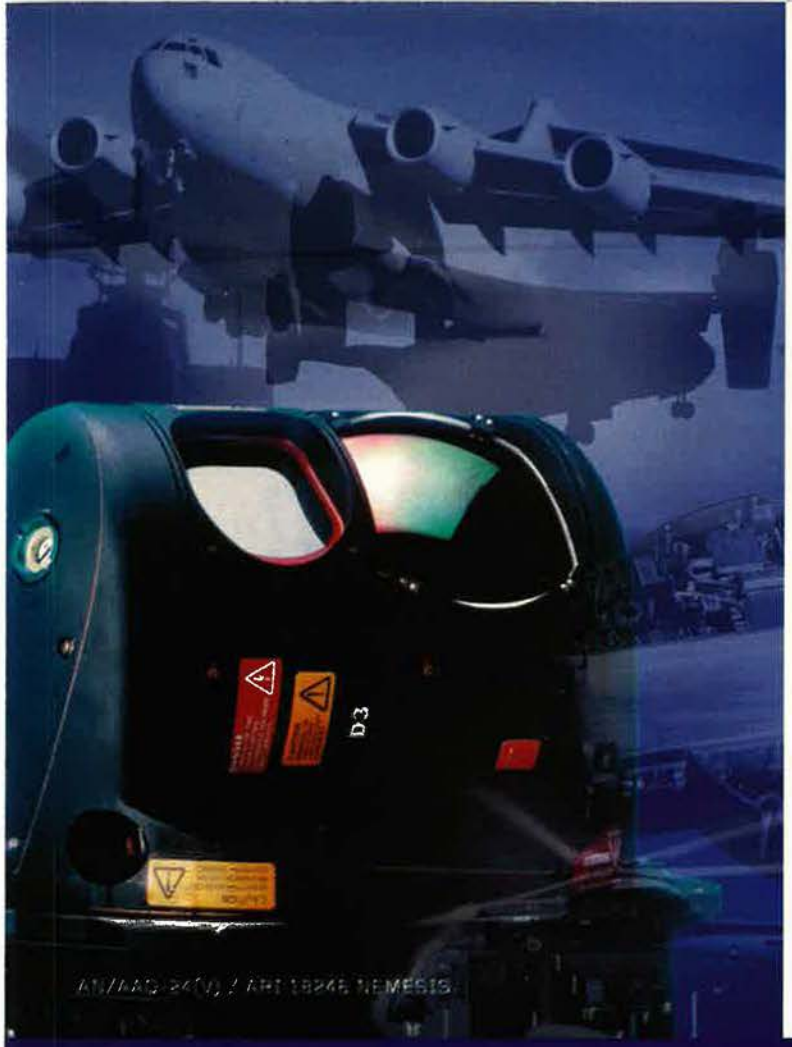
Active duty		8,965
Officers	1,448	
Enlisted	7,517	
Reserve components		2,451
ANG	1,190	
AFRC	1,261	
Civilian		585
Total		**12,001**

EQUIPMENT
(PAI as of Sept. 30, 2000)

Helicopter (UH-1)	2
Recon/BM/C^{3}I (EC-137)	1
SOF (AC/130, MC-130, MH-53, MH-60)	79

UNIT	BASE	WEAPONS
16th Special Operations Wing	Hurlburt Field, Fla.	AC-130H/U, EC-137D, MC-130E/H, MC-130P (Eglin AFB, Fla.), MH-53J/M, UH-1
18th Flight Test Squadron	Hurlburt Field, Fla.	—
352nd Special Operations Group	RAF Mildenhall, UK	MC-130H, MC-130P, MH-53J/M
353rd Special Operations Group	Kadena AB, Japan	MC-130H/P, MH-53J (Osan AB, South Korea)
720th Special Tactics Group	Hurlburt Field, Fla.	—
USAF Special Operations School	Hurlburt Field, Fla.	—

AIR FORCE SPECIAL OPERATIONS COMMAND, HURLBURT FIELD, FLA.



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READY FOR TOMORROW: As the threat evolves, so will NEMESIS. We have committed our resources to developing drop-in improvements that have been proven effective in live fire testing, including the Viper mid-infrared laser, the WANDA all-laser transmitter and the Multispectral Multi-Image Two-Color IR Missile Warning Sensor.

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Air Mobility Command

Headquarters Scott AFB, Ill.

Established June 1, 1992

Commander Gen. Charles T. Robertson Jr.

MISSIONS

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

COROLLARY MISSIONS

Provide special duty and operational support aircraft and global humanitarian support

Perform peacetime and wartime aeromedical evacuation missions

FORCE STRUCTURE

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

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

12 wings (six airlift, two air mobility, four air refueling)

Three groups (two airlift, one air refueling)

OPERATIONAL ACTIVITY

Flying hours: 27,000+ per month

Major operations

Able Sentry, Sabre (Macedonia); Allied Force, Joint Guardian, Shining Hope (Yugoslavia); Avid Response (earthquake relief, Turkey); Deep Freeze (Arctic/Antarctic); Deliberate/Joint Forge (Bosnia); Hurricane Mitch (Honduras and Nicaragua); Laser Strike (Latin America); Northern/Southern Watch (Iraq); Phoenix Banner (Europe, New Zealand, Mediterranean); Safe Border (Ecuador and Peru); Stabilise (East Timor); Taiwan earthquake support

Major training exercises

African Crisis Response Initiative; Amalgam Warrior (NORAD); Atlas Drop, Bright Star, Eastern Castle (CENTCOM); Cobra Gold, Tandem Thrust, Team Spirit, Purple Dragon (PACOM); New Horizons (Dominican Republic, Haiti, St. Lucia)

PERSONNEL

(as of Sept. 30, 2000)

Active duty		49,930
Officers	8,562	
Enlisted	41,368	
Reserve components		81,132
ANG	37,076	
AFRC	44,056	
Civilian		7,798
Total		**138,860**

USAF photo by TSgt. Cary Humphries

USAF photo by SSgt. Stan Parker

At Pope AFB, N.C., Army troops on their way to help fight forest fires last summer board a C-17 from McChord AFB, Wash. At left, a truck intended for an earthquake relief effort in India in February is unloaded from a C-5 out of Dover AFB, Del.

EQUIPMENT

(PAI as of Sept. 30, 2000)

Helicopter (UH-1)	15
Tanker (KC-10, KC-135)	222
Trainer (CT-43)	1
Transport (C-5, C-9, C-17, C-20, C-21, C-32, C-37, C-130, C-137, C-141, VC-25)	325

UNIT	BASE	WEAPONS
6th Air Refueling Wing	MacDill AFB, Fla.	KC-135
19th Air Refueling Group	Robins AFB, Ga.	KC-135
22nd Air Refueling Wing	McConnell AFB, Kan.	KC-135
43rd Airlift Wing	Pope AFB, N.C.	C-130
60th Air Mobility Wing	Travis AFB, Calif.	C-5, KC-10
62nd Airlift Wing	McChord AFB, Wash.	C-17, C-141
89th Airlift Wing	Andrews AFB, Md.	C-9, C-20, C-32, C-37, C-137, VC-25, UH-1
92nd Air Refueling Wing	Fairchild AFB, Wash.	KC-135
305th Air Mobility Wing	McGuire AFB, N.J.	C-141, KC-10
317th Airlift Group	Dyess AFB, Tex.	C-130
319th Air Refueling Wing	Grand Forks AFB, N.D.	KC-135
375th Airlift Wing	Scott AFB, Ill.	C-9, C-21
436th Airlift Wing	Dover AFB, Del.	C-5
437th Airlift Wing	Charleston AFB, S.C.	C-17
463rd Airlift Group	Little Rock AFB, Ark.	C-130

AIR MOBILITY COMMAND, SCOTT AFB, ILL.

Commander
Gen. Charles T. Robertson Jr.

- **15th Air Force**, Travis AFB, Calif.
- **21st Air Force**, McGuire AFB, N.J.
- **Defense Courier Service**, Ft. Meade, Md.
- **Air Mobility Warfare Center**, Ft. Dix, N.J.
- **Tanker Airlift Control Center**, Scott AFB, Ill.

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

Commander
Lt. Gen. Walter S. Hogle Jr.

- **22nd Air Refueling Wing**, McConnell AFB, Kan. (KC-135)
- **60th Air Mobility Wing**, Travis AFB, Calif. (C-5, KC-10)
- **62nd Airlift Wing**, McChord AFB, Wash. (C-17, C-141)
- **92nd Air Refueling Wing**, Fairchild AFB, Wash. (KC-135)
- **319th Air Refueling Wing**, Grand Forks, N.D. (KC-135)
- **375th Airlift Wing**, Scott AFB, Ill. (C-9, C-21)
- **317th Airlift Group**, Dyess AFB, Tex. (C-130)

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

Commander
Maj. Gen. George N. Williams

- **6th Air Refueling Wing**, MacDill AFB, Fla. (KC-135)
- **43rd Airlift Wing**, Pope AFB, N.C. (C-130)
- **89th Airlift Wing**, Andrews AFB, Md. (C-9, C-20, C-32, C-37, C-137, VC-25, UH-1)
- **305th Air Mobility Wing**, McGuire AFB, N.J. (C-141, KC-10)
- **436th Airlift Wing**, Dover AFB, Del. (C-5)
- **437th Airlift Wing**, Charleston AFB, S.C. (C-17)
- **19th Air Refueling Group**, Robins AFB, Ga. (KC-135)
- **463rd Airlift Group**[a], Little Rock AFB, Ark. (C-130)

[a]Tenant unit.

Pacific Air Forces

Headquarters Hickam AFB, Hawaii

Established July 1, 1957

Commander Lt. Gen. Lansford E. Trapp (acting)

MISSIONS

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

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

FORCE STRUCTURE

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

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

OPERATIONAL ACTIVITY

Flying hours: 10,109 per month

Major training exercises

Cobra Gold (Thailand), Commando Sling (Singapore), Cope North (Japan), Cope Thunder (Alaska), Cope Tiger (Thailand), Foal Eagle (South Korea), Positive Force (Pacific), Reception Staging Onward Movement and Integration (South Korea), Tandem Thrust (Guam, No. Marianas), Ulchi Focus Lens (South Korea)

USAF photo by SSgt. Jerry Morrison

F-16s from the 8th Fighter Wing, Kunsan AB, South Korea, are among PACAF assets located around the Pacific, from Alaska to South Korea.

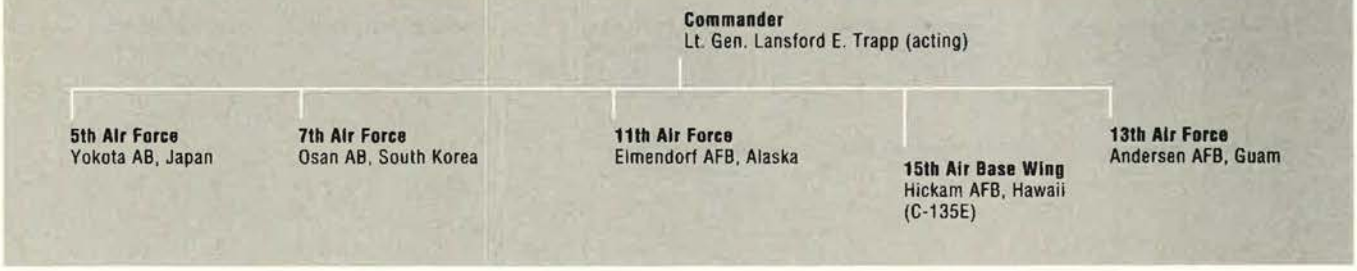
PERSONNEL

(as of Sept. 30, 2000)

Active duty		32,019
Officers	4,065	
Enlisted	27,954	
Reserve components		4,485
ANG	4,144	
AFRC	341	
Civilian		8,358
Total		**44,862**

UNIT	BASE	WEAPONS
3rd Wing	Elmendorf AFB, Alaska	C-12, C-130H, E-3B/C, F-15C/D, F-15E
8th Fighter Wing	Kunsan AB, South Korea	F-16C/D
15th Air Base Wing	Hickam AFB, Hawaii	C-135E
18th Wing	Kadena AB, Japan	E-3B/C, F-15C/D, KC-135R, HH-60G
35th Fighter Wing	Misawa AB, Japan	F-16C/D
36th Air Base Wing	Andersen AFB, Guam	—
51st Fighter Wing	Osan AB, South Korea	A/OA-10A, C-12, F-16C/D
354th Fighter Wing	Eielson AFB, Alaska	A/OA-10A, F-16C/D
374th Airlift Wing	Yokota AB, Japan	C-9A, C-21A, C-130E/H, UH-1N

PACIFIC AIR FORCES, HICKAM AFB, HAWAII



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

Commander
Lt. Gen. Paul V. Hester

18th Wing
Kadena AB, Japan
(E-3B/C, F-15C/D, KC-135R, HH-60G)

35th Fighter Wing
Misawa AB, Japan
(F-16C/D)

374th Airlift Wing
Yokota AB, Japan
(C-9A, C-21A, C-130E/H, UH-1N)

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

Commander
Lt. Gen. Charles R. Heflebower

8th Fighter Wing
Kunsan AB, South Korea
(F-16C/D)

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

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

Commander
Lt. Gen. Norton A. Schwartz

3rd Wing
Elmendorf AFB, Alaska
(C-12J/F, 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, 2000)

Fighter/Attack (A/OA-10, F-15, F-16)	270
Helicopter (UH-1, HH-60)	11
Recon/BM/C^{3}I (E-3)	3
Tanker (KC-135)	15
Transport (C-9, C-12, C-21, C-130, C-135)	40

USAF photo by SrA. Matthew Hannen

SSgt. Jason Day, a communications technician, repairs a radio while on deployment to support Operation Northern Watch. Day is from the 962nd Airborne Air Control Squadron at Elmendorf AFB, Alaska.

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

Commander
Maj. Gen. Theodore W. Lay II

36th Air Base Wing
Andersen AFB, Guam

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

[a]Base owned by Singapore government.

US Air Forces in Europe

Headquarters Ramstein AB, Germany

Established Aug. 7, 1945

Commander Gen. Gregory S. Martin

MISSIONS

Provide the joint force commander rapidly deployable expeditionary aerospace forces

COROLLARY MISSIONS

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

FORCE STRUCTURE

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

OPERATIONAL ACTIVITY

Flying hours: 6,932 per month

Major operations
Allied Force, Joint Guardian, Shining Hope (Yugoslavia); Joint Forge (Bosnia); Northern Watch (Iraq)

USAF photo by SSgt. William Greer

At RAF Lakenheath, UK, Brig. Gen. Terry Gabreski, USAF director of maintenance, performs an antenna boresight alignment as SrA. Greg Fedorick, from the 48th Component Repair Squadron's Avionics Flight, observes.

US AIR FORCES IN EUROPE, RAMSTEIN AB, GERMANY

Commander
Gen. Gregory S. Martin

3rd Air Force
RAF Mildenhall, UK
Maj. Gen. Kenneth W. Hess

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

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

Allied Command Europe (ACE)

Allied Forces Southern Europe (AFSOUTH)
Naples, Italy

Allied Forces Central Europe (AFCENT)
Brunssum, Netherlands

Allied Forces Northwest Europe (AFNORTHWEST)
High Wycombe, UK

Allied Air Forces Southern Europe (AIRSOUTH)
Naples, Italy

Allied Air Forces Central Europe (AIRCENT)
Ramstein AB, Germany

Allied Air Forces Northwest Europe (AIRNORTHWEST)
High Wycombe, UK

5th Combined Air Operations Center
Vicenza, Italy

6th Combined Air Operations Center
Eskisehir, Turkey

Major training exercises
African Eagle, Atlas Drop, Baltops, Clean Hunter, Combined Endeavor, Cooperative Banner/Chance/Key, Cornerstone, Dynamic Mix, Humro, Juniper Stallion, Matador, Medceur, Medflag, Tactical Fighter Weaponry, Trailblazer, Union Flash

PERSONNEL

(as of Sept. 30, 2000)

Active duty		25,724
Officers	3,384	
Enlisted	22,340	
Reserve components		237
ANG	68	
AFRC	169	
Civilian		4,864
Total		**30,825**

EQUIPMENT

(PAI as of Sept. 30, 2000)

Fighter/Attack (A/OA-10, F-15, F-16)	167
Tanker (KC-135)	15
Transport (C-9, C-20, C-21, C-130)	36

USAF photo by SSgt. Jennifer C. Wallis

At Aviano AB, Italy, SSgt. Rick Sapone (left) and 2nd Lt. Adam Cuquet (middle), from the 31st Fighter Wing, listen to instructions from Italian air force Lt. Dario de Liguorno. The trio was taking part in a NATO search and rescue exercise in Rimini, Italy, in February.

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

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

Commander
Maj. Gen. Kenneth W. Hess

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

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

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

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

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

Commander
Lt. Gen. Ronald E. Keys

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

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

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 Maj. Gen. James E. Sherrard III

MISSIONS

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

FORCE STRUCTURE

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

OPERATIONAL ACTIVITY

Allied Force, Shining Hope (Yugoslavia); airlift, air refueling, and fighter support (Bosnia); Coronet Oak (Central and South America); Northern/Southern Watch (Iraq)

PERSONNEL

(as of Sept. 30, 2000)

Total AFRC (paid)*		71,357
Officers	11,032	
Enlisted	60,325	
Civilians (non–ART)		4,914
Total		**76,271**

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

USAF photo by TSgt. Lance Cheung

Lt. Cols. "Hawkeye" Pierce (left) and Chuck Hanks and flight engineer SMSgt. Steve Bell fly one of Air Force Reserve Command's C-141Bs with new "glass cockpit" modifications. The mist is caused by air-conditioning and the humidity change during ascent and descent. The aircrew is from the 89th Airlift Squadron, Wright–Patterson AFB, Ohio.

EQUIPMENT

(PAI as of Sept. 30, 2000)

Bomber (B-52)	8	Recon/BM/C³I (WC-130)	10
Fighter/Attack (A/OA-10, F-16)	100	SOF (MC-130)	12
Helicopter (HH-60)	21	Tanker (HC-130, KC-135)	72
		Transport (C-5, C-130, C-141)	167

AIR FORCE RESERVE COMMAND, ROBINS AFB, GA.

Commander
Maj. Gen. James E. Sherrard III

- **4th Air Force**
  March ARB, Calif.
- **10th Air Force**[c]
  NAS Fort Worth JRB
  (Carswell Field), Tex.
- **22nd Air Force**
  Dobbins ARB, Ga.
- **Air Reserve Personnel Center**
  Col. Laura C. Counts
  Denver

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

Commander
Brig. Gen. James P. Czekanski

- **349th Air Mobility Wing**
  Travis AFB, Calif.
  (C-5A/B, KC-10[a])
- **446th Airlift Wing**
  McChord AFB, Wash.
  (C-17[a], C-141B)
- **927th Air Refueling Wing**
  Selfridge ANGB, Mich.
  (KC-135E)
- **433rd Airlift Wing**
  Kelly AFB, Tex.
  (C-5A)
- **452nd Air Mobility Wing**
  March ARB, Calif.
  (C-141C, KC-135R)
- **932nd Airlift Wing**
  Scott AFB, Ill.
  (C-9[a])
- **434th Air Refueling Wing**
  Grissom ARB, Ind.
  (KC-135R)
- **507th Air Refueling Wing**
  Tinker AFB, Okla.
  (KC-135R)
- **940th Air Refueling Wing**
  Beale AFB, Calif.
  (KC-135E)
- **445th Airlift Wing**
  Wright–Patterson AFB, Ohio
  (C-141C)
- **916th Air Refueling Wing**
  Seymour Johnson AFB, S.C.
  (KC-135R)
- **931st Air Refueling Group**
  McConnell AFB, Kan.
  (KC-135R[a])

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

Commander
Maj. Gen. John A. Bradley

- **301st Fighter Wing**[c]
  NAS Fort Worth JRB
  (Carswell Field), Tex.
  (F-16C/D)
- **919th Special Ops Wing**
  Duke Field, Fla.
  (MC-130E/P)[b]
- **310th Space Group**
  Schriever AFB, Colo.
- **419th Fighter Wing**
  Hill AFB, Utah
  (F-16C/D)
- **926th Fighter Wing**[c]
  NAS New Orleans JRB
  (OA-10A)
- **340th Flying Training Group**
  Randolph AFB, Tex.
  (AT/T-38, T-1, T-37)[a]
- **442nd Fighter Wing**
  Whiteman AFB, Mo.
  (OA-10A)
- **939th Rescue Wing**
  Portland IAP, Ore.
  (HC-130N/P, HH-60G)
- **513th Air Control Group**
  Tinker AFB, Okla.
  (E-3[a])
- **482nd Fighter Wing**
  Homestead ARS, Fla.
  (F-16C)
- **Det. 1**
  Shaw AFB, S.C.
  (F-16C/D)[a]
- **917th Wing**
  Barksdale AFB, La.
  (B-52H, OA-10A)
- **944th Fighter Wing**
  Luke AFB, Ariz.
  (F-16C/D)[b]

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

Commander
Brig. Gen. James D. Bankers

- **94th Airlift Wing**
  Dobbins ARB, Ga.
  (C-130H)
- **439th Airlift Wing**
  Westover ARB, Mass.
  (C-5A)
- **514th Air Mobility Wing**
  McGuire AFB, N.J.
  (C-141B, KC-10A)[a]
- **913th Airlift Wing**
  Willow Grove ARS, Pa.
  (C-130E)
- **302nd Airlift Wing**
  Peterson AFB, Colo.
  (C-130H)
- **440th Airlift Wing**
  General Mitchell IAP/ARS, Wis.
  (C-130H)
- **908th Airlift Wing**
  Maxwell AFB, Ala.
  (C-130H)
- **914th Airlift Wing**
  Niagara Falls IAP/ARS, N.Y.
  (C-130H)
- **315th Airlift Wing**
  Charleston AFB, S.C.
  (C-17A[a])
- **459th Airlift Wing**
  Andrews AFB, Md.
  (C-141B/C)
- **910th Airlift Wing**
  Youngstown–Warren
  Regional Airport/ARS, Ohio
  (C-130H)
- **934th Airlift Wing**
  Minneapolis–St. Paul IAP/
  ARS, Minn.
  (C-130E)
- **403rd Wing**
  Keesler AFB, Miss.
  (C-130E, WC-130H/J)
- **512th Airlift Wing**
  Dover AFB, Del.
  (C-5A/B[a])
- **911th Airlift Wing**
  Pittsburgh IAP/ARS
  (C-130H)

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

ANGB	Air National Guard Base	**IAP**	International Airport
ARB	Air Reserve Base	**JRB**	Joint Reserve Base
ARS	Air Reserve Station	**NAS**	Naval Air Station

Air National Guard

Headquarters Washington

Established Sept. 18, 1947

Director Maj. Gen. Paul A. Weaver Jr.

MISSIONS

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

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

FORCE STRUCTURE

One NAF: **1st,** Tyndall AFB, Fla.
Flying units: 91 wings

OPERATIONAL ACTIVITY

Allied Force (Yugoslavia); Coronet Nighthawk (Central America); Coronet Oak (South America); Joint Guard (Bosnia); Northern/Southern Watch (Iraq); relief missions for victims of several major hurricanes; partnership programs with nations of the former Soviet Union

USAF photo by SSgt. Sean M. Worrell

Lt. Col. John Wisniewki, an F-15 pilot from the 122nd Fighter Squadron, Louisiana ANG, gives a time hack at an Operation Southern Watch preflight briefing at Prince Sultan AB, Saudi Arabia.

PERSONNEL

(as of Sept. 30, 2000)

Total ANG military*		106,366
Officers	13,346	
Enlisted	93,020	
Civilian		1,358
Total		**107,724**

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

EQUIPMENT

(PAI as of Sept. 30, 2000)

Bomber (B-1)	16
Fighter/Attack (A/OA-10, F-15, F-16)	643
Helicopter (HH-60)	15
Recon/BM/C³I (EC-130)	4
Tanker (HC-130, KC-135)	211
Transport (C-5, C-21, C-22, C-26, C-38, C-130, C-141)	264

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

Commander
Maj. Gen. Larry K. Arnold

Southeast Air Defense Sector (ANG)
Tyndall AFB, Fla.

Northeast Air Defense Sector (ANG)
Rome, N.Y.

Western Air Defense Sector (ANG)
McChord AFB, Wash.

The Air National Guard by Major Command Assignment

(As of April 1, 2001)

Air Combat Command

A/OA-10A	
103rd Fighter Wing	Bradley IAP, Conn.
104th Fighter Wing	Barnes MAP, Mass.
110th Fighter Wing	W.K. Kellogg Airport, Mich.
111th Fighter Wing	Willow Grove ARS, Pa.
124th Wing[a]	Boise Air Terminal, Idaho
175th Wing[a]	Martin State Airport, Md.
B-1B	
116th Bomb Wing	Robins AFB, Ga.
184th Bomb Wing	McConnell AFB, Kan.
F-15	
131st Fighter Wing	Lambert–St. Louis IAP, Mo.
159th Fighter Wing	NAS New Orleans JRB[b]
F-15—air defense	
102nd Fighter Wing	Otis ANGB, Mass.
125th Fighter Wing	Jacksonville IAP, Fla.
142nd Fighter Wing	Portland IAP, 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 IAP, N.D.
120th Fighter Wing	Great Falls IAP, Mont.
122nd Fighter Wing	Fort Wayne IAP, Ind.
127th Wing[a]	Selfridge ANGB, Mich.
132nd Fighter Wing	Des Moines IAP, Iowa
138th Fighter Wing	Tulsa IAP, Okla.
140th Wing	Buckley ANGB, Colo.
147th Fighter Wing	Ellington Field, Tex.
148th Fighter Wing	Duluth IAP, Minn.
150th Fighter Wing	Kirtland AFB, N.M.
158th Fighter Wing	Burlington IAP, Vt.
169th Fighter Wing	McEntire ANGS, S.C.
174th Fighter Wing	Syracuse Hancock IAP, N.Y.
177th Fighter Wing	Atlantic City IAP, N.J.
180th Fighter Wing	Toledo Express Airport, Ohio
181st Fighter Wing	Hulman RAP, Ind.
183rd Fighter Wing	Capital MAP, Ill.
185th Fighter Wing	Sioux Gateway Airport, Iowa
187th Fighter Wing	Dannelly Field, Ala.
188th Fighter Wing	Fort Smith MAP, Ark.
192nd Fighter Wing	Richmond IAP, Va.
F-16—air defense	
144th Fighter Wing	Fresno Yosemite IAP, Calif.
HC-130/HH-60	
106th Rescue Wing	Francis S. Gabreski IAP, N.Y.
MC-130/HH-60	
129th Rescue Wing	Moffett Federal Airfield, Calif.[c]

Air Education and Training Command

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

Air Force Special Operations Command

EC-130E	
193rd Special Ops Wing	Harrisburg IAP, Pa.

Air Mobility Command

C-5A	
105th Airlift Wing	Stewart IAP, N.Y.
C-130	
109th Airlift Wing	Schenectady County Airport, N.Y.
118th Airlift Wing	Nashville Metropolitan Airport, Tenn.
123rd Airlift Wing	Louisville IAP/AGS, Ky.
130th Airlift Wing	Yeager Airport, W.Va.
133rd Airlift Wing	Minneapolis–St. Paul IAP/ARS, Minn.
136th Airlift Wing	NAS Fort Worth JRB, Tex.[b]
137th Airlift Wing	Will Rogers World Airport, Okla.
139th Airlift Wing	Rosecrans Memorial Airport, Mo.
143rd Airlift Wing	Quonset State Airport, R.I.
145th Airlift Wing	Charlotte/Douglas IAP, N.C.
146th Airlift Wing	Channel Islands ANGS, Calif.
152nd Airlift Wing	Reno/Tahoe IAP, Nev.
153rd Airlift Wing	Cheyenne MAP, Wyo.
156th Airlift Wing	Luis Munoz Marin IAP, Puerto Rico
165th Airlift Wing	Savannah IAP, Ga.
166th Airlift Wing	New Castle County Airport, Del.
167th Airlift Wing	Eastern West Virginia RAP/ Shepherd Field, W.Va.
179th Airlift Wing	Mansfield Lahm Airport, Ohio
182nd Airlift Wing	Greater Peoria RAP, Ill.
C-141C	
164th Airlift Wing	Memphis IAP, Tenn.
172nd Airlift Wing	Jackson IAP, Miss.
KC-135	
101st Air Refueling Wing	Bangor IAP, Maine
107th Air Refueling Wing	Niagara Falls IAP/ARS, N.Y.
108th Air Refueling Wing	McGuire AFB, N.J.
117th Air Refueling Wing	Birmingham Airport, Ala.
121st Air Refueling Wing	Rickenbacker IAP, Ohio
126th Air Refueling Wing	Scott AFB, Ill.
128th Air Refueling Wing	General Mitchell IAP/ARS, Wis.
134th Air Refueling Wing	McGhee Tyson Airport, Tenn.
141st Air Refueling Wing	Fairchild AFB, Wash.
151st Air Refueling Wing	Salt Lake City IAP
155th Air Refueling Wing	Lincoln MAP, Neb.
157th Air Refueling Wing	Pease Intl. Tradeport ANGS, N.H.
161st Air Refueling Wing	Sky Harbor IAP, Ariz.
163rd Air Refueling Wing	March ARB, Calif.
171st Air Refueling Wing	Pittsburgh IAP/ARS
186th Air Refueling Wing	Key Field, Miss.
190th Air Refueling Wing	Forbes Field, Kan.

Pacific Air Forces

C-130	
154th Wing (204th Airlift Sq.)	Hickam AFB, Hawaii
176th Wing[d]	Kulis ANGB, Alaska
F-15	
154th Wing[e] (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] Naval base.
[c] NASA installation.
[d] Includes 210th Rescue Squadron with HC-130 and HH-60G aircraft.
[e] Includes 203rd Air Refueling Squadron with KC-135 aircraft.

Verbatim

By Robert S. Dudney, Executive Editor

A Lost Generation

"The Air Force is operating a geriatric fighter force. The first flight of the F-15C was in 1972. Next year, that'll be 30 years. By the time the F-22 goes to initial operational capability, that'll be over 35 years. So we've already skipped a generation, I believe, [if] the definition of generation is 20 years."***—Maj. Gen. (sel.) David A. Deptula, director, Air Force national defense review, in March 28 testimony to a House subcommittee.***

Silver Bullets

"Transform[ing] one's airpower into a predominantly stealthy, precision force will cause our adversaries to change their national security priorities—to dissuade them from making choices we'd prefer them not to make. Today, they only have to contend with a silver-bullet stealth force, but their problem magnifies geometrically if we transform into a primarily stealthy force. Stealth in numbers has strategic meaning. ... This country does not buy silver-bullet tanks, silver-bullet aircraft carriers, or silver-bullet submarines, and it cannot afford to enter an uncertain future with a silver-bullet force of stealthy land-based airpower."***—Deptula, same testimony.***

Mythmaking

"The truth is, there really is a myth about a 'silver-bullet' [force]. Silver bullet is just another word for 'you can't afford enough.' It's a myth. It's an absolutely wrong assertion. You need what the nation needs to do the job. ... You don't want to take any chances. ... Why play around with a 50–49 score?"***—Gen. John Handy, USAF vice chief of staff, in April 12 remarks to Defense Writers Group in Washington, D.C.***

Why Consult NATO?

"We have our own timetable. If everything is blocked in NATO, it is not our fault. It is clear that by the end of this year the [European Union] must declare that it has an operational capability. ... European politicians need to know what is going on. They need to be able to select options and then conduct operations. Why should we have to go through NATO? ... There is no question of a [NATO] right of first refusal. If the EU works properly, it will start working on crises at a very early stage, well before the situation escalates. NATO has nothing to do with this. At a certain stage, the Europeans would decide to conduct a military operation. Either the Americans would come, or not."***—French Gen. Jean-Pierre Kelche, chief of Defense Staff, in March 28 interview with the*** **London Daily Telegraph.**

Whatever

"Transformation—for the Navy, strategically—is to be inland, to project power ashore, and remain there. Not for us; we keep the door open to get our sister services in the door and then help ransack the rooms inside the house. That's their goals, to get there rapidly. If we can project the artillery, the power projection, defensively and offensively, to lighten what they need to bring forward, because we're already there, where you were, where I am, where my son or daughter may be, we enable the transformation of a joint force."***—Rear Adm. Joseph A. Sestak Jr., head of Navy Quadrennial Defense Review office, in March 28 House testimony.***

The Verdict

"THE US IS NOT FIT TO RUN THE WORLD; WE MUST HELP EUROPE TAKE ON THE JOB" ***—Actual headline from April 1*** **London Observer.**

Go-To Guy

"Secretary [of Defense William S.] Cohen faced a very difficult challenge in the [1997 Quadrennial Defense Review] and was, quite frankly, not as well grounded in real military issues as one might have thought, given his time on the Senate Armed Services Committee. He worked hard but was at the mercy, like all of us, of his advisors, and particularly what I thought was a rather close circle of people who lacked much experience in the issues."***—Gen. Ronald R. Fogleman, USAF (Ret.), former Chief of Staff, quoted in Spring 2001*** **Aerospace Power Journal.**

New Sheriff

"I think this is a line in the sand. I think today's headline is Colin Powell saying, 'Different person. Different Administration. New line in the sand. Clean it up, or get out.' "***—Rep. Porter J. Goss (R–Fla.), chairman of the House Intelligence Committee, in March 22 comment about US decision to expel some 50 Russian diplomats on spy charges.***

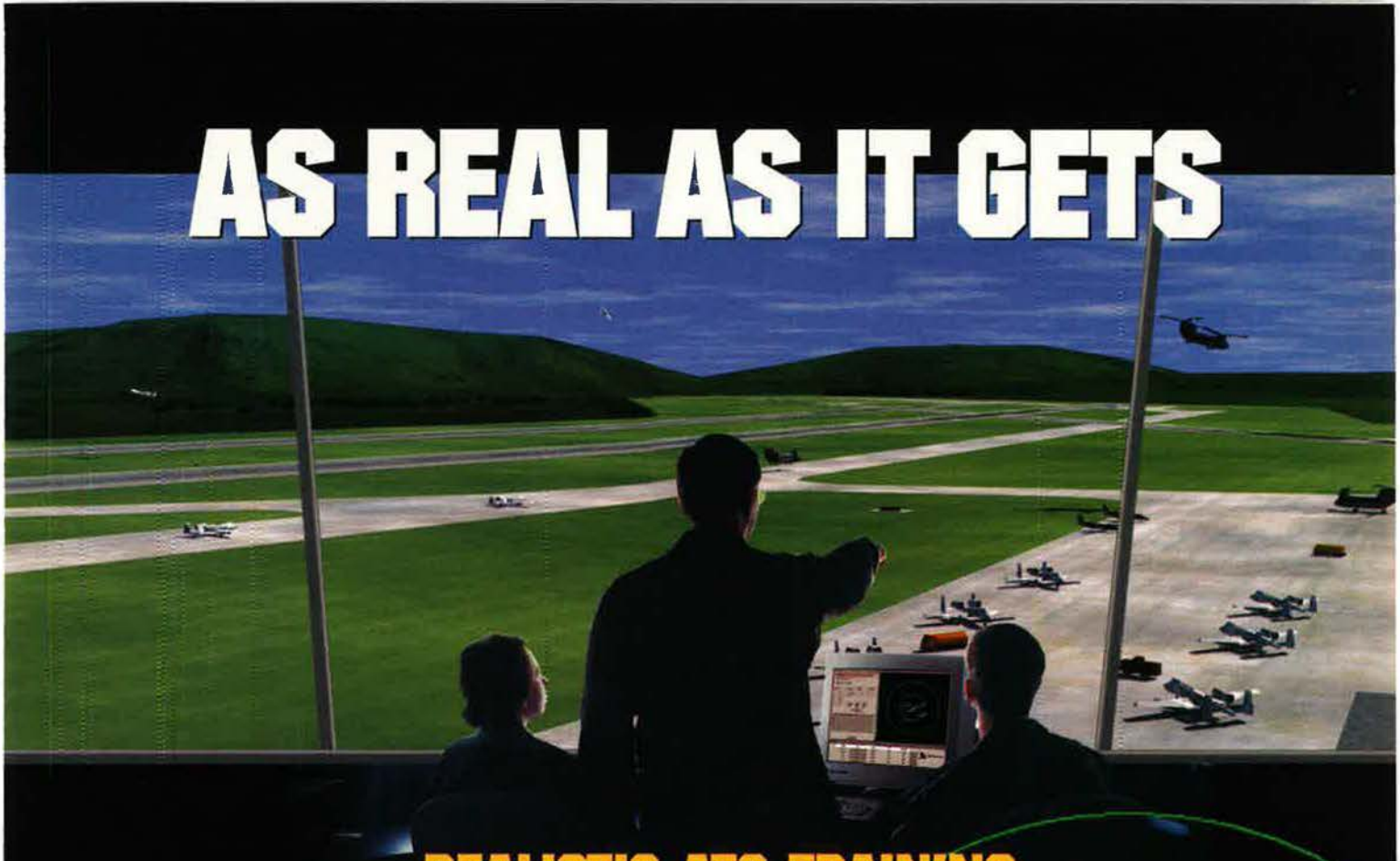
Carrier Angst

"Anybody who thinks the small carrier is comparable to a large carrier has to have their heads in the sand. The fact of the matter is we've been down this road and made this argument a million times. This Mr. [Andrew] Marshall in the Pentagon, along with [Defense Secretary Donald] Rumsfeld and President Bush, are being poorly advised and are going down the wrong road. The Marshall crowd has always preached 'little' carriers to avoid missile attack. My question is, 'What missile attack?' When did one get hit? Who is going to target it? It's a moving platform. It has layers of defenses all around it. This is not a sitting duck. It is a fortress."***—Retired Rear Adm. Jeremy Taylor, quoted in April 2*** **Washington Times.** ***Andrew Marshall has a key role in current defense reviews.***

Jones For JSF

"In addition to being a state-of-the-art technological marvel, [the Joint Strike Fighter] also caught the attention of many countries around the world. ... If we do this right, it can be the F-16 of the 21st century. ... Look behind the Joint Strike Fighter, and you see a long list of nations lining up to buy. You have no clients other than the United States Air Force and Navy buying the F/A-18E/F and the F-22. So, that tells you something."***—Gen. James L. Jones, Commandant, US Marine Corps, in March 29 remarks at Georgetown University in Washington, D.C.***

AS REAL AS IT GETS



REALISTIC ATC TRAINING WITH AAI's TOWER SIMULATION SYSTEM

AAI's Air Traffic Control (ATC) Tower Simulation System (TSS) is a new training product designed specifically to meet U.S. Air Force Tower Simulator program requirements.

OPEN ARCHITECTURE

This totally new PC-based open architecture product provides an affordable, high-fidelity, compact system that features the latest state-of-the-art image generation, display, and voice recognition technologies.

BEST VALUE

The innovative, supportable design assures an affordable product over the system's total life cycle.

AIR FORCE HERITAGE

AAI pioneered the VFR Tower Simulator at the U.S. Air Force Technical Training Center at Keesler AFB in 1977.

MEETS ALL USAF REQUIREMENTS

The compact system provides sharp visual acuity resulting in realistic aircraft and environmental effects, automated pseudo-pilot functionality through voice recognition and speech synthesis technology, open architecture airfield databases, selectable tower radar displays, time-of-day effects, airfield and runway lighting, and scenario recording and playback capabilities.

For more information or a demonstration of this U.S.–designed and manufactured system, contact us at ATC@aaicorp.com or 800-655-2616.

AAI Corporation

A subsidiary of United Industrial Corporation

York Road and Industry Lane Hunt Valley, MD 21030 www.aaicorp.com

USAF Almanac

Field Operating Agencies

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

Air Force Agency for Modeling and Simulation

Hq.: Orlando, Fla.
Estab.: June 3, 1996
Cmdr.: Col. Ricky R. Ales

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Two divisions
Two operating locations

PERSONNEL

Active duty		21
Officers	18	
Enlisted	3	
Civilians		13
Total		**34**

Air Force Audit Agency

Hq.: Washington
Estab.: July 1, 1948
Dir.: Jackie R. Crawford

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

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

PERSONNEL

Civilians	822

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

Air Force Base Conversion Agency

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

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Regional divisions
Base-level operating locations

PERSONNEL

Civilians	261

Air Force Center for Environmental Excellence

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

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Four directorates
Three regional environmental offices

PERSONNEL

Active duty		44
Officers	42	
Enlisted	2	
Reserve components		8
ANG	0	
AFRC	8	
Civilians		375
Total		**427**

Air Force Civil Engineer Support Agency

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

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Four directorates

PERSONNEL

Active duty		83
Officers	17	
Enlisted	66	
Reserve components		28
ANG	1	
AFRC	27	
Civilians		115
Total		**226**

Air Force Communications Agency

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

MISSION, PURPOSE, OPERATIONS

Enable innovative communications and information solutions for USAF warfighters by developing progressive policies, standards, best practices, and architectures
Serve as leader for USAF–wide information infrastructure and information protection

Evaluate commercial information technologies for potential USAF use
Assure integration and interoperability of Air Force communications and information systems
Provide specialized communications and information field services and support

STRUCTURE

Five functional areas

PERSONNEL

Active duty		264
Officers	116	
Enlisted	148	
Civilians		303
Total		**567**

Air Force Cost Analysis Agency

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

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Five divisions

PERSONNEL

Active duty		20
Officers	19	
Enlisted	1	
Civilians		26
Total		**46**

Air Force Flight Standards Agency

Hq.: Andrews AFB, Md.
Estab.: Oct. 1, 1991
Cmdr.: Col. Richard P. Packard

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Two detachments at Oklahoma City and Washington
Three directorates

PERSONNEL

Active duty		114
Officers	53	
Enlisted	61	
Reserve components		7
ANG	0	
AFRC	7	
Civilians		30
Total		**151**

Air Force Frequency Management Agency

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

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Two divisions
Technical director

PERSONNEL

Active duty		10
Officers	3	
Enlisted	7	
Civilians		26
Total		**36**

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

STRUCTURE

Two divisions

PERSONNEL

Active duty		9
Officers	4	
Enlisted	5	
Reserve components		17
ANG	0	
AFRC	17	
Civilians		63
Total		**89**

Air Force History Support Office

Hq.: Washington
Estab.: Sept. 30, 1994
Cmdr.: Col. George W. Ballinger

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Two divisions

PERSONNEL

Active duty		4
Officers	3	
Enlisted	1	
Reserve components		3
ANG	0	
AFRC	3	
Civilians		25
Total		**32**

Air Force Inspection Agency

Hq.: Kirtland AFB, N.M.
Estab.: Aug. 1, 1991
Cmdr.: Col. Fred K. Wall

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Four directorates

PERSONNEL

Active duty		110
Officers	86	
Enlisted	24	
Reserve components		3
ANG	1	
AFRC	2	
Civilians		21
Total		**134**

Air Force Legal Services Agency

Hq.: Bolling AFB, D.C.
Estab.: Sept. 1, 1991
Cmdr.: Col. Michael N. Madrid

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Three directorates

PERSONNEL

Active duty		400
Officers	276	
Enlisted	124	
Civilians		111
Total		**511**

Air Force Logistics Management Agency

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

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Seven divisions

PERSONNEL

Active duty		49
Officers	30	
Enlisted	19	
Civilians		18
Total		**67**

Air Force Manpower and Innovation Agency

Hq.: Randolph AFB, Tex.
Estab.: Sept. 1, 1999
Cmdr.: Col. Candace C. Abbott

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

Five divisions

PERSONNEL

Active duty		115
Officers	34	
Enlisted	81	
Civilians		85
Total		**200**

Air Force Medical Operations Agency

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

MISSION, PURPOSE, OPERATIONS

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

STRUCTURE

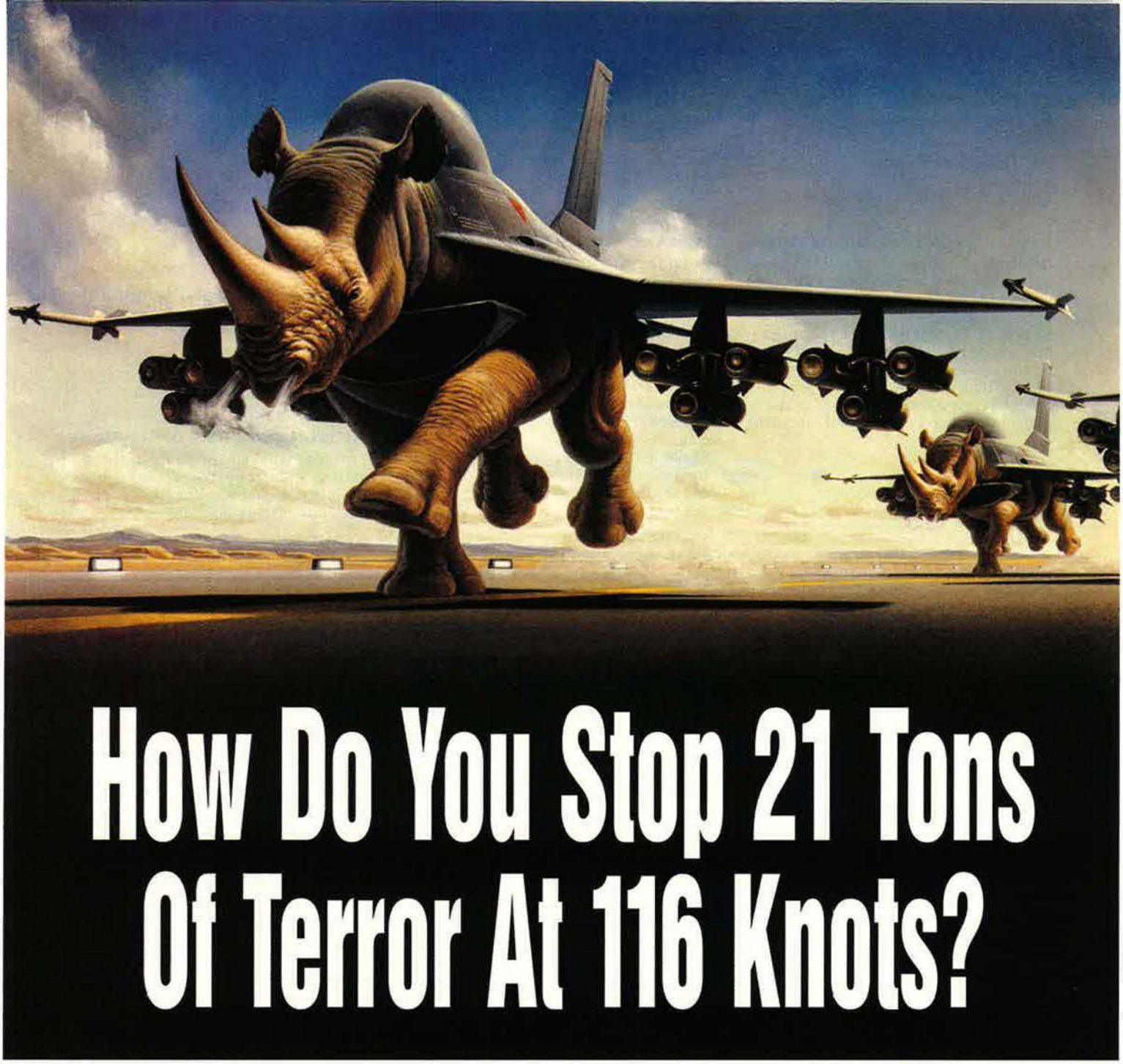
Nine divisions
Two offices

PERSONNEL

Active duty		81
Officers	60	
Enlisted	21	
Civilians		60
Total		**141**

USAF photo by SSgt. Mitch Fuqua

SrA. Noah Park, a radio–television broadcaster with Det. 8, Air Force News, interviews Maj. Mark Moore, 510th FS operations officer, during a deployment to Slovakia from Aviano AB, Italy. The Air Force News Agency, one of USAF's 33 FOAs, creates news and entertainment products for electronic and print media.



How Do You Stop 21 Tons Of Terror At 116 Knots?

When a fully loaded F-16 Fighting Falcon turns and burns, it's like a charging rhino. And it takes a tough brake to stop it and equally tough wheels to handle the roll. That's where BFGoodrich wheels and brakes come in. They're the production standard at Lockheed-Martin for all Block 50/52 aircraft and upcoming Block 60 version aircraft.

In addition, the USAF has retrofitted its entire fleet of Block 40/42 aircraft and is currently retrofitting all Block 32 and prior aircraft with the latest BFGoodrich wheel and brake technology. With long-lasting carbon brakes and fully qualified wheels for both bias and long-wearing radials, it's no wonder BFGoodrich is the popular choice of many international fleets and every F-16 flown by the USAF.

BFGoodrich wheels and brakes: longer life, higher reliability and lower operation costs. Call us at (937) 440-3221 for details on how to stop your charging rhino.

BFGoodrich
Aerospace

Aircraft Wheels & Brakes

Air Force Medical Support Agency

Hq.: Brooks AFB, Tex.
Estab.: July 1, 1992
Cmdr.: Col. Allen W. Middleton

MISSION, PURPOSE, OPERATIONS

Improve global performance and capability of the Medical Service in supporting combat forces and maintaining the health of beneficiaries
Serve as the Air Force surgeon general's focal point for policy development, strategies, plans, consultant services, and validated requirements dealing with facilities, supplies, equipment, acquisition, information systems, and resources

STRUCTURE

Three divisions
Two offices

PERSONNEL

Active duty		48
Officers	38	
Enlisted	10	
Civilians		21
Total		**69**

Air Force News Agency

Hq.: Kelly AFB, Tex.
Estab.: June 1, 1978
Cmdr.: Col. Anthony J. Epifano

MISSION, PURPOSE, OPERATIONS

Support the Secretary of the Air Force Office of Public Affairs by creating and delivering timely and credible products and services
Communicate and broadcast news, information, and entertainment through print and electronic means
Operate all USAF–managed Armed Forces Radio and Television Service outlets
Produce news and feature stories on soldiers and airmen for release to civilian broadcast and print media

STRUCTURE

Air Force Broadcasting Service
Army and Air Force Hometown News Service
Air Force News Service

PERSONNEL

Active duty		309
Officers	17	
Enlisted	292	
Reserve components		34
ANG	0	
AFRC	34	
Civilians		93
Total		**436**

Air Force Office of Special Investigations

Hq.: Andrews AFB, Md.
Estab.: Aug. 1, 1948
Cmdr.: Brig. Gen. Francis X. Taylor

MISSION, PURPOSE, OPERATIONS

Provide criminal investigative, counterintelligence information, and force-protection services to commanders
Identify and prevent criminal activity, including homicide, drug abuse, espionage, terrorism, and sabotage, and economic (major defense contractor fraud and local fraud), environmental, and other crimes that threaten Air Force and DOD resources
Provide force-protection assistance to deployed wings and units
Serve as DOD's executive agent for the Defense Computer Forensics Laboratory and the Defense Computer Investigations Training Program

STRUCTURE

USAF Special Investigations Academy
Eight regional offices
Six overseas squadrons
160 detachments and operating locations

PERSONNEL

Active duty		1,435
Officers	373	
Enlisted	1,062	
Reserve components		476
ANG	0	
AFRC	476	
Civilians		459
Total		**2,370**

Air Force Operations Group

Hq.: Washington
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		219
Officers	148	
Enlisted	71	
Reserve components		5
ANG	0	
AFRC	5	
Civilians		11
Total		**235**

Air Force Pentagon Communications Agency

Hq.: Washington
Estab.: Oct. 1, 1984
Cmdr.: Col. Joseph E. LaPosa

MISSION, PURPOSE, OPERATIONS

Provide management, policy, plans, programs, and information systems for C^4, ensuring information superiority for Hq. USAF for military operations

STRUCTURE

Eight directorates

PERSONNEL

Active duty		452
Officers	97	
Enlisted	355	
Civilians		283
Total		**735**

Air Force Personnel Center

Hq.: Randolph AFB, Tex.
Estab.: Oct. 1, 1995
Cmdr.: Maj. Gen. Richard E. Brown III

MISSION, PURPOSE, OPERATIONS

Provide personnel operations service

STRUCTURE

Eight divisions

PERSONNEL

Active duty		968
Officers	305	
Enlisted	663	
Reserve components		17
ANG	2	
AFRC	15	
Civilians		965
Total		**1,950**

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

Air Force Personnel Operations Agency

Hq.: Washington
Estab.: Aug. 15, 1993
Dir.: Brig. Gen. (sel.) Toreaser A. Steele

MISSION, PURPOSE, OPERATIONS

Execute personnel programs and provide personnel support to Hq. USAF personnel in the Washington area
Develop and operate officer, enlisted, and civilian models and databases for management information
Support DCS, Personnel, computer operations

STRUCTURE

Two divisions

PERSONNEL

Active duty		44
Officers	28	
Enlisted	16	
Civilians		22
Total		**66**

Air Force Program Executive Office

Hq.: Washington
Estab.: November 1990
Exec.: Lawrence J. Delaney

MISSION, PURPOSE, OPERATIONS

Manage and account for the execution of major and selected Air Force acquisition programs

STRUCTURE

Program Executive Officers:
Brig. Gen. Jeffrey R. Riemer, C^2 & Combat Support Programs
Joseph G. Diamond, Weapons Programs
Brig. Gen. Craig R. Cooning, Space Programs
Brig. Gen. Robert W. Chedister, Airlift, Trainers, Modeling, & Simulation
Maj. Gen. Michael C. Mushala, Fighter & Bomber Programs

PERSONNEL

Active duty		33
Officers	31	
Enlisted	2	
Civilians		12
Total		**45**

Air Force Real Estate Agency

Hq.: Bolling AFB, D.C.
Estab.: Aug. 1, 1991
Dir.: William E. Edwards

MISSION, PURPOSE, OPERATIONS

Acquire, manage, and dispose of real property worldwide for the Air Force
Plan and execute the Real Property Management program
Provide policy to assist USAF in complying with public laws and federal and DOD guidance

PERSONNEL

Civilians	11

USAF photo by SSgt. Richard Freeland

At Defender Challenge 2000 at Camp Bullis, Tex., A1C Ryan Ormberg and SSgt. Charles Davidson, both from PACAF, fire downrange during a combat weapons event. An evaluator keeps an eye out for safety infractions. Air Force Security Forces sponsor Defender Challenge, an annual USAF competition, which last year hosted 13 international teams competing in seven physical fitness, base defense, and policing skills.

Air Force Review Boards Agency

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

MISSION, PURPOSE, OPERATIONS

Manage military and civilian appellate processes for the Secretary of the Air Force
Develop overall policy and act for the Secretary of the Air Force in deciding individual cases before the boards and civilian appellate processes
Ensure due process and fair and impartial treatment in all cases

STRUCTURE

Air Force Board for Correction of Military Records
Air Force Civilian Appellate Review Office
Air Force Personnel Council

PERSONNEL

Active duty		11
Officers	5	
Enlisted	6	
Reserve components		4
ANG	1	
AFRC	3	
Civilians		43
Total		**58**

Air Force Safety Center

Hq.: Kirtland AFB, N.M.
Estab.: Jan. 1, 1996
Cmdr.: Maj. Gen. Timothy A. Peppe

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		66
Officers	47	
Enlisted	19	
Reserve components		1
ANG	0	
AFRC	1	
Civilians		50
Total		**117**

The commander is also the Air Force chief of safety. AFSC publishes *Flying Safety, Road and Rec,* and *Weapons Journal* and produces safety videos.

Air Force Security Forces Center

Hq.: Lackland AFB, Tex.
Estab.: March 17, 1997
Cmdr.: Brig. Gen. James M. Shamess

MISSION, PURPOSE, OPERATIONS

Develop USAF Security Forces guidance, policy, and training requirements to safeguard and protect personnel and resources
Prepare guidance on air base defense operations and Security Forces continuation training; mission-related security and law enforcement operations; resource protection; anti-terrorism
Develop and implement base-level and combat arms training and ground combat weapons maintenance programs
Manage USAF corrections program and activities; DOD military working dog activities; contingency requirement taskings

STRUCTURE

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

PERSONNEL

Active duty		432
Officers	59	
Enlisted	373	
Reserve components		13
ANG	1	
AFRC	12	
Civilians		14
Total		**459**

Air Force Security Police Agency was redesignated Air Force Security Forces Center, a DRU, March 17, 1997; it was redesignated an FOA Oct. 1, 1998.

Air Force Services Agency

Hq.: San Antonio
Estab.: Feb. 5, 1991
Cmdr.: Col. Horace L. Larry

MISSION, PURPOSE, OPERATIONS

Support the bases, major commands, and Air Staff by providing technical assistance, fielding new initiatives, developing procecures, and managing selected central support functions to ensure successful service programs
Manage Air Force nonappropriated central funds and operate central systems, such as banking, investments, purchasing, data flow, insurance, and benefit programs

STRUCTURE

Base-level services managers

PERSONNEL

Active duty		81
Officers	28	
Enlisted	53	
Reserve components		10
ANG	0	
AFRC	10	
Civilians		174
Total		**265**

Air Force Studies and Analyses Agency

Hq.: Washington
Estab.: Feb. 5, 1991
Cmdr.: Col. Donald P. Higgins Jr.

MISSION, PURPOSE, OPERATIONS

Provide timely, objective, and operationally relevant analyses to support senior Air Force decision makers and foster excellence in the military modeling, simulation, and analysis communities
Advise DOD and Air Force leadership on issues of force sizing and shaping, weapon system employment, resource allocation, and aerospace strategy, operational art, and tactics

STRUCTURE

Senior Analysis Review Group
Three divisions

PERSONNEL

Active duty		64
Officers	53	
Enlisted	11	
Civilians		17
Total		**81**

Air Force Technical Applications Center

Hq.: Patrick AFB, Fla.
Estab.: July 7, 1959
Cmdr.: Col. Roy E. Horton III

MISSION, PURPOSE, OPERATIONS

Monitor compliance with several international nuclear treaties
Operate and maintain a global network of subsurface, surface, airborne, and space-based sensors and analytical laboratories that provide national authorities with technical measurements with which to monitor foreign nuclear tests
Conduct research and development of proliferation-detection technologies for all weapons of mass destruction
Expand current monitoring capability to include the Comprehensive Test Ban Treaty upon its entry into force

STRUCTURE

Analysis Center, Patrick AFB, Fla.
Laboratory and technical operations division, McClellan AFB, Calif.
Operational sites/detachments in 18 countries

PERSONNEL

Active duty		532
Officers	138	
Enlisted	394	
Total		**532**

EQUIPMENT

25 seismic arrays and 11 single-instrument locations consisting of seismometers and associated data acquisition systems and workstations
Seven hydroacoustic recording locations
More than 140 sensors on 35 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. Robert H. Allen

MISSION, PURPOSE, OPERATIONS

Enhance the nation's combat capability by delivering timely, accurate, and reliable weather support worldwide to Air Force and Army forces, unified commands, national programs, and national command authority

STRUCTURE

Air Force Combat Climatology Center, Asheville, N.C.
Air Force Combat Weather Center, Hurlburt Field, Fla.
55th Space Weather Squadron, Schriever AFB, Colo. (with six solar observatories around the world)
One detachment at Tinker AFB, Okla.
Six operating locations

PERSONNEL

Active duty		622
Officers	120	
Enlisted	502	
Reserve components		8
ANG	0	
AFRC	8	
Civilians		190
Total		**820**

Formerly Air Weather Service, established July 1, 1937.

ANG Readiness Center

Hq.: Andrews AFB, Md.
Estab.: August 1997
Cmdr.: Col. Naomi D. Manadier (acting)

MISSION, PURPOSE, OPERATIONS

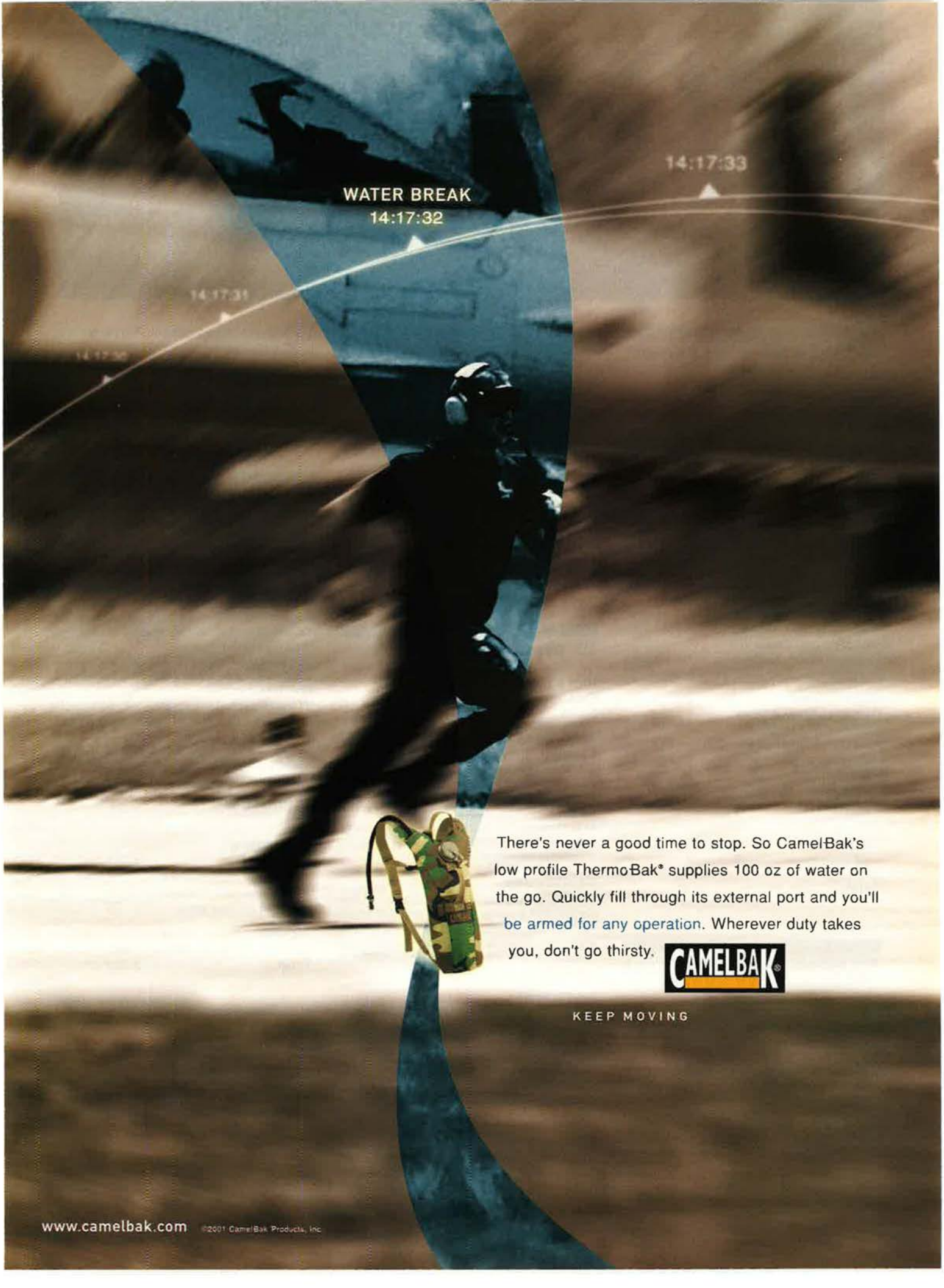
Provide guidance and resources to prepare men and women for combat and serve as a channel of communication for contingencies and national policies

STRUCTURE

201st Mission Support Squadron
13 directorates

PERSONNEL

Active duty		111
Officers	71	
Enlisted	40	
Reserve Components		555
ANG	553	
AFRC	2	
Civilians		457
Total		**1,123**



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USAF Almanac

Direct Reporting Units

A Direct Reporting Unit is a subdivision of the Air Force, directly subordinate to Hq. USAF, separate from any major command or FOA because of a unique mission, legal requirements, or other factors. DRUs have the same administrative and organizational responsibilities as major commands.

Air Force Doctrine Center

Hq.: Maxwell AFB, Ala.
Estab.: Feb. 24, 1997
Cmdr.: Maj. Gen. Lance L. Smith

MISSION, PURPOSE, OPERATIONS

Provide a focal point for aerospace doctrine
Develop basic and operational doctrine for USAF Total Force
Advocate doctrinally correct representation of aerospace power in service and joint campaign models and exercise scenarios
Collect inputs from exercises and operations for lessons learned
Participate in development and investigation of future operational concepts, technologies, and strategies
Present USAF doctrine to Army officers at various combat arms branch schools

STRUCTURE

Det. 1, Langley AFB, Va.
Six operating locations
Air Force Liaison, Pentagon

PERSONNEL

Active duty		66
Officers	59	
Enlisted	7	
Reserve components		12
ANG	0	
AFRC	12	
Civilians		13
Total		**91**

Air Force Operational Test and Evaluation Center

Hq.: Kirtland AFB, N.M.
Estab.: Jan. 1, 1974
Cmdr.: Maj. Gen. William A. Peck Jr.

MISSION, PURPOSE, OPERATIONS

Plan, execute, and report independent OT&Es
Determine operational capabilities and limitations of USAF and joint systems to meet warfighter mission needs
Provide operational effectiveness, suitability, and evaluation expertise from concept development to system employment to support USAF, DoD, and other government agencies

STRUCTURE

Three geographically separate units: Edwards AFB, Calif., Eglin AFB, Fla., and Peterson AFB, Colo.

PERSONNEL

Active duty		510
Officers	341	
Enlisted	169	
Civilians		204
Total		**714**

US Air Force Academy

Hq.: Colorado Springs, Colo.
Estab.: April 1, 1954
Supt.: Lt. Gen. John R. Dallager

MISSION, PURPOSE, OPERATIONS

Develop and inspire young men and women to become Air Force officers with knowledge, character, and discipline
Produce dedicated Air Force officers and leaders
Instill leadership through academics, military training, athletic conditioning, and character development

STRUCTURE

The cadet student body is designated the Cadet Wing. The wing is composed of four groups consisting of nine squadrons each, with more than 100 cadets assigned to a squadron. Each squadron consists of members of all four classes

PERSONNEL

Active duty		2,501
Officers	1,014	
Enlisted	1,487	
Reserve components		26
ANG	1	
AFRC	25	
Civilians		1,972
Total		**4,499**

EQUIPMENT

31 aircraft (TG-9 sailplanes; Cessna 150s; TG-3 and TG-4 gliders; and TG-7A and TG-11A motorized gliders; T-41s; UV-18 jump airplanes)

Cadets complete four years of study for a bachelor of science degree, choosing from 30 different academic majors. Four primary areas of military development are stressed in military art and science, theoretical and applied leadership experiences, aviation science and airmanship programs, and military training.

11th Wing

Hq.: Bolling AFB, D.C.
Estab.: July 15, 1994
Cmdr.: Col. James P. Hunt

MISSION, PURPOSE, OPERATIONS

Provide administrative and ceremonial support to USAF members in the National Capital Region, all 50 states, and more than 100 countries
Support the President, SECAF, and CSAF via the United States Air Force Band and Honor Guard
Provide personnel, operations, comptroller, accounting and finance, and recreation services for wing assets, including the day-to-day operations of Bolling AFB
Manage physical, personal, electronic, and information security within the Pentagon

STRUCTURE

Objective wing

PERSONNEL

Active duty		1,582
Officers	178	
Enlisted	1,404	
Reserve components		35
ANG	0	
AFRC	35	
Civilians		811
Total		**2,428**

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Four-Engine Fighter

USAF photo

The XB-40, a modified B-17F, was developed to test whether a bomber with additional defensive armament could provide bomber escort, since early World War II fighters did not have the necessary range. The prototype XB-40, which first flew in November 1942, had 14 .50-caliber machine guns in seven gun positions: chin turret, two dorsal turrets, ball turret, two waist positions, and the tail. The Army Air Forces ordered 20 test aircraft, designated YB-40s. The 92nd Bomb Group at RAF Alconbury, UK, received 12 in spring 1943 for operational tests. The first mission came on May 29, 1943. After less than 10 missions, the project was scrapped. The YB-40s were too heavily laden with guns, additional armor, and ammunition to keep up with the other bombers. Most were converted back to B-17F configuration. The chin turret gun position was later adopted for late model B-17Fs and was standard on the B-17G.

Photo via Robert F. Dorr

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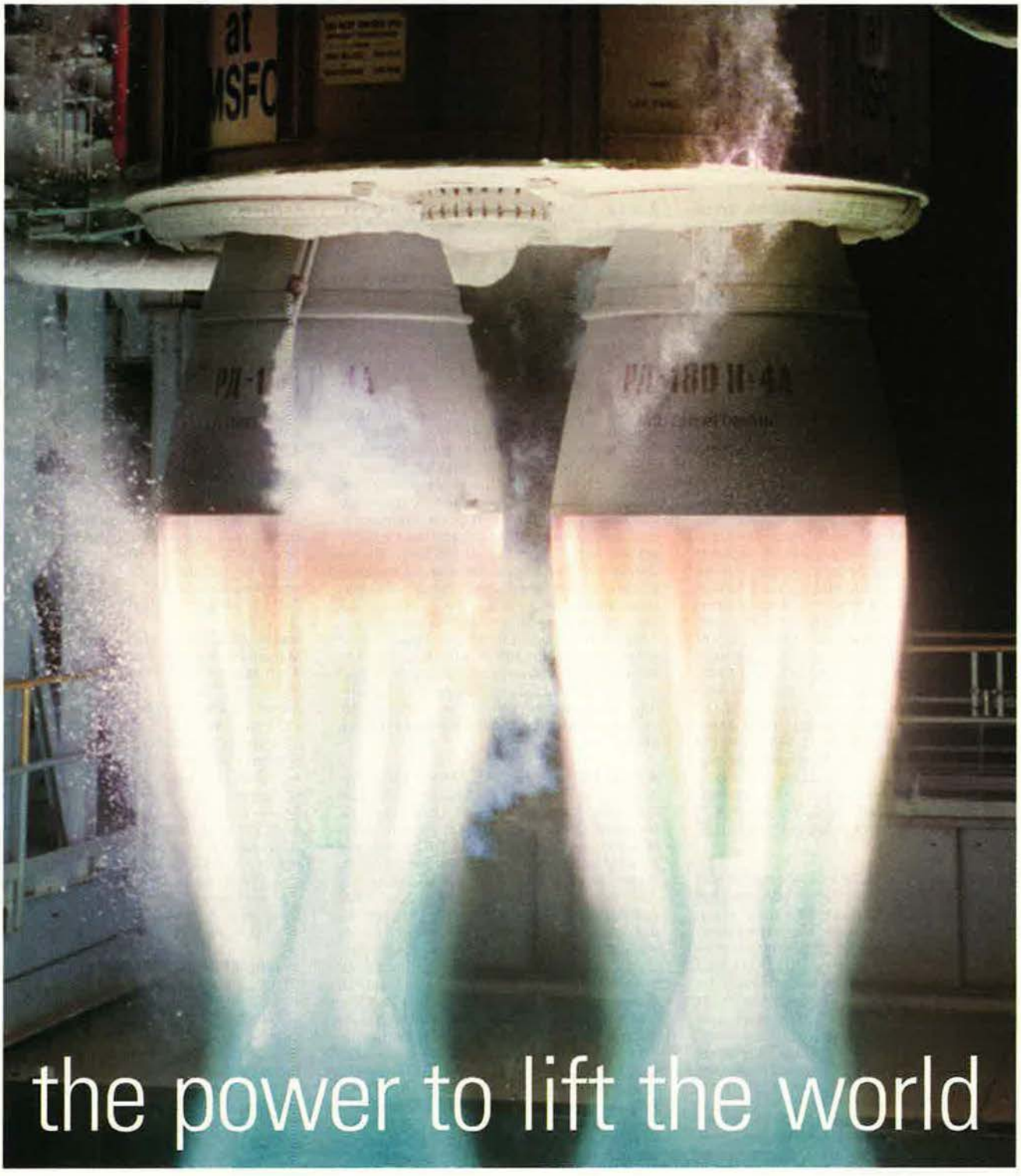
the RD-180 team They've come a long way in a short time. Developing an engine that powered Atlas III on its maiden flight. Performing test firings equivalent to 130 additional launches. Earning the 2000 Laurel award in Aeronautics/Propulsion from *Aviation Week & Space Technology*. Each achievement confirming and strengthening their commitment to mission success and setting the stage for RD-180's greatest challenge—first flight of Atlas V.



USAF Almanac

Guide to Air Force Installations Worldwide

Major 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, C-141, 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, 1,966; DOD civilians, 1,195; contract employees, 832. **Housing:** single family, officer, 212, enlisted, 766; unaccompanied, UAQ/UEQ, 554; visiting, VOQ, 312, VAQ/VEQ, 315, TLF, 50. **Clinic.**

Andersen AFB, Guam, APO AP 96543-5000; 2 mi. N of Yigo. **Phone:** (cmcl, from CONUS) 671-366-1110; DSN 315-366-1110. **Majcom:** PACAF. **Host:** 36th Air Base Wing. **Mission:** Pacific center for power projection, regional cooperation, and multinational training; serves as a logistic support and staging base for aircraft operating in the Pacific and Indian Oceans. **Major tenants:** 13th Air Force (PACAF); Det. 5, 22nd Space Operations Sq. (AFSPC); 634th 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:** (N) 10,555 ft. and (S) 11,182 ft. **Altitude:** 612 ft. **Personnel:** permanent party military, 2,481; DOD civilians, 1,241. **Housing:** single family, officer, 236, enlisted, 1,153; unaccompanied, UOQ, 74, UAQ/UEQ, 1,018; visiting, VOQ, 74, VAQ/VEQ, 204, TLF, 18. **Clinic.**

Andrews AFB, Md. 20762-5000; 10 mi. SE of Washington. **Phone:** 301-981-1110; DSN 858-1110. **Majcom:** AMC. **Host:** 89th Airlift Wing. **Mission:** gateway to nation's capital and home of Air Force One. Provides worldwide airlift for the President, vice president, top US officials, and foreign heads of state. Also responsible for Presidential support and base operations; supports all branches of the armed services, several major commands, and federal agencies. **Major tenants:** Air Force Flight Standards Agency; Hq. AFOSI; AFOSI Academy; Air National Guard Readiness Center; 113th Wing (ANG), F-16; 459th AW (AFRC), C-141; Naval Air Facility; Marine Aircraft Gp. 49, Det. A; Air Force Review Boards Agency. **History:** activated May 1943. Named for Lt. Gen. Frank M. Andrews, military air pioneer and WWII commander of the European Theater, killed in aircraft accident May 3, 1943, in Iceland. **Area:** 6,853 acres. **Runways:** 9,755 ft. and 9,300 ft. **Altitude:** 281 ft. **Personnel:** permanent party military, 4,353; DOD civilians, 1,150; contract employees, 625. **Housing:** single family, officer, 384, enlisted, 1,694; leased units, 414 off base; unaccompanied, UAQ/UEQ, 974; visiting, VOQ, 111, VAQ/VEQ, 65, TLF, 68. **Hospital.**

Arnold AFB, Tenn. 37389; approx. 7 mi. SE of Manchester. **Phone:** 931-454-3000; DSN 340-5011. **Majcom:** AFMC. **Host:** Arnold Engineering Development Center. **Mission:** supports acquisition of new aerospace systems by conducting research, development, and evaluation testing for DOD, other government agencies, and commercial aerospace firms with the world's largest complex of wind tunnels, jet and rocket engine test cells, space simulation chambers, and hyperballistic ranges. **History:** base dedicated June 25, 1951. Named for Gen. of the Army H.H. "Hap" Arnold, wartime Chief of the Army Air Forces. **Area:** 39,081 acres. **Runway:** 6,000 ft. **Altitude:** 1,100 ft. **Personnel:** permanent party military, 103; DOD civilians, 251; contract employees, 2,567. **Housing:** single family, officer, 14, enlisted, 26; visiting, 45. **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) 011-39-434-667111; DSN 632-1110. **Majcom:** USAFE. **Host:** 31st Fighter Wing. **Mission:** maintains two LANTIRN–equipped F-16 fighter squadrons, the 510th and the 555th. **Major tenants:** 16th Air Force (USAFE); Hq. 16th Aerospace Expeditionary Wing. **Geographically Separated Units:** 2nd Expeditionary Air Support Operations Sq., Camp Bondsteel, Kosovo; 16th Ex. Air Support Ops Gp., Sarajevo, Bosnia; 16th Ex. Ops Gp., Istres AB, France; 16th Ex. Support Sq., Rhein–Main AB, Germany; 31st RED HORSE Flt. and 31st Munitions Sq., Camp Darby, Italy; 31st Munitions Support Sq., Ghedi AB, Italy; 99th Ex. Recon. Sq., NAS Sigonella, Italy; 401st Ex. Air Base Gp., Tuzla, Bosnia; 406th Ex. ABG, Taszar AB, Hungary; 496th Air Base Sq., Morón AB, Spain; 620th Ex. ABG, Camp Able Sentry, Macedonia; 731st Munitions Support Sq., Araxos AB, Greece; Det. 1, Ex. Air Control Sq., Jacotenente, Italy. **History:** one of the oldest Italian air bases, dating to 1911. USAF began operations 1954. **Area:** 1,467 acres. **Runway:** 8,596 ft. **Altitude:** 413 ft. **Personnel:** permanent party military, 3,900; DOD civilians, 241; local nationals, 550. **Housing:** single family, officer, 22, enlisted, 508; unaccompanied, UAQ/UEQ, 680; visiting, VOQ, 17, VAQ/VEQ, 12, DV suites, 5. **Clinic** (contracted with local hospital).

Barksdale AFB, La. 71110-5000; in Bossier City. **Phone:** 318-456-1110; DSN 781-1110. **Majcom:** ACC. **Host:** 2nd Bomb Wing. **Mission:** B-52H operations and training. **Major tenants:** 8th Air Force (ACC); 917th Wing (AFRC), A-10, B-52H; 8th Air Force Museum. **History:** activated Feb. 3, 1933. Named for Lt. Eugene H. Barksdale, WWI airman killed in an August 1926 crash. **Area:** 22,000 acres (18,000 acres reserved for recreation). **Runway:** 11,300 ft. **Altitude:** 166 ft. **Personnel:** permanent party military, 5,400; DOD civilians, 1,500. **Housing:** single family, officer, 131, enlisted, 598; unaccompanied, UAQ/UEQ, 780; visiting, VOQ, 122, DV, 17, VAQ/VEQ, 100, 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:** RC-135 and U-2 operations. **Major tenants:** 940th ARW (AFRC), KC-135; 7th Space Warning Sq. (AFSPC), Pave Paws; 13th and 48th Intelligence Sqs. (ACC). **History:** originally US Army's Camp Beale; transferred to Air Force April 1948; became Air Force base in November 1951. Named for Brig. Gen. E.F. Beale, Indian agent in California prior to Civil War. **Area:** 22,944 acres. **Runway:** 12,000 ft. **Altitude:** 113 ft. **Personnel:** permanent party military, 3,047; DOD civilians, 834; contract employees, 66. **Housing:** single family, officer, 187, enlisted, 1,519; unaccompanied, UOQ, 30, UAQ/UEQ, 523; visiting, VOQ, 53, VAQ/VEQ, 125, TLF, 23. **Clinic.**

Bolling AFB, D.C. 20332-5000; 3 mi. S of US Capitol. **Phone:** 703-545-6700; DSN 227-0101. **Host:** 11th Wing, which includes the USAF Band and USAF Honor Guard. **Mission:** Hq. USAF direct reporting unit with support responsibilities for 40,000 USAF members worldwide. **Major tenants:** Air Force Chief of Chaplains; Air Force Surgeon General; Air Force History Support Office; Air Force Real Estate Agency; Air Force Medical Operations Agency; Defense Intelligence Agency; Air Force Legal Services Agency; 497th Intelligence Gp. (ACC). **History:**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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, 1,833; DOD civilians, 1,043. **Housing:** single family, officer, 246, enlisted, 1,100; unaccompanied, UAQ/UEQ, 492 dorm spaces; visiting, VOQ, 56, DV, 24, VAQ/VEQ, 67, TLF, 100. **Clinic.**

Brooks AFB, Tex. 78235; in SE San Antonio. **Phone:** 210-536-1110; DSN 240-1110. **Majcom:** AFMC. **Host:** 311th Human Systems Wing. **Mission:** force protection, centered around aerospace medicine and the human in the system; assesses and manages health, safety, and environmental risks for USAF and DOD; trains 6,000+ aeromedical personnel annually; manages more than 140 technical acquisition and sustainment programs. **Major tenants:** USAF School of Aerospace Medicine; Human Effectiveness Directorate (Armstrong Research site) of the Air Force Research Laboratory; Air Force Institute for Environment, Safety, and Occupational Health Risk Analysis; Air Force Medical Support Agency; Air Force Center for Environmental Excellence; Medical Systems Implementation and Training Element; Air Force Outreach Program Office. **History:** activated Dec. 8, 1917. Named for Cadet Sidney J. Brooks Jr., killed Nov. 13, 1917, on his commissioning flight. **Area:** 1,310 acres. **Runway:** none. **Altitude:** 600 ft. **Personnel:** permanent party military, 1,412; DOD civilians, 1,368; contract employees, 847. **Housing:** single family, officer, 36, enlisted, 134; unaccompanied, UAQ/UEQ, 95; visiting, VOQ, 151, VAQ/VEQ, 44, TLF, 8. **Clinic.**

Buckley AFB, Colo. 80011-9524; 8 mi. E of Denver. **Phone:** 303-677-9011; DSN 877-9011. **Majcom:** AFSPC. **Host:** 821st Space Group. **Mission:** provides space-based missile warning data, space communications processing and relay; focal point for transition to Space Based Infrared System. **Major tenants:** 2nd SWS, 140th Wing (ANG); Aerospace Data Facility; Navy/Marine Reserve Center; Army Aviation Support Facility. **History:** activated April 1, 1942, as a gunnery training facility. Named for Lt. John H. Buckley, National Guardsman, killed Sept. 17, 1918. ANG assumed control from US Navy in 1959. Became active duty Air Force base Oct. 2, 2000. **Area:** 3,832 acres. **Runway:** 11,000 ft. **Altitude:** 5,663 ft. **Personnel:** permanent party military, 3,800; DOD civilians, 3,337; contract employees, 1,750. **Housing:** unaccompanied, UAQ/UEQ, 236 dorm rooms. **Clinic.**

Cannon AFB, N.M. 88103-5000; 8 mi. W of Clovis. **Phone:** 505-784-3311; 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:** 3,782 acres. **Runways:** 10,000 ft. and 8,200 ft. **Altitude:** 4,295 ft. **Personnel:** permanent party military, 3,213; DOD civilians, 459. **Housing:** single family, officer, 162, enlisted, 1,560; unaccompanied, UAQ/UEQ, 846 dorm spaces; visiting, VOQ, 40, VAQ/VEQ, 26, TLF, 36. **Ambulatory care clinic.**

Charleston AFB, S.C. 29404-5000; 10 mi. from downtown Charleston. **Phone:** 843-963-6000; DSN 673-1110. **Majcom:** AMC. **Host:** 437th Airlift Wing. **Mission:** C-17 operations. **Major tenant:** 315th AW (AFRC Assoc.), C-141. **History:** activated October 1942; inactivated March 1946; reactivated August 1953. **Area:** 6,033 acres (including auxiliary airfield). **Runway:** 9,000 ft.; joint-use airfield. **Altitude:** 46 ft. **Personnel:** permanent party military, 3,870; DOD civilians, 1,370. **Housing:** single family, officer, 151, enlisted, 1,314; unaccompanied, UAQ/UEQ, 507 dorm spaces; visiting, VOQ, 12, DV, 116, VAQ/VEQ, 26, TLF, 38. **Clinic.**

Columbus AFB, Miss. 39710-1000; 7.5 mi. NW of Columbus. **Phone:** 662-434-7322; DSN 742-1110. **Majcom:** AETC. **Host:** 14th Flying Training Wing. **Mission:** Specialized Undergraduate Pilot Training. **History:** activated 1941 for pilot training. **Area:** 6,017 acres. **Runways:** 12,000 ft., 8,000 ft., and 6,300 ft. **Altitude:** 219 ft. **Personnel:** permanent party military, 1,459; DOD civilians, 1,443. **Housing:** single family, officer, 167, enlisted, 404; unaccompanied, UOQ, 180, UAQ/UEQ, 160; visiting, VOQ, 44, VAQ/VEQ, 30, TLF, 20. **Clinic.**

Davis–Monthan AFB, Ariz. 85707-5000; within Tucson. **Phone:** 520-228-3900; DSN 228-3900. **Majcom:** ACC. **Host:** 355th Wing. **Mission:** A-10 combat crew training; OA-10 and FAC training and operations; and EC-130E and EC-130H operations. **Major tenants:** 12th Air Force (ACC); Aerospace Maintenance and Regeneration Center (AFMC), storage location for excess DOD aerospace vehicles; 305th Rescue Sq., 939th Rescue Wing (AFRC), HH-60; US Customs. **History:** activated 1927. Named for two local aviators: 2nd Lt. Samuel H. Davis, killed Dec. 28, 1921, and 2nd Lt. Oscar Monthan, killed March 27, 1924. **Area:** 10,633 acres. **Runway:** 13,643 ft. **Altitude:** 2,404 ft. **Personnel:** permanent party military, 4,673; DOD civilians, 1,472. **Housing:** single family, officer, 128, enlisted, 1,128; unaccompanied, UAQ/UEQ, 744 dorm spaces; visiting, VOQ, 181, VAQ/VEQ, 65, TLF, 50. **Clinic.**

Dover AFB, Del. 19902-7219; 3 mi. SE of Dover. **Phone:** 302-677-3000; DSN 445-3000. **Majcom:** AMC. **Host:** 436th AW. **Mission:** provides 25 percent of nation's intertheater airlift capability; only combat-ready C-5 wing capable of employing airdrop and special operations tactics for worldwide airlift; operates largest DOD aerial port facility; houses military's East Coast mortuary. **Major tenant:** 512th AW (AFRC Assoc.). **History:** activated December 1941; inactivated 1946; reactivated February 1951. **Area:** 3,908 acres. **Runway:** 12,900 ft. **Altitude:** 28 ft. **Personnel:** permanent party military, 3,772; DOD civilians, 939; contract employees, 474. **Housing:** single family, officer, 108, enlisted, 1,440; unaccompanied, UAQ/UEQ, 726 dorm spaces; visiting, VOQ, 139, VAQ/VEQ, 174, TLF, 24. **Clinic.**

Dyess AFB, Tex. 79607-1980; WSW border of Abilene. **Phone:** 915-696-2864; DSN 461-2864. **Majcom:** ACC. **Host:** 7th BW. **Mission:** B-1B operations. **Major tenant:** 317th Airlift Gp. (AMC), C-130. **History:** activated April 1942; deactivated December 1945; reactivated as Abilene AFB September 1955. In December 1956, renamed for Lt. Col. William E. Dyess, WWII fighter pilot who escaped from a Japanese prison camp, killed in P-38 crash in December 1943. **Area:** 6,342 acres (including offbase sites). **Runway:** 13,500 ft. **Altitude:** 1,789 ft. **Personnel:** permanent party military, 4,626; DOD civilians, 923. **Housing:** single family, 1,135 (plus 402 privatized units under construction); unaccompanied, UAQ/UEQ, 1,360. **Clinic.**

Edwards AFB, Calif. 93524; adjacent to Rosamond. **Phone:** 661-277-1110; DSN 527-1110. **Majcom:** AFMC. **Host:** Air Force Flight Test Center. **Mission:** conducts developmental and follow-on testing and evaluation of manned and unmanned aircraft and related avionics, and flight-control and weapon systems. AFFTC also operates the USAF Test Pilot School, which trains test pilots, flight-test engineers, and flight-test navigators. Base is a secondary landing site for space shuttle missions. **Major tenants:** AFRL's Propulsion Dir. (AFMC); Dryden Flight Research Center (NASA); USMC Air Sqs. HMM 764 and HMM 769. **History:** activities began September 1933. Originally Muroc AAF; renamed in 1949 for Capt. Glen W. Edwards, killed June 5, 1948, in crash of a YB-49 "Flying Wing." **Area:** 301,000 acres. **Runways:** 21, from 4,000 to 39,000 ft. **Altitude:** 2,302 ft. **Personnel:** permanent party military, 3,623; DOD civilians, 3,724; contract employees, 3,147. **Housing:** single family, officer, 410, enlisted, 1,305; unaccompanied, UOQ, 62, UAQ/UEQ, 774; visiting, VOQ, 71, VAQ/VEQ, 88, TLF, 50. **Clinic.**

Eglin AFB, Fla. 32542; 2 mi. SW of the twin cities of Niceville and Valparaiso; 7 mi. NE of Fort Walton Beach. **Phone:** 850-882-1110; DSN 872-1110. **Majcom:** AFMC. **Host:** Air Armament Center. **Mission:** responsible for development, acquisition, testing, deployment, and sustainment of all air-delivered weapons. **Major tenants:** AFRL's Munitions Directorate (AFMC); 33rd FW (ACC), F-15; 53rd Wing (ACC), A-10, F-15, F-16, F-117, HH-60; 919th Special Operations Wing (AFRC) at Duke Field, MC-130; Air Force Armament Museum. **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, 8,807; DOD civilians, 3,683 (excluding Hurlburt Field); contract employees, 2,957. **Housing:** single family, officer, 235, enlisted, 2,099; unaccompanied, UOQ, UAQ/UEQ, 1,048; visiting, VOQ, 188, VAQ/VEQ, 153, TLF, 88. **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. **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, 2,680; DOD civilians, 826. **Housing:** single family, officer, 181, enlisted, 1,500; unaccompanied, UOQ, 15, UNCOQ, 8, UAQ/VEQ, 483 dorm spaces; visiting, VOQ, 206, VAQ/VEQ, 650, DV suites, 12, TLF, 40. **Outpatient clinic.**

Ellsworth AFB, S.D. 57706-5000; 10 mi. E of Rapid City. **Phone:** 605-385-5056; DSN 675-5056. **Majcom:** ACC. **Host:** 28th BW. **Mission:** B-1B operations. **Major tenants:** Det. 2, 79th Test and Evaluation Sq. (AFMC); Det. 4, 57th Wing (ACC); Det. 8, 372nd Training Sq. (AETC); South Dakota Air and Space Museum. **History:** activated January 1942 as Rapid City AAB; renamed June 13, 1953, for Brig. Gen. Richard E. Ellsworth, killed March 18, 1953, in RB-36 crash. **Area:** 5,411 acres. **Runway:** 13,497 ft. **Altitude:** 3,276 ft. **Personnel:** permanent party military, 3,252; DOD civilians, 428. **Housing:** single family, officer, 208, enlisted, 1,828; unaccompanied, UAQ/UEQ, 742 dorm spaces; visiting, VOQ, 126, VAQ/VEQ, 57, TLF, 30. **Clinic.**

Elmendorf AFB, Alaska 99506-5000; bordering Anchorage. **Phone:** 907-552-1110; DSN

317-552-1110. **Majcom:** PACAF. **Host:** 3rd Wing. **Mission:** F-15C/D, F-15E, C-130, C-12 and E-3 Airborne Warning and Control System operations. Hub for air traffic to and from Far East. **Major tenants:** Alaskan Command; 11th Air Force (PACAF); Alaskan NORAD Region; 11th Rescue Coordination Center (ANG). **History:** activated July 1940. Named for Capt. Hugh Elmendorf, killed Jan. 13, 1933. **Area:** 13,100 acres. **Runways:** 10,000 ft. and 7,500 ft. **Altitude:** 213 ft. **Personnel:** permanent party military, 6,752; DOD civilians, 1,130. **Housing:** single family, officer, 170, enlisted, 1,296; unaccompanied, UAQ/UEQ, 786; visiting, VOQ, 197, VAQ/VEQ, 240, TLF, 107. **Hospital.**

Fairchild AFB, Wash. 99011-5000; 12 mi. WSW of Spokane. **Phone:** 509-247-1212; DSN 657-1212. **Majcom:** AMC. **Host:** 92nd ARW. **Mission:** KC-135R and KC-135T operations. **Major tenants:** 336th Training Gp. (USAF Survival School, AETC); 141st ARW (ANG), KC-135E. **History:** activated January 1942. Named for Gen. Muir S. Fairchild, USAF vice chief of staff at his death in 1950. **Area:** 4,529 acres. **Runway:** 13,901 ft. **Altitude:** 2,426 ft. **Personnel:** permanent party military, 3,139; DOD civilians, 1,021. **Housing:** single family, officer, 142, enlisted, 1,281; unaccompanied, UAQ/UEQ, 756; visiting, VOQ, 143, VAQ/VEQ, 152, TLF, 18. **Clinic.**

F.E. Warren AFB, Wyo. 82005-5000; adjacent to Cheyenne. **Phone:** 307-773-1110; DSN 481-1110. **Majcom:** AFSPC. **Host:** 90th Space Wing. **Mission:** controls, maintains, and operates 50 Peacekeeper and 150 Minuteman III ICBMs; UH-1N. **Major tenants:** 20th Air Force (AFSPC); Air Force ICBM Museum. **History:** activated as Ft. D.A. Russell July 4, 1867; under Army jurisdiction until 1949, when reassigned to USAF; renamed in 1930 for Francis Emory Warren, Wyoming Senator and first state governor. **Area:** 5,866 acres. Missile site area covering more than 12,600 sq. mi. in Wyoming, Colorado, and Nebraska. **Runway:** none. **Altitude:** 6,142 ft. **Personnel:** permanent party military, 3,670; DOD civilians, 500. **Housing:** single family, officer, 114, enlisted, 717; unaccompanied, UAQ/UEQ, 1,310; visiting, VOQ, 33, VAQ/VEQ, 37, TLF, 50. **Clinic.**

Goodfellow AFB, Tex. 76908-4410; SE of San Angelo. **Phone:** 915-654-3231; DSN 477-3231. **Majcom:** AETC. **Host:** 17th Training Wing. **Mission:** trains intelligence, fire protection, and special instruments personnel for US military and DOD and international agencies. **Major tenants:** 344th Military Intelligence Battalion (US Army); Navy Technical Training Center det.; Marine Corps det.; NCO Academy. **History:** activated January 1941. Named for Lt. John J. Goodfellow Jr., WWI observation airplane pilot killed in combat Sept. 14, 1918. **Area:** 1,135 acres. **Runway:** none. **Altitude:** 1,877 ft. **Personnel:** permanent party military, 1,422; DOD civilians, 570. **Housing:** single family, officer, 2, enlisted, 296; unaccompanied, UOQ, 144, UAQ/UEQ, 180, student, 1,298; visiting, VOQ, 117, VAQ/VEQ, 660, TLF, 29. **Clinic.**

Grand Forks AFB, N.D. 58205-5000; 16 mi. W of Grand Forks. **Phone:** 701-747-3000; DSN 362-1110. **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, 2,618; DOD civilians, 330. **Housing:** single family, officer/enlisted, 1,461; unaccompanied, UOQ, 40, UAQ/UEQ, 623; visiting, VOQ/VAQ/VEQ, 13, TLF, 200. **Hospital.**

Air Force Installations

Major installations	FY97	FY98	FY99	FY00	FY01	FY02
US and possessions	75	74	74	74	74	72
Foreign	13	13	13	13	12	12
Worldwide	88	87	87	87	86	84
Minor installations						
US and possessions	81	80	81	80	80	80
Foreign	4	3	3	3	2	2
Worldwide	85	83	84	83	82	82

Includes Air National Guard and Air Force Reserve Command.

Hanscom AFB, Mass. 01731-5000; 17 mi. NW of Boston. **Phone:** 781-377-4441; DSN 478-5980. **Majcom:** AFMC. **Host:** Electronic Systems Center (AFMC). **Mission:** manages development and acquisition of command-and-control systems. **Major tenants:** AFRL's Space Vehicles Directorate–Hanscom; AFRL's Sensors Directorate–Hanscom. **History:** activated 1941. Named for Laurence G. Hanscom, a pre–WWII advocate of private aviation, killed in a lightplane accident in 1941. **Area:** 846 acres. **Runway:** no flying mission; transient USAF aircraft use runways of Laurence G. Hanscom Field, state-operated airfield adjoining the base. **Altitude:** 133 ft. **Personnel:** permanent party military, 1,413; DOD civilians, 1,590; contract employees, 980. **Housing:** single family, officer, 388, enlisted, 472; unaccompanied, UOQ, 40; visiting, VOQ and VAQ/VEQ, 131, TLF, 35. **Clinic.**

Hickam AFB, Hawaii 96853-5000; 9 mi. W of Honolulu. **Phone:** 808-449-7110 (Oahu military operator); DSN 471-7110. **Majcom:** PACAF. **Host:** 15th Air Base Wing. **Mission:** provides base and logistical support for 140 associate and tenant units in Hawaii and other Pacific–region locations; airlift for Commander in Chief, Pacific Command, and commander, PACAF; and maintenance and refueling support for aircraft transiting between the US mainland and the western Pacific. **Major tenants:** PACAF; 154th Wing (ANG), C-130, F-15, KC-135; Central Identification Lab (Army). **History:** activated September 1938. Named for Lt. Col. Horace M. Hickam, aviation pioneer killed in crash Nov. 5, 1934. **Area:** 2,761 acres. **Runway:** Four joint-use runways shared with Honolulu IAP: 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, 4,595; DOD civilians, 1,316; contract employees, 300. **Housing:** single family, officer, 615, enlisted, 2,043; unaccompanied, UOQ, 24, UAQ/UEQ, 776; visiting, VOQ, 204, VAQ/VEQ, 179, TLF, 40. **Clinic.**

Hill AFB, Utah 84056-5990; 25 mi. N. of Salt Lake City. **Phone:** 801-777-7221; DSN 777-1110. **Majcom:** AFMC. **Host:** Ogden Air Logistics Center. **Mission:** provides worldwide engineering and logistics management for F-16s; maintains the A-10, C-130, and F-16; handles logistics management and maintenance for Minuteman and Peacekeeper ICBMs; provides sustainment and logistics support for space and C^{3}I 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. **History:** activated 1940. Named for Maj. Ployer P. Hill, killed Oct. 30, 1935, while test flying the first B-17. **Area:** 6,698 acres; manages 962,076 acres (Utah Test and Training Range). **Runway:** 13,500 ft. **Altitude:** 4,788 ft. **Personnel:** permanent party military, 4,769; DOD civilians, 3,898; contract employees, 11,261. **Housing:** single family, officer, 179, enlisted, 966; visiting, VOQ, 106, VAQ/VEQ, 154, TLF, 40. **Clinic.**

Holloman AFB, N.M. 88310; 7 mi. W of Alamogordo. **Phone:** 505-572-5406; DSN 572-5406. **Majcom:** ACC. **Host:** 49th FW. **Mission:** F-117 operations. **Major tenants:** 46th Test Gp. (AFMC); 4th Space Surveillance Sq. (AFSPC); German Air Force Flying Training Center. **History:** activated 1942. Named for Col. George Holloman, guided-missile pioneer. **Area:** 58,000 acres. **Runways:** 12,000 ft., 10,500 ft., and 8,000 ft. **Altitude:** 4,350 ft. **Personnel:** permanent party military, 3,754; DOD civilians, 1,716. **Housing:** single family, officer, 190, enlisted, 1,332, unaccompanied, UAQ/UEQ, 975; visiting, VOQ, 140, VAQ/VEQ, 56, TLF, 50. **Clinic.**

Hurlburt Field, Fla. 32544-5000; 5 mi. W of Fort Walton Beach. **Phone:** 850-884-1110; DSN 579-1110. **Majcom:** AFSOC. **Host:** 16th SOW. **Mission:** specialized airpower, equipped with MC-130E/H, AC-130H/U, MH-53J/M, MC-130P (located at Eglin AFB), and UH-1N. **Major tenants:** Air Force Special Operations Command; USAF C^2 Training Innovation Gp.; 823rd RED HORSE Sq.; USAF Combat Weather Center; C^2 Warrior School; USAF Special Operations School; Joint Special Operations University. **History:** activated 1943. Named for Lt. Donald W. Hurlburt, WWII pilot killed Oct. 1, 1943. **Area:** 6,600 acres. **Runway:** 6,900 ft. **Altitude:** 38 ft. **Personnel:** permanent party military, 7,322; DOD civilians, 853. **Housing:** single family, officer, 52, enlisted, 628 (300 leased); visiting, VAQ/VEQ, 232, TLF, 24. **Clinic.**

Incirlik AB, Turkey, APO AE 09824; 6 mi. E of Adana. **Phone:** (cmcl, from CONUS) 011-90-322-316-1110; DSN (from CONUS) 314-676-1110. **Majcom:** USAFE. **Host:** 39th Wing. **Mission:** supports rotational weapons training deployments and contingency actions, as well as Operation Northern Watch with Combined Task Force assets, including Turkish F-4Es, F-16s, and KC-135s, British Jaguars and VC-10s, and USAF, USN, and USMC air assets, including the C-12, C-130, E-3, EA-6B, EP-3, F-15, F-16, KC-135, HH-60, and MH-60. **History:** activated May 1954. Present unit began operations March 1966. Incirlik, in Turkish, means

Major Air Force Installations in the US

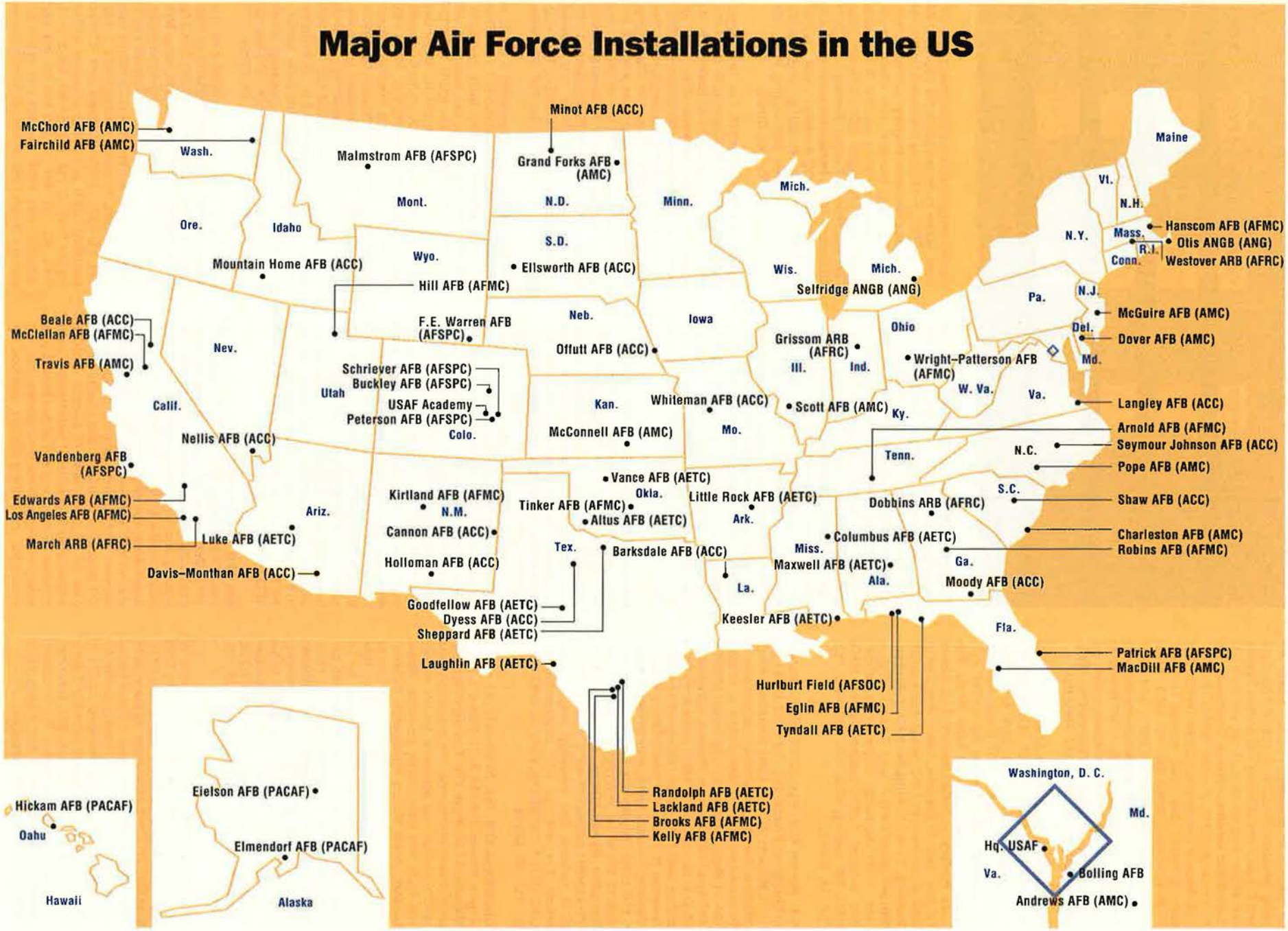

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fig orchard. **Area:** 3,400 acres. **Runway:** 10,000 ft. **Altitude:** 240 ft. **Personnel:** permanent party military, 1,600; DOD civilians, 114; local nationals 1,427. **Housing:** single family, officer, 200, enlisted, 686; unaccompanied, UOQ, 20 dorm rooms, 50 (town house share), UAQ/UEQ, 607 dorm rooms; visiting, 389, TLF, 80. **Hospital.**

Kadena AB, Japan, APO AP 96368-5000; 15 mi. N of Naha. **Phone:** (cmcl, from CONUS) 011-81-98938-1111; DSN 634-1110. **Majcom:** PACAF. **Host:** 18th Wing. **Mission:** E-3, F-15C/D, KC-135R, and HH-60 operations. **Major tenants:** Support Center Pacific (AFMC); 353rd Special Operations Gp. (AFSOC), 390th Intelligence Sq.; 82nd Reconnaissance Sq. (ACC); 633rd Air Mobility Support Sq. (AMC); Commander, Fleet Activities Kadena (US Navy). **History:** occupied by US forces in April 1945. Named for city of Kadena, Okinawa. **Area:** 11,210 acres. **Runway:** length 12,100 ft. **Altitude:** 146 ft. **Personnel:** permanent party military, 6,879; DOD civilians, 531; local nationals, 3,379. **Housing:** single family, officer, 981, enlisted, 4,360; unaccompanied, UOQ, 274, UAQ/UEQ, 2,582; visiting, VOQ, 301, VAQ/VEQ, 276, TLF, 122. **Clinic.**

Keesler AFB, Miss. 39534-5000; located in Biloxi. **Phone:** 228-377-1110; DSN 597-1110. **Majcom:** AETC. **Host:** 81st Training Wing. **Mission:** conducts Air Force, joint service, and international training for avionics, communications, electronics, radar systems, computer and C^2 systems, weather precision equipment, physician residencies, specialized nursing, and medical technicians. **Major tenants:** 2nd Air Force (AETC); 45th Airlift Flight (AETC), C-21; 403rd Wing (AFRC), C-130, WC-130. **History:** activated June 12, 1941. Named for 2nd Lt. Samuel R. Keesler Jr., a native of Mississippi and WWI aerial observer killed in action Oct. 9, 1918. **Area:** 3,554 acres. **Runway:** 5,630 ft. **Altitude:** 26 ft. **Personnel:** permanent party military, 12,055; DOD civilians, 1,881. **Housing:** single family, officer, 287, enlisted, 1,500; visiting, VOQ, 317, VAQ/VEQ, 1,172, TLF, 70. **Keesler Medical Center.**

Kelly AFB, Tex. 78241-5000; 5 mi. SW of San Antonio. **Phone:** 210-925-1110; DSN 945-1110. **Majcom:** AFMC. **Host:** San Antonio Air Logistics Center. **Mission:** transitions workforce to close San Antonio ALC July 13. At that time, the other major units on Kelly will be supported by nearby Lackland AFB. Kelly will be deactivated July 13. **Major tenants:** Information Warfare Battlelab; Air Intelligence Agency; Air Force Information Warfare Center; Joint C^2 Warfare Center; Air Force News Agency; Defense Commissary Agency; 149th FW (ANG), F-16; 433rd AW (AFRC), C-5; Defense Reutilization and Marketing Office; Air Force Audit Agency; Defense Distribution Depot. **History:** dating from Nov. 21, 1916, Kelly is the oldest continuously active air base in the US. 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. **Personnel:** transitions workforce. **Clinic.**

Kirtland AFB, N.M. 87117-5606; SE quadrant of Albuquerque. **Phone:** 505-846-0011; DSN 246-0011. **Majcom:** AFMC. **Host:** 377th Air Base Wing. **Mission:** provides munitions maintenance; worldwide training; research, development, and testing; base operating support. **Major tenants:** 58th SOW (AETC), MC-130, HH-60, MH-53, TH-53, UH-1; Air Force Operational Test and Evaluation Center; Air Force Research Laboratories (AFMC); 150th FW (ANG), F-16; Defense Threat Reduction Agency, Albuquerque Field Operations; Sandia National Laboratories; DOE's Albuquerque Operations Office; Defense Nuclear Weapons School; Air Force Inspection Agency; Air Force Safety Center. **History:** activated January 1941. Named for Col. Roy C. Kirtland, aviation pioneer who died May 2, 1941. **Area:** 51,558 acres. **Runway:** 19,375 ft. **Altitude:** 5,352 ft. **Personnel:** permanent party military, 4,855; DOD civilians, 3,898; contract employees, 11,261. **Housing:** single family, officer, 294, enlisted, 1,490; visiting, VOQ, 130, VAQ/VEQ, 180. **Air Force–VA joint medical center.**

Kunsan AB, Republic of Korea, APO AP 96264-5000; 8 mi. SW of Kunsan City. **Phone:** (cmcl, from CONUS) 011-82-63-470-1110; DSN 782-1110. **Majcom:** PACAF. **Host:** 8th FW. **Mission:** F-16C/D operations; home of the "Wolf Pack" and the first active overseas F-16 wing (September 1981). **Major tenants:** US Army's Echo and Foxtrot Batteries, 1st Battalion, 143rd Air Defense Artillery; US Army Contracting Command Korea. **History:** built by the Japanese in 1938. **Area:** 2,556 acres. **Runway:** 9,000 ft. **Altitude:** 29 ft. **Personnel:** permanent party military, 2,511; DOD civilians, 48; local nationals, 478. **Housing:** unaccompanied, UOQ, 247, UAQ/UEQ, 1,733; visiting, VOQ, 28, VAQ/VEQ, 108. **Clinic.**

Lackland AFB, Tex. 78236-5000; 8 mi. SW of downtown San Antonio. **Phone:** 210-671-1110; DSN 473-1110. **Majcom:** AETC. **Host:** 37th Training Wing. **Mission:** largest USAF training wing. Its four primary training functions graduate more than 75,000 students annually. Provides basic military training for civilian recruits entering Air Force, ANG, and Air Force Reserve; 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. **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, 8,963; DOD civilians, 4,878; students, 9,667 (avg. daily student load). **Housing:** single family, officer, 109, enlisted, 289, privatized, 320; visiting, VOQ, 388, VAQ/VEQ, 1,480, TLF, 98, student, 610. **Wilford Hall Medical Center.**

Lajes Field, Azores, Portugal, APO AE 09720-5000; Terceira Island, 900 mi. W of Portugal. **Phone:** (cmcl, from CONUS) 011-351-295-540100; DSN from US 535-1110, from Europe 245-1110. **Majcom:** ACC. **Host:** 65th Air Base Wing. **Mission:** provides support to US and allied aircraft and personnel transiting the Atlantic, through US military and host-nation coordination. **Major tenants:** US Forces Azores; 629th AMSS (AMC). **History:** US operations began at Lajes Field 1946. **Area:** 1,179 acres. **Runway:** 10,865 ft. **Altitude:** 180 ft. **Personnel:** permanent party military, 922; DOD civilians, 166, local nationals, 683. **Housing:** single family, officer, 68, enlisted, 380; unaccompanied, UOQ, 31, UAQ/UEQ, 325; visiting, VOQ, 184, VAQ/VEQ, 173, TLF, 30. **Clinic.**

Langley AFB, Va. 23665-5000; 3 mi. N of Hampton. **Phone:** 757-764-1110; DSN 574-1110. **Majcom:** ACC. **Host:** 1st FW. **Mission:** F-15 air superiority operations. **Major tenants:** Air Combat Command; Air Force Rescue Coordination Center; Aerospace C^2ISR Center (ACC); USAF Heritage of America Band; 12th Airlift Flight (AMC); 480th Intelligence Gp. (ACC); Aerospace Expeditionary Force Center (ACC). **History:** activated Dec. 30, 1916. Langley is among the oldest continuously active air bases in the US. Named for aviation pioneer and scientist Samuel Pierpont Langley, who died in 1906. **Area:** 2,900 acres. **Runway:** 10,000 ft. **Altitude:** 11 ft. **Personnel:** permanent party military, 7,637; DOD civilians, 1,477. **Housing:** single family, officer, 384, enlisted, 1,222; unaccompanied, UAQ/UEQ, 668 dorm spaces; visiting, VOQ, 101, VAQ/VEQ, 195, TLF, 100. **Hospital.**

Laughlin AFB, Tex. 78843-5000; 6 mi. E of Del Rio. **Phone:** 830-298-3511; DSN 732-1110. **Majcom:** AETC. **Host:** 47th FTW. **Mission:** SUPT. **History:** activated July 1942. Named for 1st Lt. Jack Thomas Laughlin, Del Rio native, B-17 pilot, killed Jan. 29, 1942. **Area:** 4,516 acres. **Runways:** 8,858 ft., 8,310 ft., and 6,246 ft. **Altitude:** 1,082 ft. **Personnel:** permanent party military, 883; DOD civilians, 942; contract employees, 1,093. **Housing:** single family, officer, 308, enlisted, 248; unaccompanied, UOQ, 200, UAQ/UEQ, 264; visiting, VOQ, 32, DV, 8, TLF, 20. **Clinic.**

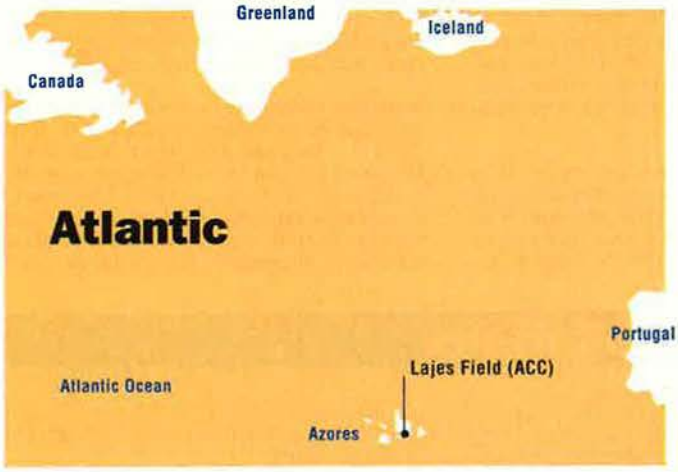
Little Rock AFB, Ark. 72099-4940; 17 mi. NE of Little Rock (Jacksonville). **Phone:** 501-987-1110; DSN 731-1110. **Majcom:** AETC. **Host:** 314th AW. **Mission:** largest C-130 training base in DOD; trains crew members from all services and 27 foreign countries. **Major tenants:** 463rd AG (AMC), C-130; 189th AW (ANG), C-130; Air Mobility Warfare Center Combat Aerial Delivery School (AMC); Hq. Arkansas ANG. **History:** activated Oct. 9, 1955. **Area:** 6,130 acres. **Runway:** 12,000 ft. **Altitude:** 310 ft. **Personnel:** permanent party military, 4,670; DOD civilians, 504. **Housing:** single family, officer, 185, enlisted, 1,350; unaccompanied, UAQ/UEQ, 764 single dorm rooms; visiting, VOQ, 121, VAQ/VEQ, 160, TLF, 110. **Clinic.**

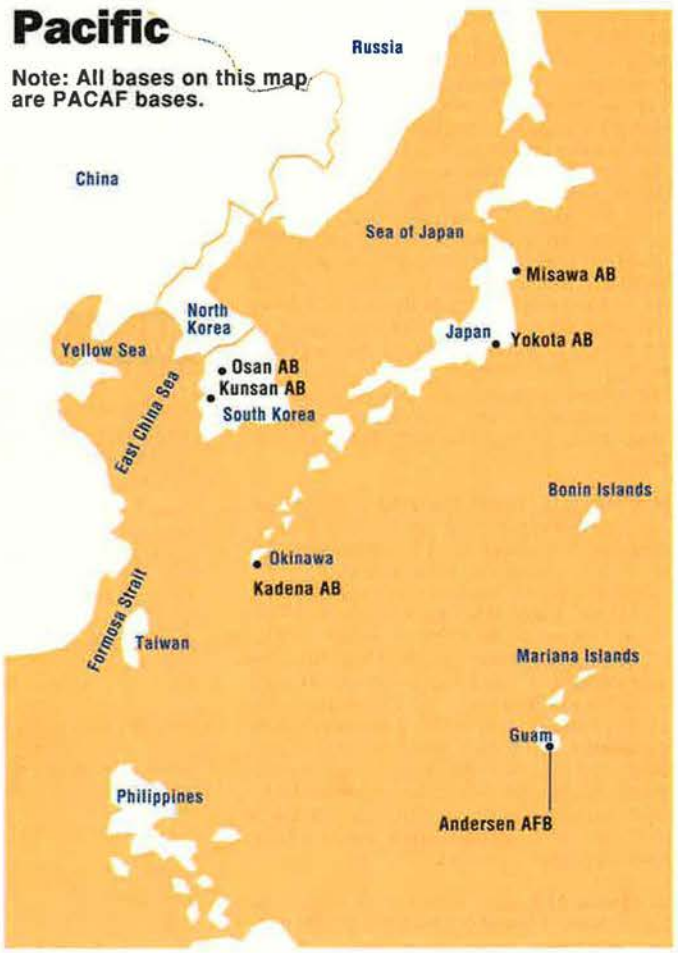
Los Angeles AFB, Calif. 90245-4657; in El Segundo, 3 mi. SE of Los Angeles IAP; base housing and support facilities 18 mi. S of the main base, in San Pedro. **Phone:** 310-363-1110; DSN 833-1110. **Majcom:** AFMC. **Host:** Space and Missile Systems Center. **Mission:** responsible for research, development, acquisition, on-orbit testing, and sustainment of military space and missile systems. **History:** activated as Air Research and Development Command's Western Development Division July 1, 1954. **Area:** 112 acres at Los Angeles AFB and 127 acres at Ft. MacArthur Military Family Housing Annex. **Runway:** none. **Altitude:** 95 ft. **Personnel:** permanent party military, 1,484; DOD civilians, 1,075. **Housing:** single family, at Ft. MacArthur Annex, 645; unaccompanied, UAQ/UEQ, 56; visiting, VOQ, 27, TLF, 22. **Clinic.**

Luke AFB, Ariz. 85309-5000; 20 mi. WNW of downtown Phoenix. **Phone:** 602-856-7411; DSN 896-1110. **Majcom:** AETC. **Host:** 56th FW. **Mission:** F-16 operations; conducts USAF and allied F-16 aircrew training. **Major tenant:** 944th FW (AFRC), F-16. **History:** activated 1941. Named for 2nd Lt. Frank Luke Jr., observation balloon–busting ace of WWI and first American aviator to receive the Medal of Honor, killed in action Sept. 29, 1918. Luke is the largest fighter training base in the world. **Area:** 4,200 acres, plus 2,679,090-acre Barry M. Goldwater Range. **Runways:** 10,000 ft. and 9,910 ft. **Altitude:** 1,090 ft. **Personnel:** permanent party military, 5,600; DOD civilians, 1,200; contract employees, 500. **Housing:** single family, officer, 95, enlisted, 927; unaccompanied, UAQ/UEQ, 996; visiting, VOQ, 184, VAQ/VEQ, 87, TLF, 40. **Hospital.**

MacDill AFB, Fla. 33621-5000; on the Interbay Peninsula in southern Tampa. **Phone:** 813-

Major Air Force Installations Overseas





828-1110; DSN 968-1110. **Majcom:** AMC. **Host:** 6th ARW. **Mission:** KC-135 operations; provides worldwide air refueling and CINC support. **Major tenants:** US Special Operations Command; Central Command; Joint Communications Support Element; NOAA Aircraft Operations Center. **History:** activated April 15, 1941. Named for Col. Leslie MacDill, killed in aircraft accident Nov. 8, 1938. **Area:** 5,767 acres. **Runways:** 11,420 ft. and 7,167 ft. **Altitude:** 6 ft. **Personnel:** permanent party military, 5,340; DOD civilians, 1,356. **Housing:** single family, officer, 27, enlisted, 665; unaccompanied, UAQ/UEQ, 610; visiting, VOQ, 105, VAQ/VEQ, 100, TLF, 24. **Hospital.**

Malmstrom AFB, Mont. 59402-5000; 1.5 mi. E of Great Falls. **Phone:** 406-731-1110; DSN 632-1110. **Majcom:** AFSPC. **Host:** 341st Space Wing. **Mission:** Minuteman III ICBM operations, UH-1N. **Major tenant:** 819th RED HORSE Sq. (ACC). **History:** activated Dec. 15, 1942. Named for Col. Einar A. Malmstrom, WWII fighter commander killed in air accident Aug. 21, 1954. Site of SAC's first Minuteman wing. **Area:** 4,041 acres, plus about 24,000 sq. mi. for missile sites. **Runway:** closed. **Altitude:** 3,525 ft. **Personnel:** permanent party military, 3,363; DOD civilians, 370. **Housing:** single family, officer, 258, enlisted, 1,148; unaccompanied, UAQ/UEQ, 13 dorms (418 1+1 units); visiting, 84, TLF, 30. **Clinic.**

Maxwell AFB, Ala. 36112-5000; 1 mi. WNW of Montgomery. **Phone:** 334-953-1110; DSN 493-1110. **Majcom:** AETC. **Host:** 42nd Air Base Wing. **Mission:** Air University conducts professional military, graduate, and professional continuing education for precommissioned and commissioned officers, enlisted personnel, and civilians. **Major tenants:** Air University; Air War College; Air Command and Staff College; Air University Library; College of Aerospace Doctrine, Research, and Education; School of Advanced Airpower Studies; Air Force Officer Accession and Training Schools; Ira C. Eaker College for Professional Development; College for Enlisted Professional Military Education; Community College of the Air Force; Air Force Institute for Advanced Distributed Learning; Squadron Officer College; Civil Air Patrol; 908th AW (AFRC), C-130; Air Force Historical Research Agency; Air Force Doctrine Center; Standard Systems Gp. **History:** activated 1918. Named for 2nd Lt. William C. Maxwell, killed in air accident Aug. 12, 1920. **Area:** 3,903 acres (includes Gunter Annex). **Runway:** 8,000 ft. **Altitude:** 172 ft. **Personnel:** permanent party military, 4,138; DOD civilians, 2,150. **Housing:** single family, officer, 371, enlisted, 596; unaccompanied, UOQ, 1, UAQ/UEQ, 428; visiting, VOQ, 1,324, VAQ/VEQ, 565, TLF, 33. **Clinic.**

McChord AFB, Wash. 98438-5000; 10 mi. S of Tacoma. **Phone:** 253-982-1910; DSN 984-1110. **Majcom:** AMC. **Host:** 62nd AW. **Mission:** C-17 and C-141 operations. Base is adjacent to Ft. Lewis, its primary customer for strategic airlift worldwide. **Major tenants:** 446th AW (AFRC Assoc.); Western Air Defense Sector (ANG); 22nd Special Tactics Sq. (AFSOC). **History:** activated May 5, 1938. Named for Col. William C. McChord, killed Aug. 18, 1937. **Area:** 4,616 acres. **Runway:** 10,100 ft. **Altitude:** 323 ft. **Personnel:** permanent party military, 3,531; DOD civilians, 931. **Housing:** single family, officer, 92, enlisted, 891; unaccompanied, UAQ/UEQ, 752 dorm rooms; visiting, VOQ, 68, VAQ/VEQ, 294, TLF, 20. **Dispensary.** Madigan Army Medical Center is located 4 mi. SE.

McClellan AFB, Calif. 95652-5000; 9 mi. NE of Sacramento. **Phone:** 916-643-2111; DSN 633-1110. **Majcom:** AFMC. **Host:** Sacramento Air Logistics Center. **Mission:** transitions workforce to close base July 13. **Major tenants:** Defense Commissary Agency Western Pacific Region; US Coast Guard Air Station, Sacramento (DOT). **History:** activated April 9, 1939. Named for Maj. Hezekiah McClellan, pioneer in Arctic aeronautical experiments, killed in a crash May 25, 1936. **Area:** 3,763 acres. **Runway:** 10,600 ft. **Altitude:** 75 ft. **Personnel:** transitions workforce. **Clinic** converted to VA facility.

McConnell AFB, Kan. 67221-5000; SE corner of Wichita. **Phone:** 316-759-6100; DSN 743-1110. **Majcom:** AMC. **Host:** 22nd ARW. **Mission:** KC-135 operations. **Major tenants:** 184th BW (ANG), B-1B; 931st Air Refueling Gp. (AFRC Assoc.). **History:** activated June 5, 1951. Named for the three McConnell brothers, WWII B-24 pilots from Wichita—Lt. Col. Edwin M. McConnell (died Sept. 1, 1997), Capt. Fred J. McConnell (died in a private airplane crash Oct. 25, 1945), and 2nd Lt. Thomas L. McConnell (killed July 10, 1943). **Area:** 3,113 acres. **Runways:** two, 12,000 ft. each. **Altitude:** 1,371 ft. **Personnel:** permanent party military, 2,675; DOD civilians, 908. **Housing:** single family, officer, 69, enlisted, 501; visiting, VOQ, 45, VAQ/VEQ, 42, TLF, 45 units off base. **Clinic.**

McGuire AFB, N.J. 08641-5000; 18 mi. SE of Trenton. **Phone:** 609-754-1100; DSN 650-1100. **Majcom:** AMC. **Host:** 305th AMW. **Mission:** C-141 and KC-10 operations. **Major tenants:** 21st Air Force (AMC); Air Mobility Warfare Center, Ft. Dix, N.J.; N.J. Civil Air Patrol; 108th ARW (ANG), KC-135; 514th AMW (AFRC Assoc.). **History:** adjoins Army's Ft. Dix. Formerly Ft. Dix AAB; activated as Air Force base 1949. Named for Maj. Thomas B. McGuire Jr., P-38 pilot, second leading US ace of WWII, Medal of Honor recipient, killed in action Jan. 7, 1945. **Area:** 3,598 acres. **Runways:** 10,001 ft. and 7,129 ft. **Altitude:** 133 ft. **Personnel:** permanent party military, 5,081; DOD civilians, 1,096. **Housing:** single family, officer, 195, enlisted, 1,552; visiting, VOQ, 33, VAQ/VEQ, 274, TLF, 30. **Clinic.**

Minot AFB, N.D. 58705-5000; 13 mi. N of Minot. **Phone:** 701-723-6212; DSN 453-6212. **Majcom:** ACC. **Host:** 5th BW. **Mission:** B-52 operations. **Major tenant:** 91st Space Wing (AFSPC), Minuteman III, UH-1N. **History:** activated January 1957. Named after the city of Minot, whose citizens donated $50,000 toward purchase of the land for USAF. **Area:** 5,049 acres, plus additional 8,500 acres for missile sites. **Runway:** 13,200 ft. **Altitude:** 1,668 ft. **Personnel:** permanent party military, 4,567; DOD civilians, 565. **Housing:** single family, officer, 352, enlisted, 1,967; unaccompanied, UOQ, 59, UAQ/UEQ, 1,401 dorm spaces; visiting, VOQ, 34, VAQ/VEQ, 28, TLF, 38. **Clinic.**

Misawa AB, Japan, APO AP 96319-5000; within Misawa city limits. **Phone:** (cmcl, from CONUS) Direct: 011-81-3117-66-1111. Switchboard: 011-81-176-53-5181; DSN 94-315-226-1110. **Majcom:** PACAF. **Host:** 35th FW. **Mission:** F-16C/D operations. **Major tenants:** 3rd Space Surveillance Sq. (AFSPC); 301st Intelligence Sq. (ACC); Naval Air Facility; Naval Security Gp. Activity; 750th Military Intelligence Det. (US Army); Co. E, US Marine Support Battalion; Northern Air Defense Force (JASDF). **History:** occupied by US forces September 1945. **Area:** 3,865 acres. **Runway:** 10,000 ft. **Altitude:** 119 ft. **Personnel:** permanent party military, 4,013; DOD civilians, 335; local nationals, 1,884. **Housing:** single family, officer, 355, enlisted, 1,884; unaccompanied, UOQ, 120, UAQ/UEQ, 823; visiting, VOQ, 82, VAQ/VEQ, 44; Navy CBH, 823; TLF, 40. **Hospital.**

Moody AFB, Ga. 31699-5000; 10 mi. NNE of Valdosta. **Phone:** 229-257-3395; DSN 460-3395. **Majcom:** ACC. **Host:** 347th Rescue Wing. **Mission:** HC-130, and HH-60 operations. **Major tenants:** 479th Flying Training Gp. (AETC); 820th Security Forces Gp. (ACC). **History:** activated June 1941. Named for Maj. George P. Moody, killed May 5, 1941. **Area:** 5,094 acres. **Runways:** 9,300 ft. and 8,000 ft. **Altitude:** 235 ft. **Personnel:** permanent party military, 4,000; DOD civilians, 700. **Housing:** single family, officer, 33, enlisted, 269; unaccompanied, enlisted, 523 dorm spaces; TLF, 32. **Clinic.**

Mountain Home AFB, Idaho 83648-5000; 45 mi. SE of Boise. **Phone:** 208-828-2111; DSN 728-2111. **Majcom:** ACC. **Host:** 366th Wing. **Mission:** USAF's Air Expeditionary Wing, B-1B, F-15C/D, F-15E, F-16CJ, and KC-135R operations. **Major tenant:** Air Expeditionary Force Battlelab. **History:** activated August 1943. **Area:** 9,112 acres. **Runway:** 13,500 ft. **Altitude:** 3,000

Minor Installations

In addition to the installations listed above, the Air Force has a number of minor installations. These air stations perform various missions, including air defense and missile warning. Here is a listing of such installations with state (or APO), ZIP code, and major command.

Cape Canaveral AFS, Fla. 32925-5000 (AFSPC)	DSN 467-1110
Cape Cod AFS, Mass. 02561-9314 (AFSPC)	DSN 557-2277
Cavalier AFS, N.D. 58220-5000 (AFSPC)	DSN 330-3292
Cheyenne Mountain AFS, Colo. 80914-5515 (AFSPC)	DSN 268-1211
Clear AFS, Alaska, APO AP 99704 (AFSPC)	DSN 317-585-6110
Onizuka AFS, Calif. 94088-3430 (AFSPC)	DSN 561-3000
Prince Sultan AB, Saudi Arabia (363rd Air Expeditionary Wing), Unit 70404, Box 4, APO AE 09882	DSN 318-434-7252
RAF Croughton (UK), APO AE 09494 (USAFE)	DSN 314-236-1110
Thule AB (Greenland), APO AE 09704-5000 (AFSPC) (ask for Thule operator)	DSN 268-1211

ft. **Personnel:** permanent party military, 4,200; DOD civilians, 830. **Housing:** single family, officer, 196, enlisted, 1,325; visiting, VOQ, 48, VAQ/VEQ, 47, TLF, 16. **Hospital.**

Nellis AFB, Nev. 89191-5000; 8 mi. NE of Las Vegas. **Phone:** 702-652-1110; DSN 682-1110. **Majcom:** ACC. **Host:** 99th Air Base Wing. **Mission:** Air Warfare Center manages advanced pilot training and tactics development and integrates test and evaluation programs; oversees Tonopah Test Range, three electronic scoring site GSUs, 5,000-sq.-mile Nellis Range Complex, and two emergency airfields. 57th Wing, A-10A, F-15C/D/E, F-16C/D, HH-60G, and Predator RQ-1A UAV. 57th Wing missions include Red Flag exercises (414th Combat Training Sq.); graduate-level pilot training (USAF Weapons School); support for US Army exercises (549th Combat Training Sq.); training for international personnel in joint firepower procedures and techniques (Hq. USAF Air Ground Operations School); USAF Air Demonstration Sq. (Thunderbirds). 53rd Wing, at 17 locations nationwide, serves as focal point for combat air forces in electronic warfare, armament and avionics, chemical defense, reconnaissance, and aircrew training devices; and operational testing and evaluation of proposed new equipment and systems. **Major tenants:** Aerospace Integration Center, OSD Joint Suppression of Enemy Air Defenses, Triservice Reserve Center, 67th Intelligence Gp. (ACC), 820th RED HORSE Sq. (ACC); 896th Munitions Sq. (AFMC). **History:** activated July 1941 as Las Vegas AAF with Army Air Corps Flexible Gunnery School; closed 1947; reopened 1949. Named for 1st Lt. William H. Nellis, WWII P-47 fighter pilot, killed Dec. 27, 1944. **Area:** Main base is 14,000 acres. NRC occupies 2.9 million acres of restricted air–land use and an additional 7,000-sq.-mile military operating area shared with civilian aircraft. **Runways:** 10,119 ft. and 10,051 ft. **Altitude:** 1,868 ft. **Personnel:** permanent party military, 7,138; DOD civilians, 2,743. **Housing:** single family, officer, 118, enlisted, 1,180; visiting, VOQ, 319, VAQ/VEQ, 637, DV, 12, TLF, 60. **Air Force–VA joint hospital.**

Offutt AFB, Neb. 68113-5000; 8 mi. S of Omaha. **Phone:** 402-294-1110; DSN 271-1110. **Majcom:** ACC. **Host:** 55th Wing. **Mission:** provides worldwide reconnaissance, C^2, and combat support to warfighting commanders and national leadership. **Major tenants:** 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, 8,654; DOD civilians, 2,812. **Housing:** single family, officer, 337, enlisted, 2,211; unaccompanied, enlisted, 800 dorm spaces; visiting, VOQ/VAQ/VEQ, 171, TLF, 60. **Hospital.**

Osan AB, Republic of Korea, APO AP 96278-5000; 38 mi. S of Seoul. **Phone:** (cmcl, from CONUS) 011-82-31-661-1110; DSN 784-4110. **Majcom:** PACAF. **Host:** 51st FW. **Mission:** A/OA-10, C-12J, and F-16C/D operations. **Major tenant:** 7th Air Force (PACAF); 5th RS (ACC); 31st SOS (AFSOC); 33rd Rescue Sq. (PACAF); 303rd Intelligence Sq. (AIA). **History:** originally designated K-55; runway opened December 1952. Renamed Osan AB in 1956 for nearby town that was the scene of first fighting between US and North Korean forces in July 1950. **Area:** 1,674 acres. **Runway:** 9,000 ft. **Altitude:** 38 ft. **Personnel:** permanent party military, 6,529; DOD civilians, 223; local nationals, 1,034. **Housing:** single family, 252; unaccompanied, UOQ, 396, UAQ/UEQ, 3,380; visiting, VOQ, 60, VAQ/VEQ, 182, TLF, 16. **Hospital.**

Patrick AFB, Fla. 32925-3237; 2 mi. S of Cocoa Beach. **Phone:** 407-494-1110; DSN 854-1110. **Majcom:** AFSPC. **Host:** 45th Space Wing. **Mission:** supports DOD, NASA, US Navy (Trident), and other government agency and commercial missile and space programs. Host responsibilities include Cape Canaveral AFS and tracking stations on Antigua and Ascension islands. **Major tenants:** Defense Equal Opportunity Management Institute; Air Force Technical Applications Center; 920th Rescue Gp. (AFRC), HC-130, HH-60; Army Training Support Brigade; Joint Task Force for Joint STARS at Melbourne, Fla. **History:** activated 1940. Named for Maj. Gen. Mason M. Patrick, Chief of AEF's Air Service in WWI and Chief of the Air Service/Air Corps, 1921–27. **Area:** 2,341 acres. **Runway:** 9,000 ft. **Altitude:** 9 ft. **Personnel:** permanent party military, 2,250; DOD civilians, 1,244; contract employees, 2,000. **Housing:** single family, officer, 185, enlisted, 1,364; unaccompanied, UAQ/UEQ, 274; visiting, VOQ, 109, VAQ/VEQ, 105, TLF, 51. **Clinic.**

Peterson AFB, Colo. 80914-5000; at eastern edge of Colorado Springs. **Phone:** 719-556-7321; DSN 834-7011. **Majcom:** AFSPC. **Host:** 21st Space Wing. **Mission:** provides missile warning and space control; detects, tracks, and catalogs objects in space. **Major tenants:** NORAD; US Space Command; Air Force Space Command; Army Space Command; 302nd AW (AFRC), C-130; Edward J. Peterson Air and Space Museum. **History:** activated 1942. Named for 1st Lt. Edward J. Peterson, killed Aug. 8, 1942. **Area:** 1,277 acres. **Runway:** shared with city. **Altitude:** 6,200 ft. **Personnel:** permanent party military, 3,175; DOD civilians, 1,593; contract employees, 1,472. **Housing:** single family, officer, 107 enlisted, 384; visiting, VOQ, 72, VAQ/VEQ, 98, TLF, 40. **Clinic.**

Pope AFB, N.C. 28308-2391; 12 mi. NNW of Fayetteville. **Phone:** 910-394-1110; DSN 424-1110. **Majcom:** AMC. **Host:** 43rd AW. **Mission:** C-130 operations. Adjoins Army's Ft. Bragg and provides intratheater combat airlift and close air support for airborne forces and other personnel, equipment, and supplies. **Major tenants:** 23rd Fighter Group (ACC), A/OA-10; 18th Air Support Operations Gp. (ACC); 21st and 24th STSs. (AFSOC); USAF Combat Control School. **History:** activated 1919. Named after 1st Lt. Harley H. Pope, WWI pilot, killed Jan. 7, 1919. **Area:** 2,198 acres. **Runway:** 7,500 ft. **Altitude:** 218 ft. **Personnel:** permanent party military, 5,100; DOD civilians, 543. **Housing:** single family, officer, 84, enlisted, 542; unaccompanied, UAQ/UEQ, 448 dorm spaces; visiting, VOQ, 120, VAQ/VEQ, 76, TLF, 22. **Clinic.**

RAF Lakenheath, United Kingdom, APO AE 09464-5000; 70 mi. NE of London; 25 mi. NE of Cambridge. **Phone:** (cmcl, from CONUS) 011-44-1638-52-3000; DSN 226-1110. **Majcom:** Royal Air Force base. **Host:** 48th FW (USAFE). **Mission:** F-15C/D and F-15E operations. **Major tenant:** 5th Space Surveillance Sq. (AFSPC) at RAF Feltwell. **History:** activated 1941. US forces arrived August 1948; the 48th FW arrived January 1960. Named after nearby village. **Area:** 2,004 acres. **Runway:** 9,000 ft. **Altitude:** 32 ft. **Personnel:** permanent party military, 5,000; DOD civilians, 1,300; local nationals, 600. **Housing:** single family, officer, 352 (including 153 govt.-leased), enlisted, 2,073 (plus 1,064 govt.-leased); unaccompanied, UAQ/UEQ, 897; visiting, VOQ, 84, VAQ/VEQ, 95 bed spaces, DV suites, 11, TLF, 32. **Regional medical center.**

RAF Mildenhall, United Kingdom, APO AE 09459-5000; 20 mi. NE of Cambridge. **Phone:** (cmcl, from CONUS) 011-44-1638-54-3000; DSN 238-3000. **Majcom:** USAFE. **Host:** 100th ARW. **Mission:** KC-135R operations. **Major tenants:** 3rd Air Force (USAFE); 352nd SOG (AFSOC), MC-130, MH-53; 95th RS (ACC); 488th Intelligence Sq. (ACC); Naval Air Facility, UC-12M aircraft. **GSUs:** 422nd Air Base Support, RAF Croughton; 423rd ABS, RAF Molesworth; 424th ABS, RAF Fairford; 426th ABS, Stavanger, Norway. **History:** activated 1934; US presence began July 1950. Named after nearby town. **Area:** 1,144 acres. **Runway:** 9,227 ft. **Altitude:** 33 ft. **Personnel:** permanent party military, 5,274; DOD US civilians, 334; local nationals, 1,043. **Housing:** single family, officer, 40, enlisted, 79; visiting, VOQ, 45, VAQ/VEQ, 36, aircrew, 79, TLF, 36.

Ramstein AB, Germany, APO AE 09094-0385; adjacent to the city of Ramstein, 10 mi. W of Kaiserslautern. **Phone:** (cmcl, from CONUS) 011-49-6371-47-113; DSN 480-1110. **Majcom:** USAFE. **Host:** 86th AW. **Mission:** C-9, C-20, C-21, and C-130E operations; provides inter- and intratheater airlift, intratheater aeromedical evacuation, and CONUS staging and aeromedical evacuation. Wing commander also serves as commander of the Kaiserslautern Military Community. **History:** activated and US presence began 1953. **Area:** 10,261 acres. **Runway:** 8,015 ft. **Altitude:** 782 ft. **Personnel:** permanent party military, 13,660; DOD US civilians, 2,123 (NAF, 2,996); local nationals, 5,383. **Housing:** single family, officer, 465, enlisted, 4,674; unaccompanied, UOQ, 60 (includes NATO), dormitory rooms, 1,724 (Air Force only); visiting, VOQ, 582, VAQ/VEQ, 1,459, TLF, 182. **Clinic.**

Randolph AFB, Tex. 78150-5000; 17 mi. ENE of San Antonio. **Phone:** 210-652-1110; DSN 487-1110. **Majcom:** AETC. **Host:** 12th FTW. **Mission:** conducts AT-38, T-1A, T-6, T-37, and T-38 instructor pilot training; Introduction to Fighter Fundamentals in AT-38; Joint Undergraduate Navigator Training in the T-43; electronic warfare officer training; C-21A airlift. **Major tenants:** AETC; 19th Air Force; Air Force Personnel Center; Air Force Manpower and Innovation Agency; Air Force Services Agency; Air Force Recruiting Service. **History:** dedicated June 1930. Named for Capt. William M. Randolph, killed Feb. 17, 1928. **Area:** 5,044 acres. **Runways:** two parallel, (W) 9,350 ft. and (E) 8,350 ft. **Altitude:** 761 ft. **Personnel:** permanent party military, 5,387; DOD civilians, 4,512; contract employees, 1,793. **Housing:** single family, officer, 218, enlisted, 801; unaccompanied, UOQ, 202, UAQ/UEQ, 275; visiting, VOQ, 348, VAQ/VEQ, 171, TLF, 30. **Clinic.**

Robins AFB, Ga. 31098; 15 mi. SSE of Macon at Warner Robins. **Phone:** 478-926-1110; DSN 468-1110. **Majcom:** AFMC. **Host:** Warner Robins Air Logistics Center. **Mission:** provides worldwide logistics management for the C-5, C-130, C-141, and F-15, helicopters, missiles, and remotely piloted vehicles; LANTIRN system, JTIDS, avionics, most Air Force airborne electronic warfare equipment, airborne communications equipment, airborne bomb- and gun-directing systems, fire-fighting equipment, general-purpose vehicles, and the USAF portion of the Global Command and Control System. **Major tenants:** Air Force Reserve Command; 93rd Air Control Wing (ACC), E-8; 116th BW (ANG), B-1B; 19th ARG (AMC), KC-135; 5th Combat Communications Gp. (ACC). **His-**

tory: 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, 5,233; DOD civilians, 12,365; contract employees, 5,514. **Housing:** single family, officer, 244, enlisted, 1,225; visiting, VOQ, 134, VAQ/VEQ, 82, TLF, 50. **Clinic.**

Schriever AFB, Colo. 80912-5000; 10 mi. E of Colorado Springs. **Phone:** 719-567-1110; DSN 560-1110. **Majcom:** AFSPC. **Host:** 50th Space Wing. **Mission:** command and control of DOD satellites. **Major tenants:** Joint National Test Facility; Space Warfare Center; Space Battlelab; 310th Space Gp. (AFRC). **History:** activated October 1985 as Falcon AFB. Renamed in June 1998 for Gen. Bernard A. Schriever. **Area:** 3,840 acres. **Runway:** none. **Altitude:** 6,267 ft. **Personnel:** permanent party military, 2,075; DOD civilians, 309; contract employees, 1,781. **Housing:** none. **Medical aid station and dental clinic.**

Scott AFB, Ill. 62225-5000; 6 mi. ENE of Belleville. **Phone:** 618-256-1110; DSN 576-1110. **Majcom:** AMC. **Host:** 375th AW. **Mission:** C-9 and C-21 operations. **Major tenants:** Transportation Command; Air Mobility Command; Air Force Communications Agency; Defense Information Technology Contracting Office; 126th ARW (ANG), KC-135; 932nd AW (AFRC), C-9. **History:** activated June 14, 1917. Named for Cpl. Frank S. Scott, the first enlisted man to die in an aircraft accident, killed Sept. 28, 1912. **Area:** 3,230 acres. **Runways:** 10,000 ft. and 8,000 ft. (joint-use airfield). **Altitude:** 453 ft. **Personnel:** permanent party military, 6,177; DOD civilians, 2,168; contract employees, 1,300. **Housing:** single family, officer, 304, enlisted, 1,122; unaccompanied, UAQ/UEQ, 558 beds; visiting, VOQ, 220, VAQ/VEQ, 169, TLF, 17. **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:** 3,233 acres. **Runway:** 11,758 ft. **Altitude:** 110 ft. **Personnel:** permanent party military, 4,400; DOD civilians, 1,200. **Housing:** single family, officer, 153, enlisted, 1,536; unaccompanied, UOQ, 20; UAQ/UEQ, 622 rooms; visiting, VOQ, 72, VAQ/VEQ, 39, TLF, 69. **Clinic.**

Shaw AFB, S.C. 29152-5000; 10 mi. WNW of Sumter. **Phone:** 803-895-1110; DSN 965-1110. **Majcom:** ACC. **Host:** 20th FW. **Mission:** F-16CJ operations. **Major tenants:** 9th Air Force (ACC); Central Command Air Forces. **History:** activated Aug. 30, 1941. Named for 1st Lt. Ervin D. Shaw, one of the first Americans to see air action in WWI, killed in France July 9, 1918. **Area:** 3,363 acres; supports another 13,000 acres. **Runways:** 10,000 ft. and 8,000 ft. **Altitude:** 242 ft. **Personnel:** permanent party military, 5,800; DOD civilians, 880. **Housing:** single family, officer, 162, enlisted, 1,542; unaccompanied, UAQ/UEQ, 988; visiting, VOQ, 74, VAQ/VEQ, 66, TLF, 40. **Hospital** (no emergency room).

Sheppard AFB, Tex. 76311-5000; 4 mi. N of Wichita Falls. **Phone:** 940-676-2511; DSN 736-2511. **Majcom:** AETC. **Host:** 82nd Training Wing. **Mission:** largest of AETC's four technical training centers. Conducts resident training in aircraft maintenance, civil engineering, communications, comptroller, transportation, and various medical specialties; provides instruction in a wide range of specialties at more than 40 USAF installations worldwide. **Major tenant:** 80th FTW (AETC), conducts T-37 and T-38 UPT, instructor pilot training in the Euro–NATO Joint Jet Pilot Training program, and Introduction to Fighter Fundamentals course with AT-38 aircraft. **History:** activated June 14, 1941. Named for US Sen. Morris E. Sheppard, who died April 9, 1941. **Area:** 6,158 acres. **Runways:** 13,100 ft., 8,800 ft., 7,000 ft., and 6,000 ft. **Altitude:** 1,015 ft. **Personnel:** permanent party military, 3,550; DOD civilians, 1,356. **Housing:** single family, officer, 200, enlisted, 1,080; unaccompanied, UOQ, 193, UAQ/UEQ (permanent party, not pipeline), 338; visiting, VOQ, 426, VAQ/VEQ/NPS/TLF, 7,472. **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-10 and HARM–equipped F-16 operations; air control squadron ops with logistics responsibilities at dozens of GSUs. **History:** built 1953 by the French and given to US. Named after nearby town. **Area:** 1,282 acres. **Runway:** 10,000 ft. **Altitude:** 1,196 ft. **Personnel:** permanent party military, 4,400; DOD US civilians, 300; local nationals, 730; NAF and DODDS, 550. **Housing:** single family, officer, 121, enlisted, 1,983; visiting, 116 rooms, TLF, 140. **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 Wing (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:** 5,000 acres. **Runways:** 11,100 ft. and 10,000 ft. **Altitude:** 1,291 ft. **Personnel:** permanent party military, 6,943; DOD civilians, 15,118. **Housing:** single family, officer, 108, enlisted, 622. **Hospital.**

Travis AFB, Calif. 94535-5000; 50 mi. NE of San Francisco at Fairfield. **Phone:** 707-424-1110; DSN 837-1110. **Majcom:** AMC. **Host:** 60th AMW. **Mission:** C-5 and KC-10 operations. **Major tenants:** 15th Air Force (AMC); 349th AMW (AFRC Assoc.); USAF Band of the Golden West; Air Museum. **History:** activated May 17, 1943. Named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950. **Area:** 6,383 acres. **Runways:** two, each approx. 11,000 ft. **Altitude:** 62 ft. **Personnel:** permanent party military, 7,197; DOD civilians, 1,481; contract employees, 51; NAF employees, 424. **Housing:** single family, officer, 275, enlisted, 2,180; unaccompanied, UAQ/UEQ, 2,708 spaces; visiting, VOQ, 183, VAQ/VEQ, 238, TLF, 288. **David Grant Medical Center.**

Tyndall AFB, Fla. 32403-5000; 12 mi. E of Panama City. **Phone:** 850-283-1113; DSN 523-1113. **Majcom:** AETC. **Host:** 325th FW. **Mission:** F-15 operations; trains USAF F-15 air-to-air pilots. **Major tenants:** 1st Air Force (ANG); Southeast Air Defense Sector (ANG); 53rd Weapons Evaluation Gp. (ACC); Air Force Civil Engineer Support Agency. **History:** activated Dec. 7, 1941. Named for 1st Lt. Frank B. Tyndall, WWI fighter pilot killed July 15, 1930. **Area:** 29,102 acres. **Runways:** 10,000 ft., 8,075 ft., and 7,000 ft. **Altitude:** 18 ft. **Personnel:** permanent party military, 3,951; DOD civilians, 1,205; contract employees, 1,510. **Housing:** single family, officer, 123, enlisted, 919; unaccompanied, UAQ/UEQ, 10 dorms/484 beds; visiting, VOQ, 6 dorms/219 beds, VAQ/VEQ, 8 dorms/406 beds, TLF, 5 units/40 suites. **Clinic.**

US Air Force Academy, Colo. 80840-5025; N of Colorado Springs. **Phone:** 719-333-1818; DSN 333-1110. **Host:** USAFA. **Mission:** inspires and develops outstanding young men and women to become Air Force officers with knowledge, character, and discipline. **History:** established April 1, 1954. Moved to permanent location August 1958. **Area:** 18,325 acres. **Runways:** 4,500 ft., 3,500 ft., and 2,300 ft. **Altitude:** 7,200 ft. **Personnel:** permanent party military, 2,227; cadets, 4,000; DOD civilians, 1,766. **Housing:** single family, officer, 619, enlisted, 609; unaccompanied, UAQ/UEQ, 164; visiting, VOQ, 76, 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. **Runway:** 5,038 ft. **Altitude:** 1,007 ft. **Personnel:** permanent party military, 875; DOD civilians, 181; contract employees, 1,200. **Housing:** single family, officer, 110, enlisted, 120; unaccompanied, UOQ, 210, UAQ/UEQ, 109; visiting, VOQ, 48, TLF, 10, DV suites, 6. **Clinic.**

Vandenberg AFB, Calif. 93437-5000; 8 mi. NNW of Lompoc. **Phone:** 805-606-1110); DSN 276-1110. **Majcom:** AFSPC. **Host:** 30th Space Wing. **Mission:** conducts polar-orbiting space launches and supports R&D tests and launch range operations for DOD, USAF, and NASA space, ballistic missile, and aeronautical systems and commercial space launches; provides test support for DOD space and ICBM systems; furnishes facilities and essential services to more than 36 aerospace contractors. **Major tenants:** 14th Air Force (AFSPC); 381st Training Gp. (AETC); 576th Flight Test Sq. (Space Warfare Center). **History:** originally Army's Camp Cooke. Activated October 1941; taken over by USAF June 7, 1957. Renamed for Gen. Hoyt S. Vandenberg, USAF's second Chief of Staff. **Area:** 98,400 acres. **Runway:** 15,000 ft. **Altitude:** 367 ft. **Personnel:** permanent party military, 3,631; DOD civilians, 1,088; contract employees, 3,074. **Housing:** single family, officer, 447, enlisted, 1,367. **Clinic.**

Whiteman AFB, Mo. 65305-5000; 2 mi. S of Knob Noster. **Phone:** 660-687-1110; DSN 975-1110. **Majcom:** ACC. **Host:** 509th BW. **Mission:** B-2 operations. **Major tenants:** 442nd FW (AFRC), OA-10; 1st Battalion, 135th Aviation Regiment (ARNG); Mobile Inshore Undersea Warfare Unit 114 (Navy Reserve). **History:** activated 1942. Named for 2nd Lt. George A. Whiteman, first pilot to die in aerial combat during the attack on Pearl Harbor. **Area:** 5,219 acres. **Runway:** 12,400 ft. **Altitude:** 871 ft. **Personnel:** permanent party military, 3,376; DOD civilians, 1,895. **Housing:** single family, officer, 94, enlisted, 1,031; unaccompanied, enlisted, 880 dorm spaces; visiting, VOQ, 52, VAQ/VEQ, 35, TLF, 31. **Clinic.**

Wright–Patterson AFB, Ohio 45433; 10 mi.

ENE of Dayton. **Phone:** 937-257-1110; DSN 787-1110. **Majcom:** AFMC. **Host:** Aeronautical Systems Center. **Mission:** develops, acquires, modernizes, and sustains aerospace systems. **Major tenants:** Air Force Materiel Command; Air Force Research Laboratory (AFMC); Air Force Security Assistance Center (AFMC); 445th AW (AFRC), C-141; Air Force Institute of Technology (AETC); USAF Museum. **History:** originally separate, Wright Field and Patterson Field were merged and redesignated Wright–Patterson AFB Jan. 13, 1948. Named for aviation pioneers Orville and Wilbur Wright and for 1st Lt. Frank S. Patterson, killed June 19, 1918. The Wright brothers did much of their early flying on Huffman Prairie, now in Area C of present base. The prairie is part of the Dayton Aviation Heritage National Historical Park. Site of US Air Force Marathon, held annually on Saturday nearest Sept. 18. **Area:** 8,145 acres. **Runway:** 12,600 ft. **Altitude:** 824 ft. **Personnel:** permanent party military, 5,878; DOD civilians, 10,532; contract employees, 3,600. **Housing:** single family, officer, 742, enlisted, 1,550; unaccompanied, UAQ/UEQ, 350; visiting, VOQ, 488, VAQ/VEQ, 75, TLF, 40. **Wright–Patterson Medical Center.**

Yokota AB, Japan, APO AP 96328-5000; approx. 28 mi. W of downtown Tokyo. **Phone:** (cmcl, from CONUS) 011-81-311-755-1110; DSN 315-225-1110. **Majcom:** PACAF. **Host:** 374th AW. **Mission:** C-9, C-21, C-130, and UH-1N operations. Primary aerial port in Japan. **Major tenants:** US Forces, Japan; 5th Air Force (PACAF); 630th AMSS (AMC); Det. 1, Air Force Band of the Pacific; American Forces Network Tokyo. **History:** opened as Tama AAF by the Japanese in 1939. **Area:** 1,750 acres. **Runway:** 11,000 ft. **Altitude:** 457 ft. **Personnel:** permanent party military, 3,654; DOD civilians, 1,415; local nationals, 2,271. **Housing:** single family, 2,257; unaccompanied, UOQ, 220, UAQ/UEQ, 860; visiting, VOQ, 196, VAQ/VEQ, 64, TLF, 94. **Hospital.**

ANG and AFRC Bases

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 Installations" section.

ANG personnel are organized into two categories. Part-time personnel are traditional Guardsmen who work in the private sector during the week, serve in ANG one weekend each month, and go on active duty for two weeks during the summer. If called up by the President, they go on active military status.

ANG's second category, full-time support personnel, are Active Guard Reserve, Title 32, and Title 5 personnel. Active Guard Reserves are assigned to the state. They do not serve at the national level, but they receive the same benefits as regular active military. Title 32 personnel are civilians employed full-time in ANG, but they wear two hats: They can go on active military service if their unit gets called up. They also participate in ANG weekend training exercises once a month and for two weeks in the summer. Title 5 personnel are federal civilian employees who hold administrative positions in ANG.

Atlantic City IAP, N.J. 08232-9500; 9 mi. NW of Atlantic City. **Phone:** 609-645-6000; DSN 455-6000. **Unit:** 177th Fighter Wing (ANG). **Area:** 256 acres. **Runway:** 10,000 ft. **Altitude:** 76 ft. **Full-time personnel:** 284.

Bangor IAP, Maine 04401-3051; 4 mi. NW of Bangor. **Phone:** 207-990-7700; DSN 698-7700. **Units:** 101st Air Refueling Wing (ANG); 776th Radar Sq. (ACC). **Area:** 503 acres. **Runway:** 11,400 ft. **Altitude:** 178 ft. **Full-time personnel:** 329. Small BX.

Barnes MAP, 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:** 279.

Birmingham Airport, Ala. 35217-3545, 7 mi. E of Birmingham. **Phone:** 205-714-2000; DSN 778-2210. **Unit:** 117th Air Refueling Wing (ANG). **Area:** 145 acres. **Runway:** 10,000 ft. **Altitude:** 644 ft. **Full-time personnel:** 276.

Boise Air Terminal (Gowen Field), Idaho 83705-8006; 1 mi. S of Boise. **Phone:** 208-422-5322; DSN 422-5322. **Units:** 124th Wing (ANG). Also host to ARNG (Army field training site) and Marine Corps Reserve. **History:** named for Lt. Paul R. Gowen, killed in B-10 crash July 11, 1938. **Area:** 576 acres. **Runway:** 9,800 ft. **Altitude:** 2,836 ft. **Full-time personnel:** 405. Limited transient facilities available during ARNG camps.

Bradley IAP, Windsor Locks, Conn. 06026-9309; 15 mi. N of Hartford. **Phone:** 860-292-2526; DSN 636-8310. **Units:** 103rd Fighter Wing (ANG); ARNG aviation battalion. **History:** named for Lt. Eugene M. Bradley, killed in P-40 crash August 1941. **Area:** 148 acres. **Runway:** 9,600 ft. **Altitude:** 172 ft. **Full-time personnel:** 274.

Burlington IAP, Vt. 05403-5872; 1 mi. E of Burlington. **Phone:** 802-660-5215; DSN 220-5215. **Unit:** 158th Fighter Wing (ANG). **Area:** 223 acres. **Runway:** 7,800 ft. **Altitude:** 355 ft. **Full-time personnel:** 290.

Capital MAP, Ill. 63707-5001; 4 mi. NW of Springfield. **Phone:** 217-757-1219; DSN 892-8219. **Unit:** 183rd Fighter Wing (ANG). **Area:** 91 acres. **Runway:** 8,000 ft. **Altitude:** 588 ft. **Full-time personnel:** 305.

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:** 286.

Charlotte/Douglas IAP, N.C. 28208, 6 mi. W of downtown Charlotte. **Phone:** 704-391-4100; DSN 583-9210. **Unit:** 145th Airlift Wing (ANG). **Area:** 79 acres. **Runway:** 10,000 ft. **Altitude:** 745 ft. **Full-time personnel:** 290.

Cheyenne MAP, Cheyenne, Wyo. 82009. **Phone:** 307-772-6110; DSN 943-6110. **Unit:** 153rd Airlift Wing (ANG). **Area:** 77 acres. **Runway:** 9,400 ft. **Altitude:** 6,250 ft. **Full-time personnel:** 292.

Dannelly Field, Ala. 36108; 7 mi. SW of downtown Montgomery. **Phone:** 334-394-7200; DSN 358-9200. **Units:** 187th Fighter Wing (ANG); 232nd Combat Communications Sq. **History:** named for Ens. Clarence Dannelly, Navy pilot killed during WWII. **Area:** 143 acres. **Runway:** 9,000 ft. **Altitude:** 221 ft. **Full-time personnel:** 299.

Des Moines IAP, Iowa 50321-2799; within Des Moines. **Phone:** 515-256-8210; DSN 946-8210. **Unit:** 132nd Fighter Wing (ANG). **Area:** 148 acres. **Runway:** 9,000 ft. **Altitude:** 942 ft. **Full-time personnel:** 294.

Dobbins ARB, Marietta, Ga. 30069-5010; 16 mi. NW of Atlanta. **Phone:** 770-919-5000; DSN 925-5000. **Majcom:** AFRC. **Units:** Hq. 22nd Air Force (AFRC); 94th Airlift Wing (AFRC); Hq. Georgia ANG; Army Aviation Group (Georgia ARNG); US Army Reserve Center; Naval 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:** 1,068 ft. **Full-time personnel:** 200 ARTs; 300 civilians.

Duke Field, Fla. 32536; 6 mi. S of Crestview. **Phone:** 850-883-6347; DSN 872-6347. **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:** 1,430 ft. **Full-time personnel:** active duty, 300; ARTs, 300.

Duluth IAP, Minn. 55811-6036; 5 mi. WNW of Duluth. **Phone:** 218-727-6886; DSN 825-7210. **Unit:** 148th Fighter Wing (ANG). **Area:** 285 acres. **Runway:** 10,150 ft. **Altitude:** 1,430 ft. **Full-time personnel:** 323.

Eastern West Virginia RAP (Shepherd Field), W. Va. 25401-7702; 4 mi. S of Martinsburg. **Phone:** 304-262-5100; DSN 242-9210. **Unit:** 167th Airlift Wing (ANG). **Area:** 206 acres. **Runway:** 7,000 ft. **Altitude:** 557 ft. **Full-time personnel:** 279.

Ellington Field, Tex. 77034-5586; a city of Houston airport 20 mi. SE of downtown Houston. **Phone:** 281-929-2110; DSN 954-2110. **Units:** 147th Fighter Wing (ANG); NASA Flight Operations; US Coast Guard; ARNG; FAA. **History:** named for Lt. Eric L. Ellington, pilot killed November 1913. **Area:** 209 acres. **Runway:** 9,000 ft. **Altitude:** 1,000 ft. **Full-time personnel:** 305.

Forbes Field, Kan. 66619-5370; 6 mi. S of Topeka. **Phone:** 785-861-4210; DSN 720-4210. **Unit:** 190th Air Refueling Wing (ANG). **Area:** 193 acres.

ANGB	Air National Guard Base
ARB	Air Reserve Base
ARS	Air Reserve Station
IAP	International Airport
JRB	Joint Reserve Base
MAP	Municipal Airport
NAS	Naval Air Station
RAP	Regional Airport

Runway: 12,819 ft. **Altitude:** 1,079 ft. **Full-time personnel:** 311.

Fort Smith MAP, 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:** 292.

Fort Wayne IAP, Ind. 46809-0122; 8 mi. SSW of downtown Fort Wayne. **Phone:** 219-478-3210; DSN 786-1210. **Unit:** 122nd Fighter Wing (ANG). **Area:** 160 acres. **Runway:** 12,000 ft. **Altitude:** 802 ft. **Full-time personnel:** 286.

Francis S. Gabreski IAP, N.Y. 11978-1294; 1 mi. N of Westhampton Beach. **Phone:** 631-288-7400; DSN 456-7300. **Unit:** 106th Rescue Wing (ANG). **History:** named for Col. Francis S. Gabreski. **Area:** 88 acres. **Runway:** 9,000 ft. **Altitude:** 67 ft. **Full-time personnel:** 257.

Fresno Yosemite IAP, 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:** 300.

General Mitchell IAP/ARS, Wis. 53207-6299; 7 mi. S of Milwaukee. **AFRC phone:** 414-482-5000; DSN 950-5000. **ANG phone:** 414-944-8410; DSN 580-8410. **Majcom:** AFRC. **Units:** 440th Airlift Wing (AFRC); 128th Air Refueling Wing (ANG). **Area:** AFRC, 103 acres; ANG, 70 acres. **Runway:** 9,690 ft. **Altitude:** 670 ft. **Full-time personnel:** AFRC, 436; ANG, 272.

Greater Peoria RAP, Ill. 61607-5023; 7 mi. SW of Peoria. **Phone:** 309-633-5210; DSN 724-5210. **Unit:** 182nd Airlift Wing (ANG). **Area:** 339 acres. **Runway:** 10,000 ft. **Altitude:** 656 ft. **Full-time personnel:** 291.

Great Falls IAP, Mont. 59404-5000; 5 mi. SW of Great Falls. **Phone:** 406-791-6285; DSN 279-2285. **Unit:** 120th Fighter Wing (ANG). **Area:** 141 acres. **Runway:** 10,502 ft. **Altitude:** 3,679 ft. **Full-time personnel:** 300.

Grissom ARB, Ind. 46971-5000; 15 mi. N of Kokomo. **Phone:** 765-688-5211; DSN 928-1110. **Majcom:** AFRC. **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. Small BX. **Full-time personnel:** ARTs, 300; civilians, 400.

Gulfport–Biloxi RAP, Miss. 39507; within Gulfport. **Phone:** 228-214-6002; DSN 363-8002. **Units:** Combat Readiness Training Center; 255th Tactical Control Sq. (ANG); 1108th Aviation Repair Depot (ARNG); 173rd Civil Engineering Flt. An air-to-ground gunnery range is located 70 mi. N of site. **Area:** 224 acres. **Runway:** 9,000 ft. **Altitude:** 26 ft. **Full-time personnel:** 120.

Harrisburg IAP, 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:** 319.

Hector IAP, Fargo, N.D. 58102. **Phone:** 701-241-7241; DSN 362-8110. **Unit:** 119th Fighter Wing (ANG). **Area:** 250 acres. **Runway:** 9,545 ft. **Altitude:** 896 ft. **Full-time personnel:** 314.

Homestead ARS, Fla. 33039-1299; 5 mi. NE of Homestead. **Phone:** 305-224-7000; DSN 791-7000. **Majcom:** AFRC. **Units:** 482nd Fighter Wing (AFRC); Det. 1, 125th Fighter Wing (Fla. ANG, NORAD); US Customs Miami Aviation Branch; Fla. Army National Guard 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, 550; ANG, 17. Billeting available.

Hulman RAP, Ind. 47803; 2 mi. E of Terre Haute. **Phone:** 812-877-5210; DSN 724-1210. **Unit:** 181st Fighter Wing (ANG). **Area:** 37 acres. **Runway:** 9,025 ft. **Altitude:** 585 ft. **Full-time personnel:** 282.

Jackson IAP, Miss. 39208-8881; 6 mi. E of Jackson. **Phone:** 601-936-8730; DSN 731-9730. **Unit:** 172nd Airlift Wing (ANG). **Area:** 140 acres. **Runway:** 10,000 ft. **Altitude:** 346 ft. **Full-time personnel:** 292.

Jacksonville IAP, Fla. 32218-7933; within Jacksonville. **Phone:** 904-741-7100; DSN 641-7100. **Unit:** 125th Fighter Wing (ANG). **Area:** 332 acres. **Runway:** 10,000 ft. **Altitude:** 25 ft. **Full-time personnel:** 362.

Joe Foss Field, S.D. 57104-0264; N side of Sioux Falls. **Phone:** 605-988-5700; DSN 798-7700. **Unit:** 114th Fighter Wing (ANG). **History:** named for Brig. Gen. Joseph J. Foss, WWII ace, former governor, former AFA national president, and founder of the S.D. ANG. **Area:** 234 acres. **Runway:** 9,000 ft. **Altitude:** 1,420 ft. **Full-time personnel:** 281.

Key Field, Miss. 39307-7112; 3 mi. S of Meridian. **Phone:** 601-484-9000; DSN 778-9000. **Units:** 186th Air Refueling Wing (ANG); 238th Combat Communications Sq. (ANG). **Area:** 117 acres. **Runway:** 10,000 ft. **Altitude:** 295 ft. **Full-time personnel:** 320.

Klamath Falls IAP (Kingsley Field), Ore. 97603; 5 mi. S of Klamath Falls. **Phone:** 541-885-6350; DSN 830-6350. **Units:** 173rd Fighter Wing (ANG); 142nd OLAD (ANG). **Area:** 381 acres. **Runway:** 10,301 ft. **Altitude:** 4,088 ft. **Full-time personnel:** 391.

Kulis ANGB, Alaska 99502-1988; at Ted Stevens Anchorage IAP. **Phone:** 907-249-1176; DSN 317-626-1176. **Units:** 176th Wing (ANG); 144th Airlift Sq. (ANG); 210th Air Rescue Sq. (ANG). **History:** named for Lt. Albert Kulis, killed in training flight in 1954. **Area:** 129 acres. **Runway:** 10,897 ft. **Altitude:** 94 ft. **Full-time personnel:** 439.

Lambert–St. Louis IAP, Mo. 63044-2371; 20 mi. NW of downtown St. Louis. **Phone:** 314-263-6200; DSN 693-6200. **Unit:** 131st Fighter Wing (ANG). **Area:** 48 acres. **Runway:** 11,000 ft. **Altitude:** 604 ft. **Full-time personnel:** 353.

Lincoln MAP, 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:** 186 acres. **Runway:** 13,500 ft. **Altitude:** 1,050 ft. **Full-time personnel:** 278.

Louisville IAP/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. **Runway:** 10,000 ft. **Altitude:** 473 ft. **Full-time personnel:** 297.

Luis Munoz Marin IAP, Puerto Rico 00979-1514; E of San Juan. **Phone:** 787-253-5100; DSN 860-9210. **Unit:** 156th Airlift Wing (ANG). **Area:** 95 acres. **Runway:** 10,000 ft. **Altitude:** 6.4 ft. **Full-time personnel:** 266.

Mansfield Lahm Airport, Ohio 44903-5000; 3 mi. N of Mansfield. **Phone:** 419-521-0100; DSN 696-6210. **Unit:** 179th Airlift Wing (ANG). **History:** named for nearby city and aviation pioneer Brig. Gen. Frank P. Lahm. **Area:** 67 acres. **Runway:** 9,000 ft. **Altitude:** 1,299 ft. **Full-time personnel:** 236. Coast Guard exchange.

March ARB, Calif. 92518-5000; 9 mi. SE of downtown Riverside. **Phone:** 909-655-1110; DSN 947-1110. **Majcom:** AFRC. **Unit:** 452nd Air Mobility Wing (AFRC). **AFRC Phone:** 909-655-4520; DSN 947-4520. 4th Air Force (AFRC); 163rd Air Refueling Wing (Calif. ANG). **ANG Phone:** 909-655-5163; DSN 947-5163; 119th Fighter Gp. (N.D. ANG); 4th Combat Camera Sq.; Armed Forces Radio and Television Broadcast Center; Defense Visual Information Center; Air Force Audit Agency Financial and Support Audit 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, 576; DOD civilians, 628; ANG, 291. **Housing:** VOQ, 120 beds, VAQ, 330 beds.

Martin State Airport, Md. 21220-2899; 8 mi. E 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:** 422.

McEntire ANGS, S.C. 29044; 9 mi. E of Columbia. **Phone:** 803-647-8300; DSN 583-8201. **Units:** 169th Fighter Wing (ANG); 240th Combat Communications Sq. (ANG); 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:** 348.

McGhee Tyson Airport, Tenn. 37777; 10 mi. SW of Knoxville. **Phone:** 865-985-3200; DSN 266-8200. **Units:** 134th Air Refueling Wing (ANG); 228th Combat Communications Sq.; ANG's I.G. Brown Professional Military Education Center. **Area:** 346 acres. **Runway:** 9,008 ft. **Altitude:** 923 ft. **Full-time personnel:** 342.

Memphis IAP, Tenn. 38118; within Memphis. **Phone:** 901-541-7111; DSN 966-8120. **Unit:** 164th Airlift Wing (ANG). **Area:** 103 acres. **Runway:** 11,120 ft. **Altitude:** 332 ft. **Full-time personnel:** 272.

Minneapolis–St. Paul IAP/ARS, Minn. 55420-2000; in Minneapolis, near confluence of the Mississippi and Minnesota rivers. **AFRC phone:** 612-713-1110; DSN 783-1000. **ANG phone:** 612-713-2501; DSN 783-2501. **Majcom:** AFRC. **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. **Runway:** 10,000 ft. **Altitude:** 840 ft. **Full-time personnel:** AFRC, 153; ANG, 265. Lodging, clubs, fitness center, and exchange available.

Moffett Federal Airfield, Calif. 94035; 2 mi. N of Mountain View. **Phone:** 650-603-9129; DSN 359-9129. **Unit:** 129th Rescue Wing (ANG). **Area:** 13 acres. **Runway:** 9,200 ft. **Altitude:** 34 ft. **Full-time personnel:** 241.

NAS Fort Worth JRB (Carswell Field), Tex. 76127-6200, 2 mi. N of White Settlement. **AFRC Phone:** 817-782-5000; DSN 739-5000. **ANG Phone:** 817-852-3202; DSN 874-3202. **Units:** 301st Fighter Wing (AFRC); 136th Airlift Wing (ANG). **Area:** AFRC, 1,805 acres; ANG, 81 acres. **Runway:** 12,000 ft. **Altitude:** 650 ft. **Full-time personnel:** AFRC, 250 ARTs, 200 civilians; ANG, 267.

NAS New Orleans JRB, La. 70143-5012, 15 mi. S of New Orleans. **ANG Phone:** 504-391-7046; DSN 457-8300. **AFRC Phone:** 504-678-3292; DSN 678-3292. **Units:** 159th Fighter Wing (ANG);

926th Fighter Wing (AFRC). **Area:** 3,245 acres. **Runway:** 8,000 ft. **Altitude:** 3 ft. **Full-time personnel:** ANG, 344; AFRC, 300.

Nashville Metropolitan Airport, Tenn. 37217-2538; 6 mi. SE of downtown Nashville. **Phone:** 615-399-5410; DSN 788-6210. **Unit:** 118th Airlift Wing (ANG). **Area:** 85 acres. **Runway:** 11,150 ft. **Altitude:** 570 ft. **Full-time personnel:** 275.

New Castle County Airport, Del. 19720; 5 mi. S of Wilmington. **Phone:** 302-323-3500; DSN 445-7500. **Units:** 166th Airlift Wing (ANG); ARNG aviation company. **Area:** 79 acres. **Runway:** 7,170 ft. **Altitude:** 80 ft. **Full-time personnel:** 238.

Niagara Falls IAP/ARS, N.Y. 14304-5001; 6 mi. E of Niagara Falls. **AFRC Phone:** 716-236-2000; DSN 238-2000. **ANG Phone:** 716-236-2594, DSN 238-2594. **Majcom:** AFRC. **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:** 9,130 ft. **Altitude:** 590 ft. **Full-time personnel:** AFRC, 414; ANG, 274. Lodging, exchange, and consolidated club available.

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; 567th USAF Band (ANG); 101st and 202nd Weather Flts. (ANG). **History:** named for 1st Lt. Frank J. Otis, ANG flight surgeon and pilot killed in 1937 crash. **Area:** 3,611 acres. **Runway:** 9,500 ft. **Altitude:** 200 ft. **Full-time personnel:** 534.

Pease Int'l. Tradeport ANGS, Portsmouth, N.H. 03803-0157. **Phone:** 603-430-2453; DSN 852-2453. **Unit:** 157th Air Refueling Wing (ANG). **Area:** 218 acres. **Runway:** 11,318 ft. **Altitude:** 101 ft. **Full-time personnel:** 338.

Pittsburgh IAP/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. **Majcom:** AFRC. **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, 369; ANG, 402. **Housing:** VOQ, 24, VEQ, 230. No on-base housing. Limited exchange.

Portland IAP, Portland, Ore. 97218-2797. **Phone:** 503-335-4020; DSN 638-4020. **Units:** 142nd Fighter Wing (ANG); 244th Combat Communications Sq. (ANG); 272nd Combat Communications Sq. (ANG); Oregon Wing, CAP; 939th Rescue Wing (AFRC). **Area:** 246 acres. **Runway:** 11,000 ft. **Altitude:** 18 ft. **Full-time personnel:** 455.

Quonset State Airport, R.I. 02852; 20 mi. S of Providence. **Phone:** 401-886-1210; DSN 476-3210. **Unit:** 143rd Airlift Wing (ANG). **Area:** 79 acres. **Runway:** 7,800 ft. **Altitude:** 19 ft. **Full-time personnel:** 245.

Reno/Tahoe IAP (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. **Runway:** 9,000 ft. **Altitude:** 4,660 ft. **Full-time personnel:** 285.

Richmond IAP (Byrd Field), Va. 23150; 4 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:** 277.

Rickenbacker IAP, Ohio 43217-5887; 13 mi. SSW of Columbus. **Phone:** 614-492-4468; DSN 950-4468. **Units:** 121st Air Refueling Wing (ANG); Naval Air Reserve and Naval Construction. **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:** 386.

Rosecrans Memorial Airport, Mo. 64503; 4 mi. W of St. Joseph. **Phone:** 816-236-3300; DSN 956-3300. **Unit:** 139th Airlift Wing (ANG). **Area:** 102 acres. **Runway:** 8,059 ft. **Altitude:** 813 ft. **Full-time personnel:** 301.

Salt Lake City IAP, Utah 84116; 3 mi. W of downtown Salt Lake City. **Phone:** 801-595-2200; DSN 924-9200. **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:** 410.

Savannah IAP, Ga. 31408; 4 mi. NW of Savannah. **Phone:** 912-966-8210; DSN 860-8210. **Units:** 165th Airlift Wing (ANG); field training site. **Area:** 234 acres. **Runway:** 9,351 ft. **Altitude:** 51 ft. **Full-time personnel:** 250. **Housing:** officer, 156, enlisted, 736.

Schenectady County Airport, N.Y. 12302-9752; 2 mi. N of Schenectady. **Phone:** 518-344-2300; DSN 974-9300. **Unit:** 109th Airlift Wing (ANG). **Area:** 122 acres. **Runway:** 7,000 ft. **Altitude:** 328 ft. **Full-time personnel:** 494.

Selfridge ANGB, Mich. 48045-5046; 3 mi. NE of Mount Clemens. **Phone:** 810-307-5110; DSN 273-5110. **Units:** 127th Wing (ANG); 927th Air Refueling Wing (AFRC); Air Force, Army, Navy Reserve, Marine Corps Reserve, Army Reserve units; US Coast Guard Air Station for Detroit. **History:** activated July 1917; transferred to Michigan 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, 769; AFRC, 242.

Sioux Gateway Airport, Iowa 51111-1300; 7 mi. S of downtown Sioux City. **Phone:** 712-233-0210; DSN 585-0210. **Unit:** 185th Fighter Wing (ANG). **Area:** 292 acres. **Runway:** 9,000 ft. **Altitude:** 1,089 ft. **Full-time personnel:** 281.

Sky Harbor IAP, Phoenix, Ariz. 85034. **Phone:** 602-302-9000; DSN 853-9000. **Unit:** 161st Air Refueling Wing (ANG). **Area:** 60 acres. **Runway:** 12,000 ft. **Altitude:** 1,000 ft. **Full-time personnel:** 291.

Springfield–Beckley MAP, Ohio 45502-8783; 5 mi. S of Springfield. **Phone:** 937-327-2100; DSN 346-2100. **Units:** 178th Fighter Wing (ANG); 251st Combat Communications Gp. (ANG); 269th Combat Communications Sq. (ANG). **Area:** 114 acres. **Runway:** 8,999 ft. **Altitude:** 1,053 ft. **Full-time personnel:** 364.

Stewart IAP, Newburgh, N.Y. 12550-5042; 15 mi. N of US Military Academy (West Point). **Phone:** 914-563-2001; DSN 636-2001. **Units:** Hq. N.Y. ANG; 105th Airlift Wing (ANG); USMA subpost airport. **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:** 617. Most military services available through West Point or subpost.

Syracuse Hancock IAP, N.Y. 13211-7099; 4 mi. NE of Syracuse. **Phone:** 315-454-6100; DSN 489-9100. **Units:** 174th Fighter Wing (ANG); operations for Hancock ANGB; 152nd Tactical Control Gp.; 108th and 113th Tactical Control Sqs. (ANG). **Area:** 356 acres. **Runway:** 9,300 ft. **Altitude:** 421 ft. **Full-time personnel:** 301.

Toledo Express Airport, Ohio 43558; 14 mi. W of Toledo. **Phone:** 419-868-4180; DSN 580-4180. **Unit:** 180th Fighter Wing (ANG). **Area:** 135 acres. **Runway:** 10,000 ft. **Altitude:** 664 ft. **Full-time personnel:** 294.

Truax Field, Wis. 53704-2591; at Dane County RAP 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 Wisconsin 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:** 280. **Housing:** transient, 7.

Tucson IAP, Ariz. 85706-6099; within Tucson. **Phone:** 520-295-6210; DSN 924-6210. **Unit:** 162nd Fighter Wing (ANG). **Area:** 88 acres. **Runway:** 11,000 ft. **Altitude:** 2,556 ft. **Full-time personnel:** 993.

Tulsa IAP, Okla. 73115-1632; 6 mi. NE of downtown Tulsa. **Phone:** 918-832-8210; DSN 956-5210. **Units:** 138th Fighter Wing (ANG); 219th Electronic Installation Sq. **Area:** 81 acres. **Runway:** 10,000 ft. **Altitude:** 677 ft. **Full-time personnel:** 297.

Volk Field, Wis. 54618-5001; 90 mi. NW of Madison. **Phone:** 608-427-1210; DSN 946-3210. **Unit:** ANG field training site featuring air-to-air and air-to-ground gunnery ranges. **History:** named for Lt. Jerome A. Volk, first Wisconsin ANG pilot killed in the Korean War. **Area:** 2,231 acres. **Runway:** 9,000 ft. **Altitude:** 912 ft. **Full-time personnel:** 114.

W.K. Kellogg Airport, Battle Creek, Mich. 49015-5512. **Phone:** 616-963-1596; DSN 580-3210. **Unit:** 110th Fighter Wing (ANG). **Area:** 320 acres. **Runway:** 10,003 ft. **Altitude:** 929 ft. **Full-time personnel:** 263.

Westover ARB, Mass. 01022-5000; 10 mi. NE of Springfield. **Phone:** 413-557-1110; DSN 589-1110. **Majcom:** AFRC. **Units:** 439th Airlift Wing (AFRC); home of Army, Navy, and Marine Corps Reserve units. **History:** dedicated April 6, 1940. Named for Maj. Gen. Oscar Westover, Chief of the Air Corps, killed Sept. 21, 1938. **Area:** 2,386 acres. **Runway:** 11,600 ft. **Altitude:** 245 ft. **Full-time personnel:** ART, 472; DOD civilians, 441. **Housing:** VOQ, 41, VAQ, 142 beds.

Willow Grove ARS, Pa. 19090-5203; 14 mi. N of Philadelphia. **AFRC phone:** 215-443-1050; DSN 991-1050. **ANG phone:** 215-443-1500; DSN 991-1500. **Majcom:** AFRC. **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, 271; ANG, 265.

Will Rogers World Airport, Oklahoma City, Okla. 73179. **Phone:** 405-686-5210; DSN 940-5210. **Unit:** 137th Airlift Wing (ANG). **Area:** 133 acres. **Runway:** 9,800 ft. **Altitude:** 1,272 ft. **Full-time personnel:** 268.

Yeager Airport, W.Va. 25311; 4 mi. NE of downtown Charleston. **Phone:** 304-341-6126; DSN 366-6210. **Unit:** 130th Airlift Wing (ANG). **History:** named for Brig. Gen. Charles E. "Chuck" Yeager. **Area:** 109 acres. **Runway:** 6,300 ft. **Altitude:** 982 ft. **Full-time personnel:** 240.

Youngstown–Warren RAP/ARS, Ohio 44473-5910; 14 mi. N of Youngstown. **Phone:** 330-609-1000; DSN 346-1000. **Majcom:** AFRC. **Units:** 910th Airlift Wing (AFRC), Army Corps of Engineers, and Army, Navy, and Marine Corps Reserve units, FAA. **History:** activated 1953. **Area:** 230 acres. **Runways:** three, primary length 9,000 ft. **Altitude:** 1,196 ft. **Full-time personnel:** 446. **Lodging:** 112 beds. Limited exchange.

USAF Almanac

Records and Trophies

Absolute Aviation World Records

The desirability of a standard procedure to certify air records was recognized early in the history of powered flight. In 1905, representatives of Belgium, Germany, the US, Great Britain, France, Spain, Italy, and Switzerland met in Paris to form the Fédération Aéronautique Internationale, the world body of national aeronautic sporting interests. The FAI today comprises the national aero clubs of 77 nations and certifies national records as world records. Since 1922, the National Aeronautic Association, based in Arlington, Va., has been the US representative to the FAI. The NAA supervises all attempts at world and world-class records in the United States. Absolute world records are the supreme achievements of all the records open to flying machines.

Speed around the world, nonstop, nonrefueled: 115.65 mph (186.11 kph). Richard G. Rutan and Jeana L. Yeager in *Voyager* experimental aircraft at Edwards AFB, Calif., Dec. 14–23, 1986.

Great circle distance without landing: 24,986.727 miles (40,212.139 kilometers). Richard G. Rutan and Jeana L. Yeager in *Voyager* at Edwards AFB, Calif., Dec. 14–23, 1986.

Distance in a closed circuit without landing: 24,986.727 miles (40,212.139 kilometers). Richard G. Rutan and Jeana L. Yeager in *Voyager* at Edwards AFB, Calif., Dec. 14–23, 1986.

Altitude: 123,523.58 feet (37,650.00 meters). Alexander Fedotov flying E-266M, a modified MiG-25, at Podmoskovnoye, USSR, Aug. 31, 1977.

Altitude in an aircraft launched from a carrier airplane: 314,750.00 feet (95,935.99 meters). USAF Maj. Robert M. White flying North American X-15 No. 3 at Edwards AFB, Calif., July 17, 1962.

Altitude in horizontal flight: 85,068.997 feet (25,929.031 meters). USAF Capt. Robert C. Helt (pilot) and USAF Maj. Larry A. Elliott (RSO) in Lockheed SR-71A Blackbird at Beale AFB, Calif., July 28, 1976.

Speed over a straight course: 2,193.16 mph (3,529.56 kph). USAF Capt. Eldon W. Joersz (pilot) and USAF Maj. George T. Morgan Jr. (RSO) in Lockheed SR-71A Blackbird at Beale AFB, Calif., July 28, 1976.

Speed over a closed circuit: 2,092.294 mph (3,367.221 kph). USAF Majs. Adolphus H. Bledsoe Jr. (pilot) and John T. Fuller (RSO) in Lockheed SR-71A Blackbird at Beale AFB, Calif., July 27, 1976.

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.

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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.

1958 **USAF/Lockheed/GE F-104 team.** F-104. **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.

The Mackay Trophy

The Mackay Trophy was established by Clarence H. Mackay, an industrialist, philanthropist, communications pioneer, and aviation enthusiast. Presented by the National Aeronautic Association, the trophy recognizes "the most meritorious flight of the year" by an Air Force member, members, or organization.

1912 2nd Lt. Henry H. Arnold.
1913 2nd Lts. Joseph E. Carberry and Fred Seydel.
1914 Capt. Townsend F. Dodd and Lt. S.W. Fitzgerald
1915 Lt. B.Q. Jones.
1916–17 No award.
1918 Capt. Edward V. Rickenbacker.
1919 Lt. Col. Harold E. Hartney; Capts. John O. Donaldson, Lowell H. Smith, and F. Steinle; Lts. B.G. Bagby, D.B. Gish, E.M. Manzelman (posthumously), Belvin N. Maynard, R.S. Northington, and Alexander Pearson Jr.
1920 Capt. St. Clair Streett; 1st Lt. Clifford C. Nutt; 2nd Lts. C.H. Crumrine, Ross C. Kirkpatrick, and Eric H. Nelson; Sgts. Joe E. English, Edmond Henriques, and Albert T. Vierra.
1921 Lt. John A. Macready.
1922 Lts. John A. Macready and Oakley G. Kelly.
1923 Lts. John A. Macready and Oakley G. Kelly.
1924 Capt. Lowell H. Smith; 1st Lts. Leslie P. Arnold, Eric H. Nelson, and Leigh Wade; 2nd Lts. John Harding Jr. and Henry H. Ogden.
1925 Lts. Cyrus K. Bettis and Jimmy Doolittle.
1926 Pan American Goodwill Fliers: Maj. H.A. Dargue; Capts. Ira C. Eaker, A.B. McDaniel, and C.F. Woolsey (posthumously); 1st Lts. J.W. Benton (posthumously), M.S. Fairchild, C.McK. Robinson, B.S. Thompson, L.D. Weddington, and E.C. Whitehead.
1927 Lts. Albert F. Hegenberger and Lester J. Maitland.
1928 1st Lt. Harry A. Sutton.
1929 Capt. A.W. Stevens.
1930 Maj. Ralph Royce.
1931 Brig. Gen. Benjamin D. Foulois.
1932 11th Bombardment Sq., March Field, Calif., 1st Lt. Charles H. Howard.
1933 Capt. Westside T. Larson.
1934 Brig. Gen. Henry H. Arnold.
1935 Capts. O.A. Anderson and A.W. Stevens.
1936 Capt. Richard E. Nugent; 1st Lts. Joseph A. Miller and Edwin G. Simenson; 2nd Lts. Burton W. Armstrong, Herbert Morgan Jr., and William P. Ragsdale Jr.; TSgt. Gilbert W. Olson; SSgt. Howard M. Miller; Cpl. Air Mechanic 2nd Class Frank B. Connor.
1937 Capts. Carl J. Crane and George V. Holloman.
1938 2nd Bombardment Group, Lt. Col. Robert Olds.
1939 Majs. Caleb V. Haynes and William D. Old; Capt. John A. Samford; 1st Lts. Richard S. Freeman and Torgils G. Wold; MSgt. Adolph Cattarius; TSgts. William J. Heldt, Henry L. Hines, and David L. Spicer; SSgts. Russell E. Junior and James E. Sands.
1940–46 No award.
1947 Capt. Charles E. Yeager.
1948 Lt. Col. Emil Beaudry.
1949 Capt. James G. Gallagher and crew of *Lucky Lady II.*
1950 27th Fighter Wing.
1951 Col. Fred J. Ascani.
1952 Majs. Louis H. Carrington Jr. and Frederick W. Shook; Capt. Wallace D. Yancey.
1953 40th Air Division, SAC.
1954 308th Bombardment Wing (M) and 38th Air Div., SAC.
1955 Col. Horace A. Hanes.
1956 Capt. Iven C. Kincheloe Jr., Air Research and Development Command.
1957 93rd Bombardment Wing, SAC.
1958 TAC Air Strike Force, X-Ray Tango.
1959 US Air Force Thunderbirds.
1960 6593rd Test Sq., Hickam AFB, Hawaii.
1961 Lt. Col. William R. Payne and Majs. William L. Polthemus and Raymond R. Wagener, 43rd Bomb Wing, SAC.
1962 Maj. Robert G. Sowers and Capts. Robert MacDonald and John T. Walton.
1963 Capts. Donald R. Mack, John R. Ordemann, and Warren P. Tomsett; TSgt. Edsol P. Inlow; SSgts. Frank C. Barrett and Jack E. Morgan.
1964 464th Troop Carrier Wing, TAC.
1965 YF-12A Test Force (Col. Robert L. Stephens; Lt. Col. Daniel Andre; Majs. Walter F. Daniel and Noel T. Warner; Capt. James P. Cooney).
1966 Lt. Col. Albert R. Howarth.
1967 Maj. John H. Casteel; Capts. Dean L. Hoar and Richard L. Trail; MSgt. Nathan C. Campbell.
1968 Lt. Col. Daryl D. Cole.
1969 49th Tactical Fighter Wing, TAC.
1970 Capt. Alan D. Milacek and AC-119K crew (Capts. Roger E. Clancy, Ronald C. Jones, Brent C. O'Brien, and James A. Russell; TSgt. Albert A. Nash; SSgts. Adolfo Lopez Jr. and Ronald R. Wilson; Sgt. Kenneth E. Firestone; A1C Donnell H. Cofer).
1971 Lt. Col. Thomas B. Estes and Maj. Dewain C. Vick.
1972 Capts. Charles B. DeBellevue, Jeffrey S. Feinstein, and Richard S. "Steve" Ritchie.
1973 MAC aircrews.
1974 Majs. Willard R. MacFarlane, David W. Peterson, and Roger J. Smith.
1975 Maj. Robert W. Undorf.
1976 Capt. James A. Yule.
1977 C-5 aircrew (Capt. David M. Sprinkel and crew).
1978 C-5 aircrews (Lt. Col. Robert F. Schultz and crew and Capt. Todd H. Hohberger and crew, 436th Military Airlift Wing).
1979 Maj. James E. McArdle Jr.
1980 Crews S-21 and S-31, 644th Bombardment Sq.
1981 Capt. John J. Walters.
1982 B-52 Crew E-21, 19th Bombardment Wing.
1983 Capt. Robert J. Goodman and his crew, 42nd Bombardment Wing, SAC.
1984 Lt. Col. James L. Hobson Jr.
1985 Lt. Col. David E. Faught.
1986 KC-10 crew (Capts. M.D. Felman and T.M. Ferguson; MSgts. C. Bridges Jr., P.S. Kennedy, and G.G. Treadwell; TSgts. L.G. Bouler and G.M. Lewis; SSgts. S.S. Flores, S.A. Helms, and G.L. Smith), 68th Air Refueling Group, SAC.
1987 Det. 15, USAF Plant Representative Office, and B-1B SPO.
1988 C-5 crew, 436th Military Airlift Wing.
1989 B-1B crew, 96th Bomb Wing.
1990 AC-130 crew, 16th Special Operations Sq.
1991 MH-53 crew, 20th Special Operations Sq.
1992 C-130 crew, 310th Airlift Sq., ACC, Howard AFB, Panama.
1993 B-52 crew, 668th Bomb Sq., ACC.
1994 HH-60G crew of Air Force Rescue 206 and 208, 56th Rescue Sq., ACC, NAS Keflavik, Iceland.
1995 Aircrew BAT-01, Dyess AFB, Tex.
1996 Aircrew Duke 01, 2nd Bomb Wing, Barksdale AFB, La.
1997 Crew of Whiskey-05, 7th Special Operations Sq., RAF Mildenhall, UK.
1998 Crew of Air Force Rescue 470, 210th Rescue Sq., Kulis ANGB, Alaska.
1999 Capt. Jeffrey G.J. Hwang, 173rd FW, Oregon ANG, Klamath Falls IAP, Ore.

The Gen. Thomas D. White USAF Space Trophy

The Gen. Thomas D. White USAF Space Trophy is named for the fourth Air Force Chief of Staff, a longtime champion of USAF's role in space. The Air Force selects the recipients among USAF individuals or organizations that made the year's outstanding progress in the field of aerospace. It was established in 1961 and, until 1996, sponsored by the National Geographic Society. It is now an AFA national award sponsored by the Gen. B.A. Schriever Los Angeles Chapter.

1961 Capt. Virgil I. Grissom.
1962 Maj. Robert M. White.
1963 Maj. L. Gordon Cooper.
1964 Air Force Systems Command.
1965 Lt. Col. Edward H. White II.
1966 Alexander H. Flax.
1967 Gen. John P. McConnell.
1968 Col. Frank Borman, Capt. James A. Lovell Jr. (USN), Lt. Col. William A. Anders.
1969 Col. Edwin E. Aldrin Jr., Neil A. Armstrong, Col. Michael Collins.
1970 Brig. Gen. Robert A. Duffy.
1971 Lt. Gen. Samuel C. Phillips.
1972 Hon. Robert C. Seamans Jr.
1973 Lt. Col. Henry Hartsfield Jr.
1974 No award.
1975 Maj. Gen. Thomas P. Stafford.
1976 Gen. William J. Evans.
1977 Lt. Col. Charles G. Fullerton, Fred W. Haise Jr.
1978 No award.
1979 Maj. Gen. John E. Kulpa Jr.
1980 Gen. Lew Allen Jr.
1981 Col. Joe Engle, Capt. Richard H. Truly (USN).
1982 Lt. Gen. Richard C. Henry.
1983 Gen. James V. Hartinger.
1984 Lt. Gen. Forrest S. McCartney.
1985 Maj. Gen. Donald W. Henderson.
1986 Gen. Donald J. Kutyna.
1987 Col. Victor W. Whitehead.
1988 Robert R. Barthelemy.
1989 Launch Systems Directorate, Space Systems Division.
1990 Gen. John L. Piotrowski, USAF (Ret.), Lt. Gen. Donald L. Cromer.
1991 Lt. Gen. Thomas S. Moorman Jr.
1992 Maj. Gen. Nathan J. Lindsay, USAF (Ret.).
1993 Gen. Merrill A. McPeak.
1994 Gen. Charles A. Horner.
1995 Gen. Joseph W. Ashy.
1996 No award.
1997 Lt. Gen. Patrick P. Caruana.
1998 Gen. Howell M. Estes III.
1999 Lt. Gen. Lance W. Lord.

The Hughes Achievement Award

The Hughes Achievement Award (formerly the HughesTrophy) is presented annually to the top Air Force squadron with an air defense/air superiority mission. Raytheon now sponsors the award.

Year	Unit, Base	Aircraft
1953	58th FIS, Otis AFB, Mass.	F-94C
1954	96th FIS, New Castle County Airport, Del.	F-94C
1955	496th FIS, Landstuhl AB, West Germany	F-86D
1956	317th FIS, McChord AFB, Wash.	F-86D/F-102A
1957	512th FIS, RAF Bentwaters, UK	F-86D
1958	31st FIS, Elmendorf AFB, Alaska	F-102A
1959	54th FIS, Ellsworth AFB, S.D.	F-89J
1960	460th FIS, Portland IAP, 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 IAP, 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 IAP, 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

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By Susan H.H. Young

Note: Inventory numbers are Total Active Inventory figures as of Sept. 30, 2000.

***B-1B** Lancer* (SSgt. Randy Mallard)

Bombers

B-1 Lancer

Brief: A long-range, air refuelable multirole bomber capable of flying missions over intercontinental range, then penetrating enemy defenses with a heavy load of ordnance.

Function: Long-range conventional bomber.

Operator: ACC, ANG.

First Flight: Dec. 23, 1974 (B-1A); Oct. 18, 1984 (B-1B).

Delivered: June 1985–May 1988.

IOC: Oct. 1, 1986, Dyess AFB, Tex. (B-1B).

Production: 104.

Inventory: 93 (B-1B).

Unit Location: Active: Dyess AFB, Tex., Ellsworth AFB, S.D., Mountain Home AFB, Idaho. ANG: McConnell AFB, Kan., Robins AFB, Ga.

Contractor: Boeing; AIL Systems; General Electric.

Power Plant: four General Electric F101-GE-102 turbofans, each 30,780 lb thrust.

Accommodation: four, pilot, copilot, and two systems officers (offensive and defensive), on zero/zero ejection seats.

Dimensions: span spread 137 ft, swept aft 78 ft, length 147 ft, height 34 ft.

Weights: empty equipped 192,000 lb, max operating weight 477,000 lb.

Ceiling: over 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 in a conventional role up to 84 Mk 82 (500-lb) bombs or Mk 62 naval mines and up to 30 CBU-87/89 cluster munitions and CBU-97 Sensor Fuzed Weapons (SFWs), to be fitted with the Wind-Corrected Munitions Dispenser (WCMD) kits, and up to 24 2,000-lb GBU-31 Joint Direct Attack Munitions (JDAMs).

COMMENTARY

Of blended wing/body configuration, the B-1's variable-geometry design and turbofan engines combine to provide greater range and high speed at low level, with enhanced survivability. Unswept wing settings provide for maximum range during high-altitude cruise. The fully swept position is used in supersonic flight and for high subsonic, low-altitude penetration.

The bomber's offensive avionics include Synthetic Aperture Radar (SAR), Ground Moving Target Indicator (GMTI), and Terrain-Following Radar, an extremely accurate Global Positioning System/Inertial Navigation System (GPS/INS), computer-driven avionics, and a strategic Doppler radar, enabling aircrews to navigate, update target coordinates in flight, and precision bomb.

The current defensive avionics package, built around the ALQ-161 Electronic Countermeasures (ECM) system, is supplemented by the ALE-50 towed decoy and chaff and flares to protect against radar-homing and heat-seeking missiles. Aircraft structure and radar-absorption materials reduce the aircraft's radar signature to approximately one percent that of a B-52. The ALE-50 provides greater protection against RF threats.

B-1A. USAF acquired four prototype flight test models of this new strategic bomber in the 1970s, but the program was canceled in 1977. Flight test of the four B-1A models continued through 1981.

B-1B is the improved variant initiated by the Reagan Administration in 1981. First production model flew October 1984 and USAF produced a total of 100. The B-1 was first used in combat in support of operations against Iraq during Desert Fox in December 1998. B-1B's speed, superior handling qualities, and large payload make it a key element of any joint/composite strike force, with the flexibility to deliver a wide range of weapons or to carry additional fuel, as required. B-1Bs are currently acquiring the capability to carry up to 24 2,000-lb GPS–guided GBU-31 JDAMs, with fleet completion in FY02.

The B-1B's capability is being significantly enhanced by the ongoing Conventional Mission Upgrade Program (CMUP). This gives the B-1B greater lethality and survivability through the integration of precision and standoff weapons and a robust ECM suite. CMUP includes GPS receivers, a MIL-STD-1760 weapon interface, secure interoperable radios, and improved computers to support precision weapons, initially the GBU-31 JDAM, with follow-on computer and software upgrades permitting simultaneous carriage of mixed guided and unguided weapons, including WCMDs, AGM-154 Joint Standoff Weapons (JSOWs), and the AGM-158 Joint Air-to-Surface Standoff Missiles (JASSMs). The Defensive System Upgrade Program, incorporating the ALE-55 fiber-optic towed decoy, ALR-56M radar, and ALQ-210 receiver/processor, will improve aircrew situational awareness and jamming capability.

***B-2** Spirit* being refueled by a ***KC-10 A** Extender* (USAF photo by Gary Ell)

B-2 Spirit

Brief: Stealthy, long-range multirole bomber that can deliver conventional and nuclear munitions anywhere on the globe by flying through previously impenetrable defenses.

Function: Long-range heavy bomber.

Operator: ACC.

First Flight: July 17, 1989.

Delivered: Dec. 11, 1993–present.

IOC: April 1997, Whiteman AFB, Mo.

Production: 21.

Inventory: 21.

Unit Location: Whiteman AFB, Mo.

Contractor: Northrop Grumman, with Boeing, LTV, and General Electric as principal subcontractors.

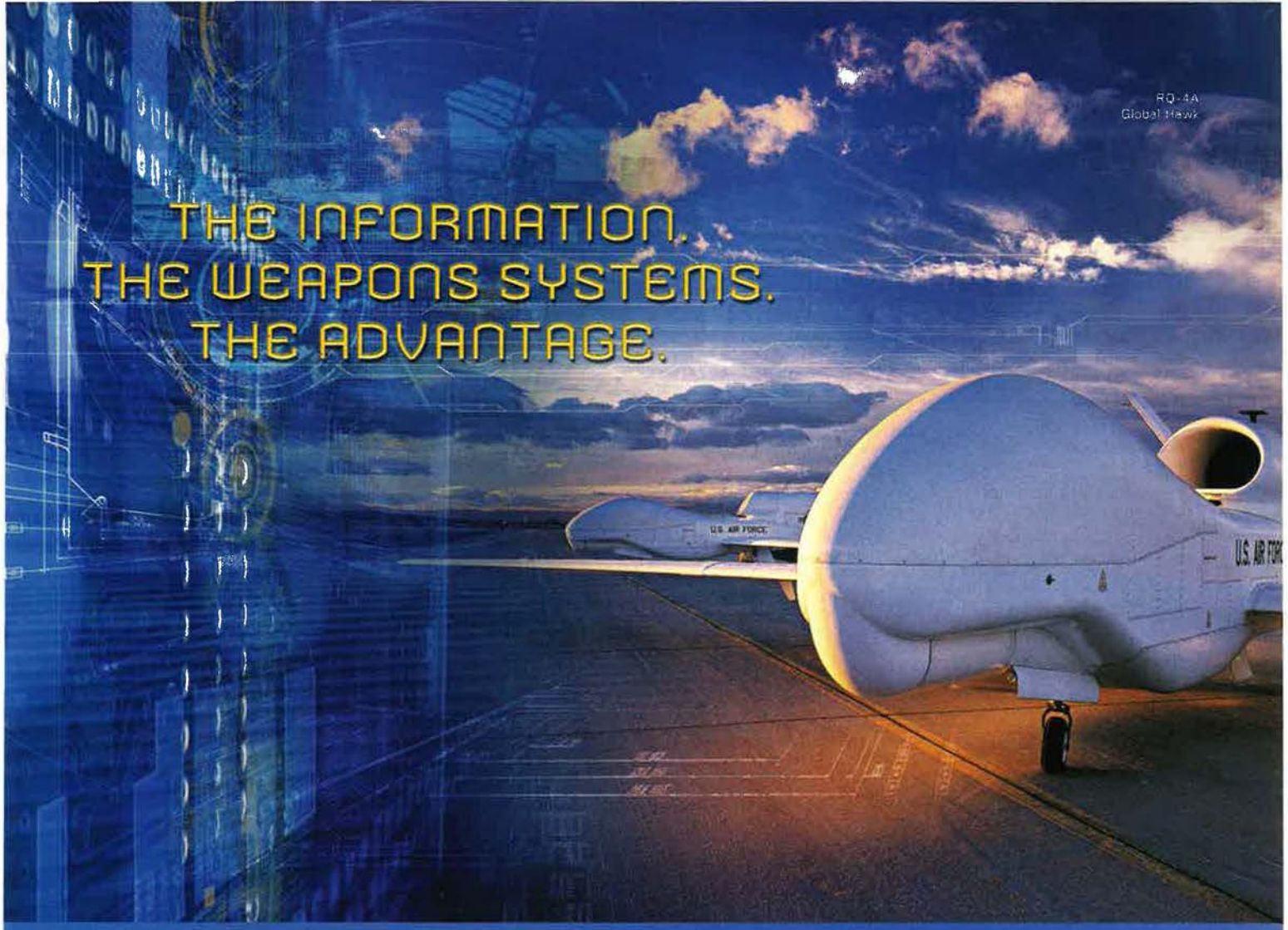
Power Plant: four General Electric F118-GE-100 turbofans, each 17,300 lb thrust.

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.



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Performance: minimum approach speed 140 mph, typical estimated unrefueled range for a hi-lo-hi mission with 16 B61 nuclear free-fall bombs 5,000 miles, with one aerial refueling more than 10,000 miles.

Armament: in a nuclear role: up to 16 nuclear weapons (B61, B61 Mod II, B83). In a conventional role: up to 16 GBU-31 (2,000-lb) JDAMs or a penetration version of a BLU-109, or 16 Mk 84 2,000-lb bombs; up to 16 2,000-lb GBU-36/B (GPS–Aided Munition); or up to eight 4,700-lb GBU-37 (GAM-113) near-precision guided weapons. Various other conventional weapons, incl the Mk 82 500-lb bomb, M117 750-lb bomb, Mk 62 500-lb naval mine, and up to 32 CBU-87/89/97 cluster bombs. JASSM and JSOW are presently being added to B-2 Block 30 aircraft through FY03.

COMMENTARY

The B-2 bomber is a unique, highly advanced system, combining sophisticated technologies, notably Low Observable (LO) stealth design, with high aerodynamic efficiency, enabling it to attack heavily defended targets and neutralize enemy defenses and, thereby, making way for less stealthy systems to operate.

Based on the flying wing concept, the B-2 has no vertical tail surfaces. The smoothly blended "fuselage" section accommodates two flight crew and two large weapon bays side by side in the lower centerbody. These bays contain rotary launchers or bomb rack assemblies capable of carrying a total weapons load of 40,000 lb.

Four nonafterburning turbofan engines are mounted in pairs within the wing structure, with scalloped over-wing intake ducts and shielded over-wing trailing-edge nozzles. The aircraft has a quadruple-redundant fly-by-wire digital flight-control system, actuating moving surfaces at the wing trailing edges that combine aileron, elevator, and rudder functions. A landing gear track of 40 ft enables the B-2 to use any runway that can handle a Boeing 727 airliner.

B-2A. B-2 production represents three successive blocks of capability. Block 10 aircraft carried B83 nuclear bombs or 16 Mk 84 2,000-lb conventional munitions. Block 20 aircraft additionally carried the B61/7 and B61/11 nuclear gravity bombs, as well as two GPS–Aided Munitions (GAMs), the GBU-37 and GBU-36B, on two rotary launcher assemblies, providing an interim, near-precision strike capability. All Block 10 and 20 aircraft have now been upgraded to Block 30.

Block 30 configuration retains weapon capability introduced in Block 10 and 20 and adds significant new capability. Using the rotary launcher assembly, all B-2s are capable of employing 16 Mk 84 JDAMs, 16 JSOWs, or 8 GAM-113s (to be replaced by EGBU-28 in the future). All of these weapons are individually targeted, giving the B-2 multiple-kills-per-pass capability. All B-2s are also capable of substituting bomb rack assemblies in place of the rotary launchers, providing the capability to employ 80 500-lb Mk 82s, 36 750-lb M117s, 34 tactical munitions dispensers, or 80 Mk 62 sea mines. Future modifications to the bomb racks will allow carriage of 80 independently targeted Mk 82 JDAMs. Other Block 30 enhancements include fully operational defensive and offensive avionics, a more sophisticated mission planning system, and additional operating modes for the Synthetic Aperture Radar (SAR).

The last original Block 20 B-2, used as a test aircraft at Edwards AFB, Calif., is being refurbished as an operational bomber and will enter operational service in September 2002.

The first combat mission took place March 24, 1999, against Serb targets in Allied Force. Two B-2s made a 30-hour-plus round-trip from Whiteman AFB to attack a variety of hard and soft targets. Each aircraft dropped 16 2,000-lb JDAMs.

B-52 Stratofortress

Brief: A long-range, heavy multirole bomber that can carry nuclear or conventional ordnance or air launched cruise missiles, with worldwide precision navigation capability.

Function: Long-range heavy bomber.
Operator: ACC, AFRC.
First Flight: April 15, 1952 (YB-52 prototype).
Delivered: November 1955–October 1962.
IOC: June 19, 1955.
Production: 744.
Inventory: 94.
Unit Location: Barksdale AFB, La., 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 ft 4 in, height 40 ft 8 in.
Weight: empty approx 188,000 lb, gross 488,000 lb.
Ceiling: 50,000 ft.
Performance (approx): max level speed 650 mph, range more than 10,000 miles.
Armament: 12 AGM-86B Air Launched Cruise Missiles (ALCMs) or AGM-129A Advanced Cruise Missiles (ACMs) externally, with provision for eight more ALCMs or gravity weapons internally. Conventional weapons incl AGM-86C/D Conventional ALCMs (CALCMs), bombs up to 2,000 lb, CBU 87/89/97 cluster munitions, WCMDs, GBU-31 JDAMs, JSOWs from 2001, JASSMs in 2002–03, and on some aircraft, three to four AGM-142A Have Nap missiles or eight AGM-84 Harpoons in under-wing clusters.

***B-52H** Stratofortress* (SSgt. Mary Smith)

COMMENTARY

Retaining a key role within USAF's manned strategic bomber force, the B-52's still-expanding weapons capability reflects its continuing ability to perform a wide range of missions despite 40 years–plus service, including show of force, maritime operations, long-range precision strikes, offensive counterair, air interdiction, and defense suppression.

The bomber is equipped with an Electro-Optical (EO) viewing system that uses Forward-Looking Infrared (FLIR) and high-resolution Low-Light-Level Television (LLLTV) sensors to augment the targeting, battle assessment, flight safety, and terrain avoidance systems, thus improving combat ability and low-level flight capability. Pilots have Night Vision Goggles (NVGs) to further enhance night operation. The B-52's ECM suite uses a combination of electronic detection, jamming, and infrared countermeasures to protect against hostile air defense systems. The aircraft can also detect and counter missile attack from the rear.

Several versions of the Stratofortress were produced, including:

B-52A. Initial production version, with J57-P-1W engines and provision for in-flight refueling. First flown Aug. 5, 1954, the three aircraft built were used by Boeing for technical development purposes. Delivered to SAC November 1957. Finally retired 1969.

B-52B. First operational version, 23 of which were built. Also, 27 RB-52B dual-role bomber/reconnaissance variants. First flown January 1955, with deliveries between June 1955–August 1956; powered by J57-P-1W, -19W, -29W, or -29WA engines. Retired in the mid-1960s.

B-52C. Multimission version with increased gross weight and larger under-wing tanks. Powered by J57-P-19W or -29WA engines. First flown March 1956, 35 were delivered June–December 1956. Majority retired 1971.

B-52D. Long-range bomber version, first flown June 1956. Total of 170 built, with deliveries beginning late 1956. Retired 1982–83.

B-52E. Version with improved bombing, navigation, and electronics systems. First flown October 1957. One hundred delivered October 1957–June 1958. Retired 1969–70.

B-52F. Version with uprated J57-P-43WA engines, first flown in May 1958. Eighty-nine delivered June 1958–February 1959. Retired 1978.

B-52G. Introduced important design changes, including a redesigned wing containing integral fuel tanks for increased range, fixed under-wing external tanks, a shorter tail fin of greater chord, and a remotely controlled tail gun turret that allowed the gunner to be repositioned with the rest of the crew. Initial flight August 1958, with the first of 193 aircraft entering service in February 1959. Withdrawn 1994.

B-52H. The only version still in service. The H introduced TF33 turbofans, providing increased unrefueled range, and improved defensive armament. First flown July 1960, 102 were built, with deliveries between May 1961–October 1962.

Deployment of the B-1 and B-2 led to a change in the primary role of the B-52 to cruise missile carrier with, typically, multiple cruise missile launches at high altitude, often followed by B-52 low-level descent to attack additional targets using gravity weapons.

Ongoing modernization of its conventional capabilities is extending the B-52's service life well into this century, with the ability to provide massive firepower in low-threat environments supplemented by a standoff attack capability. Upgrades include the installation of GPS, ARC-210 radios, Have Quick II anti-jam radio, KY-100 secure radio, and MIL-STD-1760 interfaces; weapons capability to include naval mines, precision guided weapons, such as AGM-84 Harpoon, AGM-142 Have Nap, and AGM-86C/D CALCM (a conventional variant of the nuclear AGM 86-B ALCM); and advanced weapons, such as JDAM, JSOW, JASSM, and WCMD. Modification of heavy stores adapter beams will standardize aircraft to carry all B-52–certified munitions.

***A-10A** Thunderbolt II* (SSgt. George F. Thompson)

Avionics improvements include the Avionics Midlife Improvement program, which replaces the current system processors and data transfer cartridges. Electronic attack improvements include the Situational Awareness Defensive Improvement panoramic threat receiver and the electronic combat modernization improvement upgrade to the ALQ-172 electronic countermeasures set.

Current plans encompass a force of around 76 aircraft.

***F-15C** Eagle* (A1C James L. Harper Jr.)

Fighter and Attack Aircraft

A-10 Thunderbolt II

Brief: A simple, effective, and survivable twin-engine aircraft specifically designed for Close Air Support of ground forces and which can be used against all ground targets, including tanks and other armored vehicles.

Function: Attack aircraft.

***F-15E** Strike Eagle* (Ted Carlson)

Operator: ACC, PACAF, USAFE, ANG, AFRC.
First Flight: Feb. 15, 1975 (preproduction).
Delivered: November 1975–March 1984.
IOC: October 1977.
Production: 713.
Inventory: 367.

Unit Location: Active: Davis–Monthan AFB, Ariz., Eglin AFB, Fla., Eielson AFB, Alaska, Moody AFB, Ga., Nellis AFB, Nev., Osan AB, South Korea, Pope AFB, N.C., Spangdahlem AB, Germany. ANG: Barnes MAP, Mass., Boise Air Terminal, Idaho, Bradley IAP, Conn., Martin State Airport, Md., W.K. Kellogg Airport, Mich., Willow Grove ARS, Pa. AFRC: Barksdale AFB, La., NAS New Orleans JRB, La., Whiteman AFB, Mo.

Contractor: Fairchild Republic.

Power Plant: two General Electric TF34-GE-100 turbofans, each 9,065 lb thrust.

Accommodation: pilot only, on zero-height/518 mph–zero-speed ejection seat.

Dimensions: span 57 ft 6 in, length 53 ft 4 in, height 14 ft 8 in.

Weight: empty 28,000 lb, max gross 51,000 lb.

Ceiling: 45,000 ft.

Performance: speed 420 mph, range with 9,500 lb of weapons and 1.7 hr loiter, 20 min reserve, 288 miles.

Armament: one 30 mm GAU-8/A gun; eight underwing hardpoints and three under fuselage for up to 16,000 lb of ordnance, incl various types of free-fall or guided bombs, Combined Effects Munition (CEM) dispensers, gun pods, up to six AGM-65 Maverick missiles, up to four AIM-9 Sidewinder missiles, and jammer pods. Chaff and flares carried internally to counter radar-directed or infrared-directed threats. The centerline pylon and the two flanking fuselage pylons cannot be occupied simultaneously.

COMMENTARY

Supporting the demands of the Close Air Support (CAS) mission, the A-10 combines large military load, long loiter, and wide combat radius with the ability to operate under 1,000-ft ceilings, with 1.5-mile visibility, and in darkness with NVGs. In a typical anti-armor mission, the A-10, nicknamed "Warthog," can fly 150 miles and remain on station for an hour. The 30 mm GAU-8/A gun provides a cost-effective weapon with which to defeat the whole array of ground targets, including tanks. The large bubble canopy provides all-around vision for the pilot, and the cockpit is protected with titanium armor, capable of withstanding projectiles up to 23 mm. Used extensively during the Persian Gulf War. Projected to serve well into the 2020s. An A-10 structural enhancement will begin in FY02.

A-10A equipment includes EGI, an Enhanced GPS/Inertial Navigation System (INS), Head-Up Display (HUD), NVGs, the Low-Altitude Safety and Targeting Enhancement (LASTE) system for ground collision avoidance, Pave Penny laser target identification pod, ECM, target penetration aids, self-protection systems, and AGM-65 Maverick and AIM-9 Sidewinder missiles. A precision engagement upgrade began in February 2001 to provide the A-10 with new cockpit displays, a digital stores management system, a situational awareness data link and integration of the JDAM and WCMD. A targeting pod, not yet selected, is also planned. Additionally, an upgraded automated chaff and flare system is planned for all aircraft by 2005.

OA-10A. Redesignated A-10s, used for forward air control of fighter aircraft, combat escort, search and rescue, and visual reconnaissance. The 30 mm GAU-8/A gun is retained, but under-wing stores are normally restricted to canisters of white phosphorous rockets for target marking. The first OA-10 unit reached Initial Operational Capability (IOC) in October 1987.

AC-130 Gunship

Brief: Heavily armed aircraft using side-firing weapons integrated with sophisticated sensor, navigation, and fire-control systems to provide precise firepower or area saturation for long periods, at night and in adverse weather.

Function: Attack aircraft.
Operator: AFSOC.
First Flight: 1967.
Delivered: 1968–95.
IOC: 1972 (AC-130H); 1995 (AC-130U).
Production: 39.
Inventory: 21.
Unit Location: Hurlburt Field, Fla.
Contractor: Lockheed Martin, Rockwell (AC-130U).
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: AC-130H crew of 14; AC-130U crew of 13.
Dimensions: span 132 ft 7 in, length 97 ft 9 in, height 38 ft 6 in.
Weight: H model: gross 155,000 lb.
Ceiling: 25,000 ft.
Performance: H model: speed 300 mph, range 1,500 miles, with air refueling unlimited.
Armament: two 20 mm Vulcan cannons with 3,000 rd (AC-130H); one 25 mm Gatling gun (AC-130U); one 40 mm Bofors cannon with 256 rd, and one Howitzer with 100 rd.

COMMENTARY

The AC-130 is a C-130 modified with gun systems, electronic and Electro-Optical (EO) sensors, fire-control systems, enhanced navigation systems, sophisticated communications, defensive systems, and in-flight refueling capability. These systems give the gunship crew the capability to acquire and identify targets day or night, coordinate with ground forces and Command-and-Control (C^2) agencies, and deliver surgical firepower in support of both conventional and special operations missions.

AC-130A was the initial version, deployed in Vietnam 1968–69. Eighteen produced.

AC-130E, an improved version, of which eight were built. Converted to H standard after service in Vietnam.

AC-130H Spectres serve with the 16th SOW. The unit has eight, each equipped with a digital fire-control computer. They employ EO sensors and target-acquisition systems, including FLIR and LLLTV, and are capable of in-flight refueling. Fire-control computers, navigation, communications, and sensor suites have been upgraded; an Infrared Suppression System (IRSS) overhaul is under way.

AC-130U Spookys are the most recent gunship conversions, converted by Rockwell, of which 13 were delivered to the 16th SOW's 4th SOS in 1994–95. These aircraft have greater altitude capability and combine increased firepower, reliability, and superior accuracy with the latest methods of target location. The two 20 mm cannon of the H model are replaced with one trainable 25 mm Gatling gun. All weapons can be subordinated to the APQ-180 digital fire-control radar, FLIR, or All-Light-Level Television (ALLTV) for adverse weather attack operations.

Although the AC-130H Spectre and AC-130U Spooky gunships use dissimilar avionics and other systems, fire support to ground parties is generally comparable. The AC-130U will not be required for most fire support missions but provides benefits under certain circumstances (weather, dual target attack, and defensive avionics).

F-15 Eagle

Brief: A supersonic, all-weather, highly maneuverable tactical fighter designed to permit USAF to swiftly gain and maintain air superiority in aerial combat.

Function: Fighter.
Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG.
First Flight: July 27, 1972.
Delivered: from November 1974.
IOC: September 1975.
Production: 874.
Inventory: 522.

Unit Location: Active: Edwards AFB, Calif., Eglin AFB, Fla., Elmendorf AFB, Alaska, Kadena AB, Japan, Langley AFB, Va., Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath, UK, Tyndall AFB, Fla. ANG: Hickam AFB, Hawaii, Jacksonville IAP, Fla., Klamath Falls IAP, Ore., Lambert–St. Louis IAP, Mo., NAS New Orleans JRB, La., Otis ANGB, Mass., Portland IAP, Ore.

Contractor: Boeing.

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 ft 10 in, length 63 ft 9 in, height 18 ft 8 in.

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-9 Sidewinder and up to four AIM-7 Sparrow air-to-air missiles, or up to eight AIM-120 AMRAAMs, carried externally.

COMMENTARY

Superior maneuverability and acceleration, range, weapons, and avionics enable the F-15 to penetrate hostile defenses and establish air superiority over enemy systems. F-15 fighters deployed to the Persian Gulf for Desert Storm accounted for 29 of the 37 USAF air-to-air victories.

F-15A (single-seat) and **F-15B** (two-seat) fighters immediately became USAF's front-line fighter upon introduction in the mid-1970s. Basic equipment includes APG-63 pulse–Doppler radar for long-range detection and tracking of small high-speed objects down to treetop level and effective weapons delivery, a HUD for close-in combat, Identification, Friend or Foe (IFF), and INS. A/Bs now serve with the ANG.

F-15C (single-seat) and **F-15D** (two-seat) models followed in June 1979. Improvements include 2,000 lb of additional internal fuel and provision for carrying Conformal Fuel Tanks (CFTs), reducing in-flight refueling requirements and increasing time in the combat zone. Tactical capabilities have been extensively enhanced since 1983 through an ongoing program of installation or modification of new or existing avionics equipment, allowing for the carriage of more advanced weapons and increased self-protection. The last 43 aircraft included improved APG-70 radar, and 159 C/Ds are scheduled to receive an APG-63 upgrade, the APG-63(V)1. One squadron will receive a later version, the APG-63(V)2, featuring an advanced active electronic scanned array.

F-15E Strike Eagle

Brief: A heavily modified, two-seat, dual-role variant of the original F-15, with weapon 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: December 1988–present.

IOC: May 1989.

Production: 226.

Inventory: 218.

Unit Location: Edwards AFB, Calif., Eglin AFB, Fla., Elmendorf AFB, Alaska, Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath, UK, Seymour Johnson AFB, N.C.

Contractor: Boeing.

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 ft 9 in, length 63 ft 9 in, height 18 ft 5 in.

Weight: empty 32,000 lb, gross 81,000 lb.

Ceiling: 65,000 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; EO, IR, and standard bombs; CBU 87/89/97 cluster munitions; and nuclear weapons. JSOW, JDAM, and WCMD capability from FY03.

COMMENTARY

F-15E has a strengthened airframe for increased gross weight at takeoff and maneuver at 9 Gs throughout the flight envelope. Cockpit controls and displays are improved, and a wide-field-of-view HUD is included.

For low-altitude, high-speed penetration and precision attack on tactical targets at night and in adverse weather, the F-15E carries a high-resolution APG-70 SAR and LANTIRN (Low-Altitude Navigation and Targeting Infrared for Night) pods, with wide-field FLIR. The APG-70 gives the F-15E, with its AMRAAM, AIM-7, and AIM-9 load, a true multirole capability with the inherent air-to-air capability of the F-15C. The digital, triple-redundant flight-control system permits automatic terrain following. Other improvements include a ring-laser gyro INS, with GPS capability from 1997, and, in FY03, the capability to carry smart weapons (JSOW, JDAM, and WCMD). CFTs, adapted to carry ordnance tangentially, can be fitted to reduce drag while increasing combat range.

During Desert Storm 48 USAF F-15Es were deployed to the Persian Gulf where they operated mainly at night, hunting Scud missile launchers and artillery sites using the LANTIRN system. They also operated successfully with Joint STARS aircraft.

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–present.

IOC: October 1980, Hill AFB, Utah.

Production: 2,206.

Inventory: 1,412.

Unit Location: 14 active wings, 28 ANG, and five AFRC units (one Associate aircraft).

Contractor: Lockheed Martin.

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 ft 8 in, length overall 49 ft 5 in, height 16 ft.

Weight: (F-16C) empty (F100-PW-229) 18,591 lb, (F110-GE-129) 18,917 lb; gross, with external load (Block 40/42) 42,300 lb.

Ceiling: above 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.

Armament: one M61A1 20 mm multibarrel cannon, with 511 rd, mounted in fuselage; wingtip-mounted missiles; seven other external stores stations for fuel tanks and a range of air-to-air and air-to-surface munitions.

COMMENTARY

The F-16 is the workhorse of the USAF fighter fleet. The 200+ USAF F-16 multimission fighters deployed to the Persian Gulf theater flew more sorties than any other type during Desert Storm, with 13,500 missions, and were again used extensively during Allied Force. F-16s are deployed to patrol the no-fly zones in northern and southern Iraq.

F-16A (single-seat) and **F-16B** (two-seat) versions, which entered service with the 388th TFW, Hill AFB, Utah, incorporated advanced technologies from the start, making these aircraft two of the most maneuverable fighters built. Equipment includes a multimode radar with a clutter-free look-down capability, advanced Radar Warning Receiver (RWR), HUD, internal chaff/flare dispensers, and a 500-rd 20 mm internal gun.

Production of the F-16A and B for USAF ended in 1985. Most now belong to ANG. USAF and NATO operators have cooperated in an operational capabilities upgrade. Under this midlife update program the radar, fire-control computer, stores-management computer, and avionics software are improved, giving F-16A/Bs the ability to use next-generation air-to-air and air-to-surface weapons.

Reliability and maintainability improvements include a ring-laser gyro INS and installation of the upgraded F100-PW-220E turbofan.

The Multinational Staged Improvement Program (MSIP), implemented in 1980, ensured the aircraft could accept systems under development, thereby minimizing retrofit costs. All F-16s delivered since November 1981 have had built-in structural and wiring provisions and systems architecture that expand the single-seater's multirole flexibility to perform precision strike, night attack, and beyond-visual-range intercept missions.

F-16C (single-seat) and **F-16D** (two-seat) aircraft were introduced at production Block 25 with MSIP II improvements in the cockpit, airframe, and core avionics and an increased-range APG-68 radar. Deliveries began in 1984. With the exception of AFMC, all of the active and many of the Guard and Reserve units have since converted to F-16C/Ds.

Block 40/42 F-16s specialize in night attack operations with precision guided weapons. Follow-on improvements include ALE-47 improved defensive coun-

***Block 40 F-16CG** Fighting Falcon* (SSgt. Vince Parker)

***Block 50 F-16CJ** Fighting Falcon* (SSgt. Sean M. Worrell)

termeasures, ALR-56M advanced RWR (Block 40 only), Very High Speed Integrated Circuit (VHSIC) technology in the APG-68(V5) fire-control radar, a ring-laser gyro INS, a LANTIRN nav/attack system, and IPEs. System improvements also introduced at Block 40/42 include core avionics hardware, installation of a LANTIRN nav/attack system, GPS, enhanced-envelope gunsight, digital flight controls, automatic terrain following, increased takeoff weight and maneuvering limits, an 8,000-hour airframe, and expanded envelope 9 G capability.

Block 50/52 F-16C/Ds have MSIP Stage III improvements, which also show up in selected retrofits of earlier F-16 blocks. These aircraft incorporate the latest cockpit control and display technology, including a wide-angle HUD. Weapons improvements include multishot AMRAAM compatibility. Integration of AGM-154 JSOW and WCMD is under way.

In another program, Block 40/42/50/52 USAF F-16C/Ds are to be retrofitted with a new modular mission computer being developed under an F-16 Common Configuration Implementation Program. This effort includes the participating European governments of the F-16 Multinational Fighter Program. Other improvements to be incorporated include Litening II targeting pods, joint helmet mounted cueing system, AIM-9X, Link 16 data link, and improved weapons capabilities.

***F-22** Raptor* (Ted Carlson)

***F-117A** Nighthawk* (Ted Carlson)

Block 60 F-16C/Ds include most Block 40 and 50 configurations and other improvements, such as a new internal sensor suite, which is similar to LANTIRN but with only the sensor heads outside the aircraft. Block 60 will also include a new Integrated Electronic Warfare System and the Agile Beam Radar from Northrop Grumman. Either the General Electric or Pratt & Whitney IPE power plants are being offered. Currently Lockheed Martin will deliver 80 Block 60 fighters from 2004–07 to the United Arab Emirates.

The Block 60 is considered the chief alternative for USAF if the Joint Strike Fighter is canceled.

F-16CG designated aircraft are equipped with LANTIRN for precision day or night attack.

F-16CJ/DJ designated Block 50 aircraft are equipped with the HARM Targeting System for Suppression of Enemy Air Defenses (SEAD), the role previously undertaken by F-16C/Ds with interim High-speed Anti-Radiation Missile (HARM) capability in conjunction with the now-retired F-4G Wild Weasel aircraft. Thirty additional F-16CJs have been budgeted by USAF beginning in the FY00 budget and ending in FY05.

F-22 Raptor

Brief: High-technology follow-on for the F-15C. An all-weather fighter that combines an extremely maneuverable airframe at both sub- and supersonic speeds with stealth technologies and highly integrated avionics to help it penetrate enemy airspace and achieve air superiority in aerial combat.

Function: Fighter.

Operator: ACC.

First Flight: Sept. 7, 1997.

Delivery: 2001 (first production representative aircraft).

IOC: December 2005.

Production: 339 (planned).

Inventory: five test aircraft.

Unit Location: Langley AFB, Va. (preferred option).

Contractor: Lockheed Martin, with Boeing and Pratt & Whitney as principal subcontractors.

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 ft 6 in, length 62 ft 1 in, height 16 ft 7 in.

Weight: empty 40,000-lb class, gross approx 60,000 lb.

Ceiling: above 50,000 ft.

Performance (design target): max level speed at S/L 900+ mph, range more than 2,000 miles.

Armament: (projected) one internal M61A2 20 mm gun, two AIM-9 Sidewinders stored internally in the sides of the fuselage; six AIM-120 AMRAAMs in the main weapons bay; for ground attack, two 1,000-lb JDAMs will replace four AMRAAMs internally.

COMMENTARY

This ultrasophisticated multimission air superiority fighter aircraft is designed to penetrate high-threat enemy airspace and achieve air superiority with a first-look, first-kill capability against multiple targets. It will cruise at supersonic speed without using its afterburners (supercruise). Its fully integrated avionics and weapon systems will permit simultaneous engagement of multiple targets. Extreme maneuverability is achieved through the combination of the avionics system, structural strength, and thrust vectoring nozzles. A Raytheon Common Integrated Processor will tie together various avionics functions.

Two prototypes were built for competitive evaluation with Northrop/McDonnell Douglas YF-23 prototypes. First flight was Sept. 29, 1990. **YF-22** selected as winner in April 1991.

F-22A. Production-configured version entered Engineering and Manufacturing Development (EMD) phase in August 1991. USAF is receiving nine single-seat F-22As, three without avionics to explore flight characteristics, flutter, loads, propulsion, and envelope expansion, and six as avionics test beds. It is also testing one static test and one fatigue test airframe.

With a decision taken toward the end of 1999 to continue development, the next six F-22s are production representative test aircraft used for follow-on testing of avionics, stealthiness, and weapons delivery systems. A critical series of avionics flight testing milestones had to be achieved prior to the decision on Low-Rate Initial Production (LRIP), including, crucially, the first flight of an F-22 equipped with combat-capable Block 3.0 avionics, achieved by Raptor 4005 on Jan. 5, 2001. However, DOD postponed an LRIP decision until after a defense program and strategy review in fall 2001.

F-117 Nighthawk

Brief: World's first operational aircraft designed to exploit Low Observable (LO) stealth technology to expand the range of heavily defended strategic targets that can be attacked.

Function: Attack aircraft.

Operator: ACC, AFMC.

First Flight: June 18, 1981.

Delivered: 1982–summer 1990.

IOC: October 1983.

Production: 59.

Inventory: 55.

Unit Location: Eglin AFB, Fla., Holloman AFB, N.M.

Contractor: Lockheed Martin.

Power Plant: two General Electric F404-GE-F1D2 nonafterburning turbojets, each 10,800 lb thrust.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: span 43 ft 4 in, length 65 ft 11 in, height 12 ft 5 in.

Weight: empty (estimated) 29,500 lb, max gross 52,500 lb.

Ceiling: 35,000 ft.

Performance: high subsonic, mission radius, unrefueled (5,000-lb weapon load) 656 miles.

Armament: full internal carriage of what is described as a wide variety of tactical weapons, incl laser-guided 2,000-lb munitions.

COMMENTARY

Acknowledged publicly in November 1988, the F-117's first operational deployment was to Panama in 1989 for Just Cause. During the Persian Gulf War in 1991, a fleet of more than 40 F-117As undertook 1,270 missions. No aircraft were lost or damaged by hostile fire. An F-117 was lost March 27, 1999, while participating in Allied Force in Yugoslavia.

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 initially with the 4450th Tactical Group (redesignated 37th TFW in 1989) at Tonopah Test Range Airfield, Nev., where operations were restricted mainly to night flying to maintain secrecy, although three aircraft were lost in much-publicized accidents.

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. High-precision INS is installed, with upgraded FLIR and DLIR (Downward-Looking Infrared), each with a boresight laser designator and an autotracker, to ensure precision attack.

Improvements since 1989 have included upgraded cockpit display and instrumentation, GPS capability, and ring-laser gyro INS. Current modification aims at providing a single, optimal LO configuration, adverse

weather capability via advanced weapons, and at maintaining the fleet through its service life.

Joint Strike Fighter

Brief: An affordable, highly common family of next-generation strike aircraft.

Function: Multirole fighter.

Operator: ACC for USAF.

First Flight: Boeing X-32A Sept. 18, 2000; Lockheed Martin X-35A Oct. 24, 2000.

Delivery: 2008 (anticipated first production aircraft).

IOC: 2011 (USAF).

Production: planned: 1,763 (USAF), 480 (USN), 609 (USMC), 150 (UK).

Inventory: TBD

Unit Location: TBD

Contractor: Lockheed Martin and Boeing are competing contractors; Pratt & Whitney is primary propulsion contractor; General Electric is alternate engine contractor.

Power Plant: one Pratt & Whitney F119 derivative turbofan, in 35,000-lb thrust class.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: TBD

Weight: TBD

Ceiling: TBD

Performance (design targets): max level speed at S/L 630 knots calibrated airspeed for Navy and Short Takeoff and Vertical Landing (STOVL) variants, Mach 1 for USAF variant, combat radius more than 678.5 miles for USAF variant, 690 miles for Navy variant, and 517.5 miles for STOVL variant.

Armament: (main weapons bay): USAF variant: one internal gun, two AMRAAMs, and two 2,000-lb JDAMs. USN variant: two AMRAAMs and two 2,000-lb JDAMs. STOVL variant: two AMRAAMs and two 1,000-lb JDAMs. External carriage will also be available. (Note: Numerous other weapons capabilities will be added as system development continues.)

COMMENTARY: USAF is developing the Joint Strike Fighter (JSF) to replace its current force of F-16 and A-10 aircraft with a stealthy multirole fighter that will comprise the bulk of USAF's fighter fleet for up to 50 years. This advanced multimission fighter is designed to penetrate high-threat enemy airspace and engage all enemy targets in any conflict. In addition to its advanced LO design, the JSF incorporates stealth, maneuverability, long range, and highly advanced avionics to accomplish the bulk of USAF missions. Its fully integrated avionics and weapon systems will permit simultaneous engagement of multiple targets in enemy airspace.

The Concept Demonstration Phase (CDP) of the program commenced in November 1996 with competitive contract awards to Lockheed Martin and Boeing. This phase focuses on EMD risk reduction and flight test of the Boeing and Lockheed Martin concept demonstrator aircraft. First flight of the Boeing X-32A concept demonstration aircraft took place on Sept. 18, 2000, followed by the Lockheed Martin X-35A on Oct. 24. Objectives of CDP include demonstration of commonality and modularity, STOVL hover and transition, and low-speed handling qualities. Final selection is currently scheduled for October 2001. Pratt & Whitney received a contract to provide propulsion hardware and engineering support for the weapons system concept demonstration efforts. General Electric is continuing technical efforts related to development of an alternate engine source for production.

YAL-1A Attack Airborne Laser

Brief: The prototype YAL-1A, using a modified 747-400F platform, will be the world's first operational airborne high-energy laser weapon system. It will be used to kill Theater Ballistic Missiles (TBMs) in their boost, or very earliest, phase of flight, when the TBMs display bright plumes and are under tremendous dynamic stresses, making them vulnerable to laser weapons. The Airborne Laser can target TBMs hundreds of miles away and thus can fly over friendly territory to kill TBMs as they are launched.

Function: Airborne laser.

Operator: ACC.

First Flight: 2002.

Delivered: to be completed by FY10–12 (planned).

IOC: FY08–10 (planned).

Production: seven (planned).

Inventory: TBD

Unit Location: TBD

Contractor: Boeing (ABL platform; battle management system), TRW (COIL and subsystems), Lockheed Martin (beam control system).

Power Plant: four GE CF6-80 turbofans, each 61,500 lb thrust.

Accommodation: flight crew of two, plus four mission specialists.

Dimensions: span 211 ft 5 in, length 228 ft 9 in, height 63 ft 8 in.

Weight: empty 423,882 lb, gross 800,000 lb.

Ceiling: 45,000 ft.

Performance: max operating speed Mach 0.83, max laser weapon range hundreds of kms, unrefueled endurance at 40,000 ft with operational laser weapon load approx 6 hr.

COMMENTARY

The Airborne Laser is on track to become the first directed energy weapon in the US arsenal. Air Combat Command plans to base the Attack Laser in CONUS, but it has the ability to deploy with minimal airlift support to any region of the world. It will arrive in theater with its crew, laser fuel, and initial spares ready to fight. Typical deployment would include five aircraft to establish two, near continuous combat air patrols as directed by the joint force commander. The aircraft will fly above the clouds and typically operate at an altitude of approx 40,000 ft, initially located some 50 miles from the enemy but able to be moved forward as US forces gain air superiority. Information on the hostile launch location can also be determined by the ABL and passed on to attack airplanes.

The Attack Laser's main armament is a lightweight, megawatt-class Chemical Oxygen–Iodine Laser (COIL). The laser weapon contains 14 COIL modules and sufficient chemical fuel for 20–40 TBM kills. An optical system transports the laser beam up to the aircraft nose, where a 4.5-ft-diameter mirror in a ball turret points the beam at the target. The optical system contains low-power lasers, sensors, steering mirrors, and adaptive optics (deformable mirrors) to precisely track targets and correct atmospheric distortions, thereby increasing the high-energy laser beam's intensity on target and the system's lethal range.

The test aircraft will offer limited operational capability; this aircraft will eventually be converted to a fully operational model.

***X-32A** Boeing Joint Strike Fighter concept demonstrator* (Ted Carlson)

***X-35A** Lockheed Martin Joint Strike Fighter concept demonstrator* (Ted Carlson)

Reconnaissance and Surveillance Aircraft

E-3 Sentry

Brief: Modified Boeing 707, fitted with a rotating radar dome 30 ft wide and 6 ft thick, which provides all-weather air surveillance and C^3 for tactical and air defense forces. Capable of surveillance from Earth's surface up to the stratosphere, over land or water, at more than 200 miles.

Function: Airborne early warning, Battle Management (BM), C^3 aircraft.

Operator: ACC, PACAF, AFRC (associate).

First Flight: Oct. 31, 1975 (full avionics).

Delivered: March 1977–84.

IOC: 1977.

Production: 34.

Inventory: 32.

Unit Location: Elmendorf AFB, Alaska, Kadena AB, Japan, Tinker AFB, Okla.

Contractor: Boeing.

Power Plant: four Pratt & Whitney TF33-PW-100/100A turbofans, each 21,000 lb thrust.

Accommodation: basic operational crew of 17–23, incl 13–19 AWACS mission specialists and four flight crew members.

Dimensions: span 145 ft 9 in, length 152 ft 11 in, height 41 ft 9 in.

Weight: gross 335,000 lb; max T-O 347,000 lb.

Ceiling: above 38,000 ft.

Performance: optimum cruise Mach 0.78, endurance eight hr unrefueled.

COMMENTARY

The E-3 Sentry is an Airborne Warning and Control System (AWACS) aircraft that provides all-weather surveillance and command, control, and communications (C^3) needed by commanders of US, NATO, and other allied air forces. Constantly in high operational demand the AWACS aircraft is a militarized version of the Boeing 707-320B, equipped with an extensive complement of mission avionics, including computer, radar, IFF, communications, display, and navigation systems. Its primary capability is provided by its look-down radar, which makes possible all-altitude surveillance over land or water, with an ability to track both air and sea targets simultaneously.

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

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Sea

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Technological superiority is key for tomorrow's warfighter. Infrared imaging and targeting systems equipped with the NightConqueror offer four times the performance and three times the reliability at half the cost of current sighting systems. Deployed through heavy or light armored vehicles, UAV's, fixed or rotary wing aircraft, surface or submarine fleets, forward maneuver forces are forewarned and forearmed. A true force multiplier, NightConqueror extends the range of threat detection and verification beyond today's Gen 2 environment. It offers a true path to horizontal technology insertion across battle platforms and a quantum leap toward the objective force.

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***E-3C** Sentry* (SSgt. Sean M. Worrell)

maritime detection capability. Nine were built new for USAF, and one of the original E-3As was upgraded.

E-3B is the upgraded earliest version E-3A. Twenty-two production models and two prototypes were produced. Improvements include much-enhanced computer capabilities, jam-resistant communications, austere maritime surveillance capability, additional radio communications, and five additional display consoles.

E-3C is an upgrade to the original 10 US/NATO Standard E-3A aircraft, with additional radio, console, and radar capabilities. Redelivered 1984.

USAF E-3s are undergoing major sustainability, reliability, and availability upgrades. Mission system upgrades include new passive detection systems, known as Electronic Support Measures, that complement the active beaming radar, enabling the aircraft to detect signals emitted by both hostile and friendly targets. Additional enhancements include upgrade of the Joint Tactical Information Distribution System (JTIDS), jam-resistant communications, increased computer capacity, and GPS capability. Full operational capability on these improvements is expected soon. Radar system improvements will permit AWACS aircraft operating in the pulse–Doppler mode to detect smaller, stealthier targets. IOC for these radar improvements is imminent.

E-8 Joint STARS

Brief: A modified Boeing 707 equipped with a large, canoe-shaped radome mounted under the forward part of the fuselage, housing long-range, air-to-ground radar capable of locating, classifying, and tracking vehicles moving on Earth's surface out to distances in excess of 124 miles. Such data are then transmitted via data link to ground stations or other aircraft.

Function: Ground surveillance, BM, C^2 aircraft.
Operator: ACC.
First Flight: December 1988.
Delivered: May 1996–present.
IOC: Dec. 18, 1997.
Production: 16 (planned).
Inventory: eight.
Unit Location: Robins AFB, Ga.
Contractor: Northrop Grumman.
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 ft 9 in, length 152 ft 11 in, height 42 ft 6 in.
Weight: empty 171,000 lb, gross 336,000 lb.
Ceiling: 42,000 ft.
Performance: max operating speed Mach 0.84, endurance with one in-flight refueling 20 hr.
COMMENTARY

Joint STARS is a Battle Management platform capable of providing theater commanders with C^2 of air to ground forces and simultaneous near-real-time wide area surveillance as well as downlink of targeting information to air and ground commanders. Joint STARS battle managers, in combination with a robust communications suite, conduct C^2 of air operations to engage enemy forces in day, night, and adverse weather 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).

E-8A. Prototype version, with specialized equipment installed aboard two specially modified 707-300 airframes. One was converted to an in-flight pilot trainer in 1997, and the second has been placed in long-term storage.

E-8C. Production version, based on former commercial 707-300 airframes. Equipped with 18 operations-and-control consoles, two of which double as communications stations. The first E-8C flew in March 1994 and served as the preproduction test bed. The last six production aircraft will have more advanced computer systems, which will be retrofitted on the 10 earlier aircraft.

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.
IOC: October 1993.
Production: three.
Inventory: two.
Unit Location: Offutt AFB, Neb.
Contractor: Boeing.
Power Plant: four Pratt & Whitney TF33-P-5 turbofans, each 16,050 lb thrust.
Accommodation: seating for 38.
Dimensions: span 131 ft, length 135 ft, height 42 ft.
Weight: gross 297,000 lb.
Ceiling: 50,000 ft (basic C-135).
Performance: speed: 500+ mph, unrefueled range 3,900 miles.
COMMENTARY

A modified version of the WC-135, used for specialized reconnaissance with an infrared linescanner, Synthetic Aperture Radar, and forward- and vertical-looking video cameras, to monitor the 1992 Open Skies Treaty.

OC-135B modifications center around four cameras installed in the rear of the aircraft. Cameras installed include one vertical and two oblique KS-87 framing cameras, used for low-altitude photography approximately 3,000 ft above the ground, and one KA-91 pan camera, which pans from side to side to provide a wide sweep for each picture, used for high-altitude photography at approximately 35,000 ft. Data is processed and recorded by the Miletus camera annotation system.

RC-135

Brief: Specially configured variant of the Boeing C-135 Stratolifter, having an elongated nose and cheeks containing highly advanced electronic signal collection systems. Used to acquire real-time electronic intelligence data for theater and tactical commanders.

Function: Electronic reconnaissance aircraft.
Operator: ACC.
First Flight: not available
Delivered: circa 1973–99.
IOC: circa 1973 (Rivet Joint).
Production: (converted).
Inventory: 21.
Unit Location: Offutt AFB, Neb.
Contractor: Raytheon.
Power Plant: four Pratt & Whitney TF33-P-5/9 turbofans, each 18,000 lb thrust. (Replaced with CFM International F108-CF-100s in one W version; re-engining of further aircraft anticipated.)
Accommodation: flight crew of four; 25–35 mission crew.
Dimensions: span 145 ft 9 in, length 164 ft, height 42 ft 6 in.
Weight: max gross 336,000 lb.
Ceiling: 45,000 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.

RC-135S Cobra Ball is used for missile tracking. Equipment includes wide-area IR sensors, long-range optical telescopes, and an advanced communications suite that can locate a missile more than 250 miles away and calculate its trajectory and impact point.

RC-135U Combat Sent. Two aircraft with larger tailcone and fin fairing, used for measuring and analyzing foreign electronic and IR equipment. IOC: 1967.

RC-135 V/W Rivet Joint. Used for electronic surveillance. RC-135 Rivet Joints loiter near battlefields and provide near-real-time data updates on enemy defensive and offensive activities to warfighters via the Tactical Information Broadcast System and JTIDS to crews of F-16CJ HTS aircraft. The aircraft's recon systems are continuously upgraded to keep pace with new threats.

TC-135S/W. Used for training purposes.

RQ-1A Predator

Brief: A medium-altitude, long-endurance Unmanned Aerial Vehicle (UAV), flown remotely. Joint force commander asset with multiple imagery sensors.

Function: Unmanned reconnaissance aircraft.
Operator: ACC.
First Flight: July 1994.
Delivered: November 1996–present.
IOC: TBD
Production: 12 systems planned (system typically consists of four air vehicles, one ground control station, and one Trojan Spirit II satellite communications suite). Sixty vehicles total ordered.
Inventory: Eight systems.
Unit Location: Indian Springs AFAF, Nev.
Contractor: General Atomics.
Power Plant: one Rotax 914 engine.
Accommodation: unmanned system.
Dimensions: length 27 ft, height 6 ft 9 in, span 48 ft 8 in.

***RQ-1A** Predator* (USAF photo)

Weight: empty 950 lb, gross 2,250 lb.
Ceiling: 25,000 ft.
Performance: cruise speed up to 80 mph, continuous coverage on station with multiple air vehicles and relief on station, 460 miles from base at altitude of 25,000 ft, endurance 40 hr.

COMMENTARY

USAF has two Predator squadrons, the 11th and 15th RS. Both squadrons support operational deployment commitments, and the 11th conducts mission qualification training. The system demonstrated its operational capability during surveillance missions over Bosnia and Iraq. Navigation is by GPS/INS. Equipped with EO/IR and SAR sensors with C-band line of sight and Ku-band satellite data link allowing near-real-time transmissions of video images to the ground control station. System upgrades are under way to expand capability. Armed Predator tests have been undertaken to assess its potential for the attack mission. USAF is also contemplating an air-to-air role.

RQ-4A Global Hawk
Brief: A high-altitude, long-range, long-endurance Unmanned Aerial Vehicle.
Function: Unmanned reconnaissance aircraft.
Operator: ACC.
First Flight: Feb. 28, 1998.
Delivered: five.
IOC: 2003 (anticipated).
Production: MSII/LRIP decision expected in FY01.
Inventory: TBD
Unit Location: Beale AFB, Calif. (preferred option).
Contractor: Northrop Grumman.
Power Plant: one Rolls Royce–Allison AE 3007H turbofan, 7,600 lb thrust.
Accommodation: unmanned system.
Dimensions: length 44 ft 5 in, height 15 ft 2 in, span 116 ft 2 in.
Weight: empty 9,200 lb, gross 25,600 lb.
Ceiling: 67,300 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 3,450 miles from base for 24 hr.

COMMENTARY

A high-altitude endurance UAV carrying a 2,000-lb payload, incorporating EO/IR and SAR sensors that permit switching among radar, IR, and visible wavelengths as required. Objective system will add signals intelligence (Sigint) and improved Moving Target Indicator (MTI) capability. Navigation is by GPS/INS. Global Hawk flies autonomously from takeoff to landing, providing near-real-time imagery products for tactical and theater commanders. Vehicle ground track and mission plan can be updated in real time to respond to changing air traffic control needs and/or mission collection needs. Global Hawk No. 2 crashed March 29, 1999. Vehicle No. 3 was damaged Dec. 6, 1999, after a test flight. Vehicle No. 1 resumed test flights March 11, 2000, after a precautionary standdown.

Global Hawk completed its advanced concept technology demonstration on June 30, 2000. It completed 58 flights, flew in excess of 66,000 ft altitude and 31 hours endurance, accumulating more than 700 hours total flight time. Global Hawk participated in several joint/NATO exercises, to include flying over water to Alaska and completing the first transoceanic crossing to Portugal and back.

A military utility assessment completed in September 2000 found that the system demonstrated military utility and should be expeditiously fielded. The Air Force is currently evaluating options to field operational Global Hawks, with upgraded sensor capabilities, following a positive acquisition decision in FY01.

Projected Primary Aircraft Inventory (PAI) is 18 imagery intelligence (Imint) and 12 Sigint aircraft. Total buy TBD.

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: 35.
Unit Location: Beale AFB, Calif.
Contractor: Lockheed.
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: max cruising speed ceiling, more than 430 mph; range more than 4,500 miles; max endurance 14+ hr.

***U-2** Dragon Lady* (SSgt. Sean M. Worrell)

COMMENTARY

The U-2 is the Air Force's premier high-altitude reconnaissance system, capable of carrying Imint and Sigint sensors simultaneously.

The current generation of imaging (SAR, EO camera) and signals sensors are being modified and will reach the field along with a new aircraft power distribution system over the coming year.

U-2R (single-seat) and **U-2RT** (two-seat) aircraft, derived from the original version that had a key role in the Cuban missile crisis of 1962, were significantly larger and more capable than the earlier aircraft. The last U-2R aircraft were delivered to USAF in October 1989. In 1992, all existing U-2s and tactical TR-1s were consolidated under the designation U-2R.

U-2S (single-seat) and **U-2ST** (two-seat) are the current designations of all 35 aircraft (31 U-2S mission aircraft, four U-2ST trainers) in the inventory, having completed conversion to S model configuration with the new GE F118 engine, incorporating significant improvements in reliability and performance over the U-2R. The Air Force accepted the first U-2S in October 1994.

WC-130 Hercules
Brief: A high-wing, medium-range aircraft flown by Air Force Reserve Command for weather reconnaissance missions. It flies into the eye of tropical cyclones or hurricanes, collecting weather data from within the storm's environment.
Function: Weather reconnaissance aircraft.
Operator: AFRC.
First Flight: circa 1959.
Delivered: C-130J: October 1999–present.
IOC: 1959 (B model), 1962 (E), 1964 (H).
Production: (no new-build WC-130H).
Inventory: 14 (WC-130H).
Unit Location: Keesler AFB, Miss.
Contractor: Lockheed.
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: six.
Dimensions: span 132 ft 6 in, length 99 ft 4 in, height 38 ft 6 in.
Weight: gross 155,000 lb.
Ceiling: 33,000 ft at 100,000 lb gross T-O weight.
Performance: speed 374 mph at 20,000 ft, range 4,000 miles.

COMMENTARY

The WC-130 is flown by AFRC organizations known as the Hurricane Hunters. The hurricane reconnaissance area includes the Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and central Pacific Ocean areas.

WC-130B/E. Earlier version C-130 modifications used for weather reconnaissance. Now retired.

WC-130H. Improved version, currently operated by the 53rd WRS for weather reconnaissance duties, including penetration of tropical storms, to obtain data for forecasting storm movements.

It is equipped with two external 1,400-gallon fuel tanks, an internal 1,800-gallon fuel tank, and uprated engines. An average weather reconnaissance mission might last 11 hours and cover almost 3,500 miles while the crew collects and reports weather data every minute. Results are transmitted via satellite to the National Hurricane Center, Miami, Fla.

WC-130J. Weather-capable versions of the latest C-130 model, powered by four Allison AE2100D3 turboprops. First of 10 aircraft that will replace the WC-130H was delivered Oct. 12, 1999. First test and evaluation sortie made Nov. 18, 1999.

Special Duty Aircraft

E-4B National Airborne Operations Center
Brief: A four-engine, swept-wing, long-range, high-altitude airplane providing a modern, highly survivable, C^3 center allowing the National Command Authority 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.
Power Plant: four General Electric CF6-50E2 turbofans, each 52,500 lb thrust.
Accommodation: up to 114.
Dimensions: span 195 ft 8 in, length 231 ft 4 in, height 63 ft 5 in.
Weight: gross 800,000 lb.
Ceiling: above 30,000 ft.
Performance: unrefueled endurance in excess of 12 hr; with aerial refueling up to 72 hr.

COMMENTARY

E-4 aircraft are used to execute the National Airborne Operations Center (NAOC), previously the National Emergency Airborne Command Post (NEACP), mission. The E-4B fleet provides a survivable C^3 platform capable of supporting the National Command Authority throughout the full threat spectrum, including sustained operations in a nuclear environment.

A militarized version of the Boeing 747-200, the first B model was delivered to the Air Force in January 1980. Four were produced, of which three were converted E-4As. The first operational mission was flown in March 1980. They are hardened against the effects of nuclear explosions, including electromagnetic pulse, and have in-flight refueling capability. A 1,200-kVA electrical system supports advanced system electronics as well as state-of-the-art communications and data processing equipment such as Extremely High Frequency (EHF) Milstar satellite terminals and six-channel International Maritime Satellite (INMARSAT). A triband radome also houses the E-4B's Super High Frequency (SHF) Frequency Demand Multiple Access (FDMA) 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 EMD phase of a modernization program aimed at updating the electronic infrastructure supporting the aircraft's primary mission equipment and increasing the bandwidth of external communications and onboard data transfer. These updates, along with programmed changes to the aircraft's interior configuration, internal noise reduction modifications, Battle Management improvements, and Global Air Transport Management (GATM) avionics modifications, will ensure the E-4B aircraft can effectively execute its NAOC and FEMA missions for the foreseeable future.

EC-18

Brief: A heavily modified Boeing 707 used as a flexible airborne telemetry and other data recording and relay station in tests of aircraft, spacecraft, and missiles.

Function: Electronic surveillance.
Operator: AFMC.
First Flight: February 1985.
Delivered: January 1986.
IOC: January 1986.
Production: six.
Inventory: three.
Unit Location: Edwards AFB, Calif.
Contractor: Boeing.
Power Plant: four Pratt & Whitney TF33 turbofans, each 18,000 lb thrust.
Accommodation: 16–24 in EC-18B.
Dimensions: span 145 ft 9 in, length 152 ft 11 in, height 42 ft 5 in.
Weight: gross 326,000 lb.
Ceiling: 42,000 ft.
Performance: max cruise speed 470 mph, range 7,610 miles.
COMMENTARY

EC-18B Advanced Range Instrumentation Aircraft (ARIA), modified former commercial Boeing 707-320 transports, replaced some of the EC-135A/E ARIA aircraft. The EC-18B is similarly equipped, with the world's largest airborne steerable antenna housed in a bulbous nose. Range, cabin space, and fuel efficiency are all increased to provide greater support for the ARIA mission, including DOD and NASA space and missile programs. The last is to retire by the end of FY01.

EC-18D Cruise Missile Mission Control Aircraft (CMMCA) are Boeing 707s, modified by Chrysler, to include an AN/APG-63 surveillance radar, telemetry receiver, and weather radar. Operated by the 452nd FTS, the two aircraft support USAF and USN missile testing and are also capable of monitoring and controlling UAVs.

EC-130E/J

Brief: A heavily modified C-130 which, in its several variants, is used to carry out battlefield command, electronic warfare, and electronic combat.

Function: Electronic warfare.
Operator: ACC, ANG.
First Flight: January 1990.
Delivered: March 1990.
IOC: December 1990.
Production: (no USAF new-build EC-130Es).
Inventory: 15.
Unit Location: Active: Davis–Monthan AFB, Ariz. ANG: Harrisburg IAP, Pa.
Contractor: Lockheed Martin.
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: four flight crew, 15 mission personnel.
Dimensions: span 132 ft 7 in, length 100 ft 6 in, height 38 ft 3 in.
Weight: gross 155,000 lb.
Ceiling: 20,000 ft.
Performance: speed 299 mph, range in excess of 2,100 miles.
COMMENTARY

EC-130E ABCCC is an Airborne Battlefield Command and Control Center. Seven aircraft were updated by Unisys to ABCCC III standard. The advanced JTIDS receives data transmitted by AWACS aircraft and other systems, enabling the crew to see a real-time picture of air operations over a combat area. EC-130s have been deployed in support of NATO operations.

EC-130E Commando Solo. ANG uses this version as a broadcasting station for psychological warfare operations. Specialized modifications include enhanced navigation systems, self-protection equipment, and worldwide color television configuration. Commando Solo aircraft have been used in numerous military operations. They also have a role in civil emergencies. Secondary mission is electronic attack in the military frequency spectrum.

EC-130J Commando Solo. Four specialist versions of the latest C-130 aircraft ordered. First expected to enter operational service mid-2001 with the 193rd Special Operations Wing (ANG), Harrisburg.

EC-130H Compass Call

Brief: A heavily modified C-130 for electronic combat.
Function: Electronic warfare.
Operator: ACC.
First Flight: 1981.
Delivered: 1982.
IOC: 1983.
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 ft 7 in, length 100 ft 6 in, height 38 ft 3 in.
Weight: 155,000 lb.
Ceiling: 20,000 ft.
Performance: speed 374 mph at 20,000 ft.
COMMENTARY

A variant used as an airborne communications jamming and information warfare platform. It played a vital role in disrupting Iraqi military communications at strategic and tactical levels during the Persian Gulf War and has since been deployed to the Balkans and Southwest Asia.

EC-135

Brief: Modified KC-135 tanker aircraft extensively equipped with sophisticated communications equipment was used to provide continuous airborne alert in support of national command and control; other aircraft used for telemetry and voice relay.

Function: Specialized test aircraft.
Operator: AFMC.
First Flight: not available
Delivered: not available
IOC: Feb. 3, 1961.
Production: (converted).
Inventory: three.
Unit Location: Edwards AFB, Calif.
Contractor: Boeing.
Power Plant: (EC-135C) four Pratt & Whitney TF33-P-9 turbofans, each 18,000 lb thrust.
Accommodation: flight crew of four, plus various specialists.
Dimensions: span 130 ft 10 in, length 136 ft 3 in, height 38 ft 4 in.
Weight: (ARIA) gross 300,500 lb.
Ceiling: (ARIA) 33,000 ft.
Performance: (ARIA) max cruise speed 490 mph, operational radius 2,675 miles.
COMMENTARY

Several KC-135A tankers were modified for use as airborne command posts during the 1960s.

EC-135A/G/L were operated by SAC; **EC-135H** by USAFE; **EC-135J/P** by PACAF; and **EC-135K** by TAC. **EC-135N**s had specialized nose radar and tracking equipment to support the Apollo program. Other EC-135 aircraft included **J** and **Y** versions. Virtually all retired.

EC-135C aircraft, known as Looking Glass, supported STRATCOM's Airborne National Command Post mission, as well as other command-and-control missions. Delivered as KC-135Bs, they were redesignated in 1964 to reflect their role. Continuous airborne alert status ended July 24, 1990, and all retired by September 1998 as the USN's E-6B aircraft took over the NCP mission.

EC-135E ARIA. The last E model, which functioned as a telemetry data recording and relay station to supplement land and marine telemetry stations that support DOD and NASA space and missile programs, was retired in November 2000. Specialized equipment included an airborne steerable antenna housed in a bulbous nose, a probe antenna on each wingtip, and a trailing wire antenna on the bottom of the fuselage. The cargo compartment was modified to include all of the instrumentation subsystems installed as a 30,000-lb modular package.

***EC-130H** Compass Call* (Ted Carlson)

Tanker Aircraft

HC-130N/P King

Brief: An extended-range, Combat Search-and-Rescue (CSAR) configured C-130 that extends the range of rescue helicopters through in-flight refueling and performs tactical delivery of Pararescue Jumper (PJ) specialists and/or equipment in hostile environments.

Function: Aerial refueling/transport.
Operator: ACC, ANG, AFRC.
First Flight: Dec. 8, 1964 (as HC-130H).
Delivered: from 1965.
IOC: 1986.
Production: (converted).
Inventory: 30.
Unit Location: active: Moody AFB, Ga; ANG: Francis S. Gabreski IAP, NY, Kulis ANGB, Alaska; AFRC: Davis–Monthan AFB, Ariz., Patrick AFB, Fla., Portland IAP, Ore.
Contractor: Lockheed (now Lockheed Martin).
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: four flight crew, plus mission crew.
Dimensions: span 132 ft 7 in, length 98 ft 9 in, height 38 ft 6 in.
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 locator systems compatible with aircrew survival radios. Ongoing modifications include an improved digital low-power color radar, integrated satellite communications radio, NVG–compatible interior/exterior lighting, and cockpit armor. HC-130 avionics are slated for complete update through the C-130 Avionics Modernization Program.

KC-10 Extender

Brief: A modified McDonnell Douglas DC-10 that combines in a single aircraft the operations of aerial refueling and long-range cargo transport.

Function: Aerial refueling/transport.
Operator: AMC, AFRC (associate).
First Flight: April 1980.
Delivered: March 1981–April 1990.
IOC: August 1982.
Production: 60.
Inventory: 59.
Unit Location: McGuire AFB, N.J., Travis AFB, Calif.
Contractor: McDonnell Douglas (now Boeing).
Power Plant: three General Electric CF6-50C2 turbofans, each 52,500 lb thrust.
Accommodation: crew of four; additional seating possible for up to 75 persons; max 27 pallets; max cargo payload 169,409 lb.
Dimensions: span 165 ft 5 in, length 181 ft 7 in, height 58 ft 1 in.
Weight: gross 590,000 lb.
Ceiling: 42,000 ft.
Performance: cruising speed Mach 0.825, range with max cargo 4,370 miles.
COMMENTARY

The KC-10 combines the tasks of tanker and cargo aircraft in a single unit, enabling it to support worldwide fighter deployments, strategic airlift, strategic reconnaissance, and conventional operations.

***KC-135R** Stratotanker* (Ted Carlson)

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. Later modification included wing-mounted air refueling pods to increase capability.

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 US Navy, Marine Corps, and allied aircraft.

Function: Aerial refueling/airlift.

Operator: ACC, AETC, AFMC, AMC, PACAF, USAFE, ANG, AFRC.

First Flight: August 1956.

Delivered: January 1957–66.

IOC: June 1957, Castle AFB, Calif.

Production: 732.

Inventory: 546.

Unit Location: Altus AFB, Okla., Fairchild AFB, Wash., Grand Forks AFB, N.D., Kadena AB, Japan, MacDill AFB, Fla., McConnell AFB, Kan., Mountain Home AFB, Idaho, RAF Mildenhall, UK, Robins AFB, Ga. ANG: 19 units. AFRC: seven units.

Contractor: Boeing.

Power Plant: KC-135R/T: four CFM International F108-CF-100 turbofans, each 22,224 lb thrust; KC-135E: four TF33-PW-102 turbofans, each 18,000 lb thrust.

Accommodation: crew of four; up to 80 passengers.

Dimensions: span 130 ft 10 in, length 136 ft 3 in, height 38 ft 4 in.

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

Backbone of the USAF tanker fleet, the long-serving KC-135 is similar in size and appearance to commercial 707 aircraft but was designed to military specifications, incorporating different structural details and materials. The KC-135 fuel tanks are located in the "wet wings" and in fuel tanks below the floor in the fuselage.

KC-135A. Original version with J57 turbojets. USAF built 732, since modified to other standards.

KC-135E. The JT3D re-engining program upgraded 163 AFRC and ANG KC-135As to KC-135E standard with JT3D turbofans removed from surplus commercial 707s; fuel carrying capacity is increased by 20 percent.

KC-135R/T. Designation of re-engined KC-135As with CFM56 turbofans. They embody modifications to 25 major systems and subsystems and not only carry more fuel farther but have reduced maintenance costs, are able to use shorter runways, and meet Stage III requirements. The first KC-135R flight was in October 1982, and redeliveries began in July 1984. KC-135T aircraft were capable of refueling the now-retired SR-71s. The program continues.

Ongoing modifications are extending the capability and operational utility of the KC-135 well into this century. Renewal of the lower wing skin added 27,000 flying hours to the aircraft. The Pacer CRAG avionics modernization program permits operation by a three-person flight crew, with avionics upgrades under way that will significantly improve systems reliability and maintainability. The entire fleet will be fitted with improved cockpit and navigation suites, including color weather radar, and integrated INS/GPS. Reduced vertical separation minima and GATM upgrades are also planned for the entire fleet. Some KC-135Rs have been fitted with wing-mounted hose-and-drogue refueling pods to enhance interoperability and support to the US Navy, US Marines, NATO, and other allied receiver aircraft.

MC-130P Combat Shadow

Brief: Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide air refueling for Special Operations Forces (SOF) helicopters or to airdrop small special operations teams, small bundles, and zodiac and combat rubber raiding craft.

Function: Air refueling for SOF helicopters/airdrop.

Operator: AETC, AFSOC, ANG, AFRC.

First Flight: Dec. 8, 1964 (as HC-130H).

Delivered: from 1965.

IOC: 1986.

Production: (converted).

Inventory: 28.

Unit Location: Active: Eglin AFB, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK. ANG: Moffett Federal Airfield, Calif. AFRC: Duke Field, Fla.

Contractor: Lockheed.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: four flight crew, plus four mission crew.

Dimensions: span 132 ft 7 in, length 98 ft 9 in, height 38 ft 6 in.

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 Special Operations Forces by airdrop or air-land operations. To perform these missions, depending upon the enemy threat, crews navigate using both visual and electronic means, or visual means only. Primary emphasis is on NVG operations.

Modifications include improved secure communications, advanced integrated navigation equipment, including digital scan radar, ring-laser gyro INS, FLIR, GPS, and dual nav stations, as well as new missile warning systems and countermeasures for refueling missions in hostile environments. Some aircraft have been modified with an in-flight refueling system allowing them to be air refuelable.

Strategic Transports

C-5 Galaxy

Brief: A heavy-lift, air refuelable cargo transport for massive strategic airlift over long ranges, including outsize cargo. Supports special operations missions.

Function: Cargo and troop transport.

Operator: AETC, AMC, ANG, AFRC.

First Flight: June 30, 1968.

Delivered: October 1969–April 1989.

IOC: September 1970.

Production: 131.

Inventory: 126.

Unit Location: Active: Altus AFB, Okla., Dover AFB, Del., Travis AFB, Calif. ANG: Stewart IAP, N.Y. AFRC: Dover AFB, Del., Kelly 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 75. 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 ft 9 in, length 247 ft 10 in, height 65 ft 1 in.

Weight: empty 374,000 lb, gross 769,000 (wartime 840,000) lb.

Ceiling: 34,000 ft with a 605,000-lb load.

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 6,469 miles. Normal cruising speed at altitude 518 mph (Mach 0.77), unlimited range with in-flight air refueling.

COMMENTARY

One of the world's biggest aircraft, the C-5 is able to carry unusually large and heavy cargo for intercontinental ranges at jet speeds. It can take off and land in relatively short distances and taxi on substandard surfaces during emergency operations. Front and rear cargo openings permit simultaneous drive-through loading and off-loading.

C-5A. USAF took delivery of 81 of these basic models between December 1969 and May 1973. A major wing modification was subsequently undertaken, extending the aircraft's service life by 30,000 flight hours. Additionally, the avionics subsystems developed for the C-5B have been incorporated into the C-5A fleet. One ANG and two AFRC squadrons are C-5A–equipped. The reliability and maintainability of the C-5A version have been the focus of numerous AMC studies.

C-5B is generally similar to the C-5A but embodies

***C-5** Galaxy* (SSgt. Jim Howard)

C-17 Globemaster III (TSgt. Cary Humphries)

all the improvements introduced since completion of C-5A production, including the strengthened wings, improved turbofans, and updated avionics, with color weather radar and triple INS. The first C-5B flew for the first time in September 1985 and was delivered to Altus AFB, Okla., in January 1986.

C-5C. Two C-5As assigned to Travis AFB, Calif., were modified to carry outsize space cargo for NASA by extending the cargo bay and modifying the aft doors.

All USAF Galaxys are on contract to undergo a complete avionics modernization program that will install a state-of-the-art cockpit and ensure global access navigation safety compliance by the end of 2005. To baseline this modification, all C-5s have had their flight-management systems modernized and GPS receivers installed. A number of C-5s have been equipped with a prototype missile defense system. Additionally, the Air Force is planning a comprehensive modernization program including a re-engining effort, initially for the C-5B aircraft, to take advantage of an estimated service life through 2040.

C-17 Globemaster III

Brief: A heavy-lift, air refuelable cargo transport for intertheater (strategic) and intratheater (tactical) direct delivery airlift of all classes of military cargo, including outsize items.

Function: Cargo and troop transport.

Operator: AETC, AFMC, AMC, AFRC.

First Flight: Sept. 15, 1991.

Delivered: June 1993–present.

IOC: Jan. 17, 1995.

Production: 120 minimum.

Inventory: 67.

Unit Location: Altus AFB, Okla., Charleston AFB, S.C., McChord AFB, Wash. AFRC: Charleston AFB, S.C., McChord AFB, Wash.

Contractor: Boeing.

Power Plant: four Pratt & Whitney F117-PW-100 turbofans, each 40,440 lb thrust.

Accommodation: normal flight crew of three (two pilots plus loadmaster). Provisions for full range of military airlift missions, incl capacity for up to 102 passengers/paratroops or 36 litters; range of military cargo incl tanks, jeeps, and up to three AH-64A helicopters; three Bradley vehicles; one M1 main battle tank with other equipment; airdrop capability for single platforms weighing up to 60,000 lb.

Dimensions: span over winglet tips 169 ft 10 in, length 173 ft 11 in, height 55 ft 1 in.

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 .74) at 28,000 ft, unrefueled range with 160,000-lb payload 2,760 miles, unlimited with refueling.

COMMENTARY

Developed to meet US force projection requirements, the C-17 is able to operate routinely into small, austere airfields (3,000 ft x 90 ft) previously restricted to C-130s and provides the first capability to air-land or airdrop outsize cargo in the tactical environment.

C-17A is the first military transport to feature a full digital fly-by-wire control system and two-person cockpit, with two full-time, all-function HUDs and four multifunction electronic displays. For operational deployments to Bosnia, the C-17 was the only aircraft capable of carrying outsize cargo into Tuzla AB.

C-135 Stratolifter

Brief: A version of the KC-135 tanker, without refueling equipment, produced for nontanker duties.

Function: Passenger and cargo airlifter.

Operator: AFMC, PACAF.

First Flight: May 1961.

Delivered: 1961–62.

IOC: circa 1961.

Production: 48, plus five WC/TC-135s.

Inventory: five.

Unit Location: Edwards AFB, Calif., Hickam AFB, Hawaii.

Contractor: Boeing.

Power Plant: (C-135B) four Pratt & Whitney TF33-P-5 turbofans, each 18,000 lb thrust.

Accommodation (C-135B): 60 passengers.

Dimensions: span 130 ft 10 in, length 134 ft 6 in, height 38 ft 4 in.

Weights (C-135B): operating weight empty 102,300 lb, gross 275,500 lb.

Ceiling: 50,000 ft.

Performance (C-135B): max speed 600 mph, range with 54,000 lb payload 4,625 miles.

COMMENTARY

Several C-135 transports and variants, without the KC-135's refueling equipment, remain operational within USAF. They were ordered originally to serve as interim jet passenger or cargo transports, pending delivery of C-141s. Three converted KC-135s were followed by 45 production Stratolifters in two versions.

C-135A. The first 15 aircraft were equipped with J57-P-59W turbojets.

C-135B. The next version included upgraded Pratt & Whitney turbofans. USAF retrofitted 11 Bs with revised interior for VIP transportation.

C-141 Starlifter

Brief: Workhorse of the US airlift force, the Starlifter can project combat forces over long distances, inject those forces and their equipment either by air-land or airdrop, resupply these employed forces, and extract the sick and wounded from the hostile area to advanced medical facilities. Primary strategic special operations and airdrop platform.

Function: Long-range, air refuelable troop and cargo airlift.

Operator: AETC, AMC, ANG, AFRC.

First Flight: Dec. 17, 1963.

Delivered: October 1964–June 1982.

IOC: May 1965.

Production: 285.

Inventory: 130.

Unit Location: Active: Altus AFB, Okla., Charleston AFB, S.C., Edwards AFB, Calif., McChord AFB, Wash., McGuire AFB, N.J. ANG: Jackson IAP, Miss., Memphis IAP, Tenn. AFRC: Andrews AFB, Md., Charleston AFB S.C. (associate), March ARB, Calif., McChord AFB, Wash., McGuire AFB, N.J., Wright–Patterson AFB, Ohio.

Contractor: Lockheed.

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 ft 11 in, length 168 ft 4 in, height 39 ft 3 in.

Weight: operating 150,000 lb; max payload 68,725 lb normal, 89,000 lb emergency war planning; gross 325,000 lb normal, 344,900 lb emergency war planning.

Ceiling: 41,600 ft.

Performance: max cruising speed 566 mph, range with max payload 2,170 miles without air refueling.

COMMENTARY

Longtime mainstay of USAF's airlift fleet, the C-141 was the first jet aircraft designed to meet military standards as a troop and cargo carrier. Current plans call for retirement of all C-141s in active units by 2006.

C-141A entered service with MAC in April 1965; 285 were built, some of which were structurally modified to accommodate the Minuteman ICBM.

C-141B is a stretched C-141A with in-flight refueling capability. All C-141As (except four AFMC aircraft used for test purposes) were lengthened by 23 ft 4 in to expand lift capacity. First C-141B flew March 1977 and redeliveries took place between December 1979 and June 1982. The modification gave USAF the equivalent of 90 additional C-141A aircraft. Subsequent improvements include structural upgrades, a state-of-the-art autopilot and all-weather landing system, and improved airdrop systems. Modification of 13 C-141Bs is aimed at increasing their SOLL (Special Operations Low Level) capability and survivability.

C-141C is a C-141B modified with computerized glass-cockpit instrumentation and digital flight-management system, with integrated GPS data for navigation and modern navigation safety equipment. The first version, which rolled out at Warner Robins ALC, Ga., Oct. 1, 1997, was assigned to AFRC's 452nd Air Mobility Wing, March ARB, Calif. Sixty-three of these glass-cockpit transports are slated for ANG and AFRC.

Theater and Special Use Transports

C-9 Nightingale

Brief: A twin-engine, medium-range, swept-wing jet aircraft used primarily for the aeromedical evacuation mission. A modified version of the DC-9, it is the only USAF aircraft specifically designed for the movement of litter and ambulatory patients.

Function: Aeromedical evacuation.

Operator: AMC, PACAF, USAFE, AFRC.

First Flight: August 1968.

Delivered: August 1968–February 1975.

IOC: circa 1968.

Production: 24.

Inventory: 23.

Unit Location: Andrews AFB, Md., Ramstein AB, Germany, Scott AFB, Ill., Yokota AB, Japan.

Contractor: McDonnell Douglas (now Boeing).

Power Plant: two Pratt & Whitney JT8D-9A turbofans, each 14,500 lb thrust.

Accommodation: crew of three; 40 litter patients or 40 ambulatory patients, or a combination of both, plus five medical staff.

Dimensions: span 93 ft 5 in, length 119 ft 3 in, height 27 ft 5 in.

Weight: gross 121,000 lb.

Ceiling: 35,000 ft.

Performance: max cruising speed at 25,000 ft 565 mph, range more than 2,000 miles.

COMMENTARY

C-9A transport is a derivative of the DC-9 Series 30 commercial airliner, modified to include a special-care compartment with separate atmospheric and ventilation controls. One C-9A also provides DV airlift in Europe. Because of the critical nature of its mission, the aircraft carries a flight mechanic and a small supply of spares.

C-9C. Three specially configured C-9s were delivered to Andrews AFB, Md., in 1975 for Presidential and other US governmental duties.

C-12 Huron

Brief: Aircraft to provide airlift support for attaché and military advisory groups worldwide.

Function: Special airlift.

Operator: AETC, AFMC, PACAF.

First Flight: Oct. 27, 1972 (Super King Air 200).

Delivered: 1974–late 1980s.

IOC: circa 1974.

Production: 88.

Inventory: 30.

Unit Location: Elmendorf AFB, Alaska, Keesler AFB, Miss., Osan AB, South Korea, various overseas embassies.

Contractor: Beech.

Power Plant: (C-12J) two Pratt & Whitney Canada PT6A-65B turboprops, each 1,100 shp.

Accommodation: crew of two; C-12C: up to eight passengers; C-12J: up to 19 passengers.

Dimensions: (C-12J) span 54 ft 6 in, length 43 ft 9 in, 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.

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C-12D. Similar to C model and also deployed to overseas embassies.

C-12F. With uprated PT6A-42 engines, can support medical airlift.

C-12J. A military version of the larger Beechcraft Model 1900, operated by PACAF.

C-20 Gulfstream

Brief: A twin-engine turbofan aircraft acquired to provide airlift for high-ranking government and DOD officials.

Function: Operational support airlift; special air missions.

Operator: AMC, USAFE.

First Flight: December 1979.

Delivered: from September 1983.

IOC: circa 1983.

Production: not available

Inventory: 13.

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 ft 10 in, length 83 ft 1 in, height 24 ft 4 in.

Weight: C-20A/B gross 68,200 lb; C-20H gross 74,600 lb.

Ceiling: 45,000 ft.

Performance: max cruising speed 561 mph, range 4,050 miles.

COMMENTARY

C-20A. Three Gulfstream III transports were acquired to replace aging C-140B aircraft. They provide USAFE's Operational Support Airlift fleet with intercontinental range and ability to operate from short runways.

C-20B. Seven C-20B versions, with advanced mission communications equipment and revised interior, were acquired in the late 1980s. Two C-20B aircraft have been retired.

C-20C. Three special missions aircraft, with hardened strategic communications equipment.

C-20H. Two Gulfstream IV–SP aircraft, with advanced-technology flight-management systems and upgraded Rolls Royce engines, were acquired by USAF to meet expanding special air mission requirements.

C-21

Brief: Aircraft designed to provide cargo and passenger airlift and transport litters during medical evacuations.

Function: Pilot seasoning, passenger and cargo airlift.

Operator: AETC, AMC, PACAF, USAFE, ANG.

First Flight: January 1973.

Delivered: April 1984–October 1985.

IOC: April 1984.

Production: 84.

Inventory: 78.

Unit Location: Andrews AFB, Md., Keesler AFB, Miss., Langley AFB, Va., Maxwell AFB, Ala., Offutt AFB, Neb., Peterson AFB, Colo., Ramstein AB, Germany, Randolph AFB, Tex., Scott AFB, Ill., Stuttgart, Germany, Wright–Patterson AFB, Ohio, Yokota AB, Japan.

Contractor: Raytheon.

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 ft 6 in, length 48 ft 7 in, height 12 ft 3 in.

Weight: empty, equipped 10,119 lb, gross 18,300 lb.

Ceiling: 45,000 ft.

Performance: max level speed at 25,000 ft 542 mph, range with max passenger load 2,420 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.

C-22

Brief: A Boeing 727-100 used by the Air National Guard as its primary medium-range aircraft for airlift of personnel.

Function: Passenger transportation.

Operator: ANG.

First Flight: February 1963 (commercial).

Delivered: 1984.

IOC: circa 1984.

Production: four.

Inventory: three.

Unit Location: Andrews AFB, Md.

Contractor: Boeing.

Power Plant: three JTD8D-7 turbofans, each 14,000 lb thrust.

Accommodation: flight crew of four, plus three or four cabin crew; up to 89 passengers.

Dimensions: span 108 ft, length 133 ft 2 in, height 34 ft.

Weight: gross 170,000 lb.

Ceiling: 37,400 ft.

Performance: max speed 630 mph, range 2,000 miles, 5.5 hr endurance.

COMMENTARY

C-22B. Boeing 727 commercial transports purchased and modified as C-22Bs for use by ANG on operational support airlift missions. Two were further modified to accommodate an additional 1,100 gallons of fuel and landing gear rated for 170,000 lb gross landing weight.

C-26

Brief: A modified commuter transport aircraft.

Function: Transport, medevac, and counterdrug.

Operator: ANG.

First Flight: not available

Delivered: March 1989–present.

IOC: March 1989.

Production: not available

Inventory: 12 (C-26B, UC-26C).

Unit Location: various ANG units.

Contractor: Fairchild.

Power Plant: two AlliedSignal TPE331-11U-612G turboprops, each 1,100 shp (C-26A); TPE331-12UAR-701G, each 1,119 shp (C-26B); or TPE331-3U-303G, each 840 shp (UC-26C).

Accommodation: crew of two; 14–22 passengers.

Dimensions: (UC-26C) span 57 ft, length 59 ft 4 in, height 16 ft 8 in.

Weight: (UC-26C) gross 12,500 lb.

Ceiling: (UC-26C) 30,000 ft.

Performance: max cruising speed at midcruise weight of 12,500 lb 321 mph, range with 19 passengers 1,224 miles.

COMMENTARY

C-26A. USAF acquired 13 Fairchild Metro III commuter transport aircraft, under the designation C-26A, to replace ANG C-131s. C-26As serving in the ANG Operational Support Transport Aircraft (ANGOSTA) role have a quick-change interior, enabling passenger seats to be replaced by a medevac or cargo-carrying configuration.

C-26B. C-26Bs, modified Fairchild Metro 23s, have FLIR, TCAS II, GPS, and microwave landing systems.

UC-26C. A modified Fairchild Merlin IVC, used for counterdrug operations.

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.

Function: VIP air transport.

Operator: AMC.

First Flight: Feb. 19, 1982 (USAF Feb. 11, 1998).

Delivery: June–December 1998.

IOC: 1998.

Production: four.

Inventory: four.

Unit Location: Andrews AFB, Md.

Contractor: Boeing.

Power Plant: two Pratt & Whitney PW2040 turbofans, each 41,700 lb thrust.

Accommodation: 16 crew and 45 passengers.

Dimensions: span 124 ft 10 in, length 155 ft 3 in, height 44 ft 6 in.

Weight: empty 127,800 lb, gross 255,000 lb.

Performance: cruise speed Mach 0.8–0.86, cruise altitude 41,000 ft.

COMMENTARY

New Boeing 757-200s, known as C-32As, were acquired 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.

C-37A

Brief: A modified Gulfstream V utilized as part of the executive fleet, providing transportation for the vice president, cabinet, Congressional members, Secretary of Defense, service secretaries, and other prominent US and foreign officials.

Function: VIP air transport.

Operator: AMC.

First Flight: USAF October 1998.

Delivery: October 1998–February 2000.

IOC: Dec. 9, 1998.

Production: three.

Inventory: three.

Unit Location: Andrews AFB, Md.

Contractor: Gulfstream.

Power Plant: two BMW–Rolls Royce BR710A1-10 turbofans, each 14,750 lb thrust.

Accommodation: five crew and 12 passengers.

Dimensions: span 93 ft 6 in, length 96 ft 5 in, height 25 ft 10 in.

Weight: empty 47,601 lb, gross 90,500 lb.

Performance: cruise speed Mach 0.8, cruise altitude up to 51,000 ft.

COMMENTARY

Two C-37As, along with the C-32s, are replacements for the VC-137B/C aircraft. They can conduct simultaneous diplomatic missions with secure communications. Capable of operations at any suitable civilian or military airfield in the world. The third C-37 is a CINC support airlift aircraft based in the European Theater as a pooled 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 cargo use.

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 ft 7 in, length 55 ft 7 in, height 18 ft 2 in.

Weight: gross 24,800 lb.

Performance: cruise speed Mach 0.87, cruise altitude 33,000 ft.

COMMENTARY

The C-38A is a military version of the Astra SPX

***C-20** Gulfstream* (Ted Carlson)

***MC-130E** Combat Talon* (Ted Carlson)

produced by IAI and supported worldwide by Galaxy Aerospace. Two aircraft are operated by ANG's 201st AS replacing Learjet C-21As. The contract includes an option for two additional aircraft.

C-130 Hercules

Brief: A rugged aircraft capable of operating from rough dirt strips to provide theater airlift and paradropping of troops and equipment into hostile areas.

Function: Inter- and intratheater airlift.

Operator: AETC, AFMC, AMC, PACAF, USAFE, ANG, AFRC.

First Flight: August 1954 (C-130A).

Delivered: December 1956–present.

IOC: circa 1958.

Production: more than 2,200.

Inventory: 533: 228 (E), 293 (H), 12 (J).

Unit Location: Active: Dyess AFB, Tex., Edwards AFB, Calif., Elmendorf AFB, Alaska, Little Rock AFB, Ark., Pope AFB, N.C., Ramstein AB, Germany, Yokota AB, Japan. ANG: 22 units. AFRC: 10 units.

Contractor: Lockheed Martin.

Power Plant: (C-130H) four Rolls Royce–Allison T56-A-15 turboprops, each 4,300 shp. (C-130J) four Rolls Royce–Allison AE2100D3 engines.

Accommodation: (C-130H) crew of five; up to 92 troops, 64 paratroops, 74 litter patients plus attendants, 54 passengers on palletized seating, or up to five 463L standard freight pallets, etc.

Dimensions: span 132 ft 7 in, length 97 ft 9 in, height 38 ft 1 in.

Weight: (C-130H) empty 81,000 lb, fuel/cargo max gross 155,000 lb.

Ceiling: 33,000 ft at 100,000 lb T-O weight.

Performance: (C-130H) max cruising speed 385 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.

COMMENTARY

First flown 46 years ago, the C-130 Hercules transport continues in production and has been delivered to more than 60 countries. Basic and specialized versions operate throughout USAF, performing diverse roles in both peace and war situations, including airlift support, Arctic ice cap resupply, aeromedical missions, aerial spray missions, fire-fighting duties for the US Forest Service, and natural disaster and humanitarian relief missions.

C-130A, B, and D. Early versions, now retired. The initial production C-130A had four Allison T56-A-11 or -9 turboprop engines. USAF ordered a total of 219. The C-130B had improved range and higher weights and introduced Allison T56-A-7 turboprops; 134 were produced, with delivery from April 1959. Twelve were modified beginning 1961 as **JC-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 has extended the life of the aircraft well into this century. Other modifications include a self-contained navigation system, with an integrated communications/navigation management suite, GPS capability, and a state-of-the-art autopilot that incorporates a ground collision avoidance system. ANG C-130Es are used in fire-fighting missions.

C-130H is generally similar to the E model but has updated turboprops, a redesigned outer wing, and improved pneumatic systems; delivery began in July 1974. Subsequent improvements include updated avionics, improved low-power color radar, and other minor modifications. Night vision instrumentation system was introduced from 1993. TCAS II in new aircraft from 1994. ANG and AFRC C-130Hs are used in fire-fighting missions. Specifically modified aircraft are used by AFRC's 757th AS for aerial spraying, typically to suppress mosquito-spread epidemics. The ANG's 109th AW, Schenectady County Airport, N.Y., operates 10 LC-130H/Rs, modified with wheel-ski gear in support of Arctic and Antarctic operations. Two **DC-130Hs** were modified for UAV control duties.

USAF plans to upgrade C-130E/H aircraft under the Avionics Modernization Program.

C-130J. This newest model features a three-crew flight operation system, 6,000-shp Rolls Royce–Allison AE2100D engines, all composite six-blade Dowty Aerospace R391 propeller system, digital avionics, and mission computers. Compared to earlier production C-130Es, its speed is up 21 percent, cruising altitude is 40 percent higher, and range 40 percent longer. The J also features improved reliability and maintainability. USAF plans to procure C-130Js to replace its oldest 1960s-vintage C-130Es. ANG and AFRC units have already begun receiving J models.

C-137 Stratoliner

Brief: A modified Boeing 707 providing transportation for the vice president, cabinet and Congressional members, and other high-ranking US and foreign officials. It also serves as a backup for Air Force One, the Presidential aircraft.

Function: VIP air transport.

Operator: AMC.

First Flight: April 1959.

Delivered: from 1959.

IOC: 1962.

Production: seven.

Inventory: one.

Unit Location: Andrews AFB, Md.

Contractor: Boeing.

Power Plant: four Pratt & Whitney JT3D-3B turbofans, each 18,000 lb thrust.

Accommodation: varies with mission.

Dimensions: span 145 ft 9 in, length 152 ft 11 in, height 42 ft 5 in (VC-137C).

Weight: gross 322,000 lb (VC-137C).

Ceiling: 42,000 ft.

Performance: max speed 627 mph, range 6,000 miles (VC-137C).

COMMENTARY

One specially modified Boeing 707 transport is operated by AMC's 89th Airlift Wing for VIP duties. Other aircraft have been replaced by new Boeing 757-200s, designated C-32A, and two Gulfstream-5s, designated C-37A.

VC-137A. Three specially configured 707-120 aircraft, acquired by USAF for VIP duties. All modified to B standard.

C-137B. VC-137A aircraft modified with turbofan engines. All retired.

C-137C. Four VIP–configured 707-320Bs, two of which have been Air Force One aircraft. Aircraft tail #26000, the first VC-137C in service (Oct. 12, 1962) and the first specifically purchased for use as Air Force One, retired in May 1998. It is perhaps most well-known as the aircraft that was used to return President John F. Kennedy's body to Washington and to host the swearing in of President Lyndon B. Johnson in 1963. The sole operational C-137 Air Force One, tail #27000, entered service Aug. 4, 1972.

CV-22

Brief: A tilt rotor, multimission transport aircraft designed to have the maneuverability and lift capability of a helicopter and the speed of a fixed wing aircraft.

Function: Multimission airlift.

Operator: AFSOC.

First Flight: March 19, 1989 (V-22).

Delivery: 2003 (planned).

IOC: 2005 (planned).

Production: 50 (planned).

Inventory: 50 (planned).

Unit Location: Hurlburt Field, Fla.

Contractor: Bell–Boeing.

Power Plant: two Rolls Royce–Allison AE1107C turboshafts, each 6,200 shp.

Accommodation: four (two pilots, two flight engineers), up to 24 troops or 8,000 lb internal cargo.

Dimensions: proprotor diameter 38 ft, width, rotors turning 84 ft 7 in, fuselage length 57 ft 4 in, height over tail fins 17 ft 8 in.

Weight: gross weight, VTO 52,870 lb; STO 57,000 lb, self-deploy T-O 60,500 lb.

Ceiling: 25,000 ft.

Performance: typically will carry troops or cargo over a 575-mile combat radius at 265 mph. Self-deployment range with one air refueling 2,417 miles.

COMMENTARY

CV-22 is the designation for the US Special Operations Command variant of the V-22 Osprey, currently undergoing combined testing at Edwards AFB, Calif. It is a tilt rotor, Vertical/Short Takeoff and Landing (V/STOL) aircraft capable of operations in austere environments from remote bases or air capable ships. The CV-22's mission is long-range clandestine penetration of denied areas in adverse weather and low visibility to infiltrate, exfiltrate, and resupply SOF. Capable of air-to-air refueling, its range is limited only by crew endurance.

CV-22 avionics include a fully integrated precision navigation suite, with GPS and INS; a digital cockpit management system oriented around four Multifunction Displays (MFDs); FLIR; an integrated NVG HUD; Terrain-Following/Terrain-Avoidance (TF/TA) radar; and digital map system. The CV-22 also incorporates an extensive defensive countermeasures suite. Components of this system include a Radar Warning Receiver (RWR), missile warning system, laser detection system, radar missile jammer, IR missile jammer, and a countermeasures dispensing system. The communications suite will include secure UHF, VHF (AM and FM), and SATCOM radios.

The first CV-22 is planned to begin initial operational test and evaluation at Kirtland AFB, N.M., in spring 2002. Initial training capability is scheduled for September 2003 at Kirtland AFB, N.M., and IOC for February 2005 at Hurlburt.

MC-130E/H Combat Talon

Brief: A modified C-130 able to provide global, day, night, and adverse weather capability to air-drop personnel and to deliver personnel and equipment to support US and allied SOF.

Function: SOF infiltration, exfiltration, and resupply.

Operator: AETC, AFSOC, AFRC.

First Flight: circa 1965 (E); January 1990 (H).

Delivered: initially 1966.

IOC: 1966 (E); June 1991 (H).

Production: 24 (new-build Hs).

Inventory: 14 (E); 24 (H).

Unit Location: Active (associate) and AFRC MC-130Es at Duke Field, Fla. Active MC-130H at Hurlburt Field, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK.

Contractor: Lockheed Martin.

Power Plant: four Allison T56-A-15 turboprops, each 4,508 shp.

Accommodation: E: crew of nine; 53 troops or 26 paratroops; H: crew of seven; 75 troops or 52 paratroops.

Dimensions: span 132 ft 7 in, height 38 ft 6 in, length 100 ft 10 in (E), 99 ft 9 in (H).

Weight: empty 72,892 lb, gross 155,000 lb.

Ceiling: 33,000 ft.

Performance: max speed 366 mph, range 3,110 miles, unlimited with refueling.

COMMENTARY

MC-130 Combat Talon aircraft are equipped with in-flight refueling equipment, TF/TA radar, INS/GPS, ECM, and a high-speed aerial delivery system, enabling them to conduct infiltration, exfiltration, resupply, psychological operations, and aerial reconnaissance into hostile or denied territory. Combat Talons are able to deliver or air-drop personnel or equipment on austere, marked and unmarked landing zones/drop zones. They can conduct overt, clandestine, and low-visibility operations.

MC-130E (Combat Talon I). Fourteen modified C-130E aircraft, nine of which are equipped with a surface-to-air Fulton air recovery system. The MC-130Es are also equipped to air refuel helicopters. During Operation Desert Storm, MC-130Es played a vital role performing psychological operations, with a secondary mission in CSAR.

MC-130H (Combat Talon II). Twenty-four new-build MC-130Hs were acquired to supplement the Talon I. They include an integrated glass cockpit compatible

with NVGs and improved infrared and electronic defensive countermeasures. The 1st, 7th, and 15th SOSs employ the Combat Talon II, supporting unconventional warfare units from their bases in Japan, Europe, and CONUS, respectively. The 58th SOW at Kirtland AFB, N.M., is responsible for MC-130H mission qualification training.

VC-25 Air Force One

Brief: A specially configured Boeing 747-200B used for air transport of the President and his entourage. When the President is aboard, it has the radio call sign "Air Force One."

Function: Air transport of the President.
Operator: AMC.
First Flight: First flown as Air Force One Sept. 6, 1990.
Delivered: August–December 1990.
IOC: circa 1990.
Production: two.
Inventory: two.
Unit Location: Andrews AFB, Md.
Contractor: Boeing.
Power Plant: four General Electric CF6 turbofans, each 56,700 lb thrust.
Accommodation: crew of 26; up to 76 passengers.
Dimensions: span 195 ft 8 in, length 231 ft 10 in, height 63 ft 5 in.
Weight: long-range mission T-O weight 803,700 lb., gross 833,000 lb.
Ceiling: 45,000 ft.
Performance: high-speed cruise Mach 0.88–0.91, normal cruising speed Mach 0.84, unrefueled range 7,140 miles.
COMMENTARY
Based on the Boeing 747-200B airframe, two VC-25A Presidential transports replaced the former primary and backup Air Force One C-137Cs. Equipment aboard the aircraft makes them practically self-sufficient, and despite their long range they are air refuelable.

Trainer Aircraft

T-1 Jayhawk

Brief: A medium-range, twin-engine jet trainer version of the Beechcraft 400A. It is used by the Air Force to train student pilots to fly airlift, tanker, and bomber aircraft.

Function: Advanced pilot training.
Operator: AETC, AFRC (associate).
First Flight: Sept. 22, 1989 (Beechcraft 400A).
Delivered: Jan. 17, 1992–July 1997.
IOC: January 1993.
Production: 180.
Inventory: 180.
Unit Location: Columbus AFB, Miss., Laughlin and Randolph AFBs, Tex., Vance AFB, Okla.
Contractor: Raytheon.
Power Plant: two Pratt & Whitney Canada JT15D-5B turbofans, each 2,900 lb thrust.
Accommodation: two side by side and one to the rear; rails are fitted to accommodate an extra four seats to permit transport of maintenance teams.
Dimensions: span 43 ft 6 in, length 48 ft 5 in, height 13 ft 11 in.
Weight: empty 5,200 lb, gross 16,300 lb.
Ceiling: 41,000 ft.
Performance: max speed at 27,000 ft 538 mph, range 2,222 miles.
COMMENTARY
Pilots trained in the T-1 progress to transports such as the C-5 and C-17 or to tankers such as the KC-10 and KC-135.

T-1A. The swept-wing T-1A is a military version of the Beech 400A used for Joint Specialized Undergraduate Pilot Training (JSUPT). The T-1A differs from its commercial counterpart, having a single-point refueling system with greater capacity and increased bird strike protection in the windshield and leading edges for sustained low-level operation. A GPS retrofit program has been completed.

T-6A Texan II

Brief: A single-engine turboprop aircraft to be used for training student pilots, navigators, and naval flight officers in fundamentals of aircraft handling and instrument, formation, and night flying.

Function: Primary trainer.
Operator: AETC (USAF), USN.
First Flight: July 15, 1998.
Delivery: May 2000–present (operational aircraft).
IOC: FY01 (planned).
Production: USAF 454, USN 328 (planned).
Inventory: 18 (as at Nov. 3, 2000).
Unit Location: total planned: USAF: Columbus AFB, Miss., Laughlin, Randolph, and Sheppard AFBs, Tex., Moody AFB, Ga., Vance AFB, Okla. Navy: NAS Corpus Christi, Tex., NASs Pensacola and Whiting, Fla.
Contractor: Raytheon Beech.
Power Plant: one Pratt & Whitney Canada PT6A-68 turboprop, 1,100 shp.
Accommodation: two, in tandem, on zero/zero ejection seats.
Dimensions: span 33 ft 5 in, length 33 ft 4 in, height 10 ft 8 in.
Weight: empty (approx) 4,707 lb; gross 6,300 lb.
Ceiling: 31,000 ft.
Performance: max speed 368 mph.
COMMENTARY
The Joint Primary Aircraft Training System (JPATS) T-6A Texan II is based on the Swiss Pilatus PC-9 aircraft, modified to include a strengthened fuselage, upgraded engine, increased fuel capacity, pressurized cockpit, larger, bird-resistant canopy, and new digital avionics. The JPATS will replace USAF's T-37Bs and USN's T-34Cs in primary pilot training, as well as supporting undergraduate naval flight officer and USAF navigator training.

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: from December 1956.
IOC: 1957.
Production: 985.
Inventory: 417.
Unit Location: Columbus AFB, Miss., Laughlin, Randolph, and Sheppard AFBs, Tex., Vance AFB, Okla.
Contractor: Cessna.
Power Plant: two Continental J69-T-25 turbojets, each 1,025 lb thrust.
Accommodation: two, side by side, on ejection seats.
Dimensions: span 33 ft 8 in, length 29 ft 3 in, height 9 ft 2 in.
Weight: empty 3,870 lb, gross 6,625 lb.
Ceiling: 35,000 ft.
Performance: max speed at 25,000 ft 426 mph, range at 360 mph with standard tankage 870 miles.
COMMENTARY
USAF's first purpose-built jet trainer, the T-37 is currently AETC's standard two-seat primary trainer. A distinctive blue-and-white finish is intended to help formation training and ease maintenance.

T-37A, with J69-T-9 turbojets; all have been modified to T-37B standards.

T-37B. The original T-37A was superseded in November 1959 by the T-37B, with improved radio navigational equipment, UHF radio, and upgraded instruments. All A models were later converted to B standard. Kits were subsequently produced to extend the capability of the T-37 by modifying or replacing critical structural components. AETC began replacing the T-37B with the new T-6A Texan II in 2000.

T-38 Talon

Brief: A twin-engine, high-altitude, supersonic jet trainer used in a variety of roles, primarily for undergraduate pilot and pilot instructor training.

Function: Trainer.
Operator: ACC, AETC, AFMC, AFRC.
First Flight: April 1959.
Delivered: 1961–72.
IOC: March 1961.
Production: more than 1,100.
Inventory: 509.
Unit Location: Beale and Edwards AFBs, Calif., Columbus AFB, Miss., Eglin AFB, Fla., Holloman AFB, N.M., Laughlin, Randolph, and Sheppard AFBs, Tex., Moody AFB, Ga., Vance AFB, Okla., Whiteman AFB, Mo.
Contractor: Northrop.
Power Plant: two General Electric J85-GE-5A turbojets, each 2,680 lb thrust dry, 3,850 lb thrust with afterburning.
Accommodation: two, in tandem, on ejection seats.
Dimensions: span 25 ft 3 in, length 46 ft 4 in, height 12 ft 10 in.
Weight: empty 7,164 lb, gross 12,093 lb.
Ceiling: above 55,000 ft.
Performance: max level speed at 36,000 ft more than Mach 1.23 (812 mph), range, with reserves, 1,093 miles.

T-37 Tweet (Ted Carlson)

T-6 Texan II *(USAF photo)*

***T-38** Talon* (Ted Carlson)

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 and integrated GPS/INS. As a result of the reduction in the T-38's workload through introduction of the T-1A and JSUPT, the service life of the T-38s should extend well beyond 2020.

T-38A. Close in structure to the F-5A export tactical fighter, the T-38A was the world's first supersonic trainer aircraft. It is used to teach supersonic techniques, aerobatics, formation, night and instrument flying, and cross-country and low-level navigation. Also used to train test pilots and flight engineers at Edwards AFB, Calif., by AFMC to test experimental equipment, and by ACC to maintain pilot proficiency.

AT-38B. A slightly different version, with a gunsight and practice bomb dispenser, used by AETC for introduction to Fighter Fundamentals.

T-38C. All T-38A and AT-38B airframes will be redesignated as C models upon modification of the avionics systems, begun in 2000.

T-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: 11.
Unit Location: Randolph AFB, Tex.
Contractor: Boeing.
Power Plant: two Pratt & Whitney JT8D-9 turbofans, each 14,500 lb thrust.
Accommodation: crew of two; 12 students and six instructors.
Dimensions: span 93 ft, length 100 ft, height 37 ft.
Weight: gross 115,500 lb.
Ceiling: 37,000 ft.
Performance: econ cruising speed at 35,000 ft Mach 0.7, operational range 2,995 miles.
COMMENTARY
T-43A. The T-43A was derived from the commercial Boeing Model 737-200 and was equipped with the same onboard avionics as most USAF operational aircraft, including mapping radar, VOR and Tacan radio systems, INS, radar altimeter, all required communications equipment, and celestial navigation capability.
Several T-43s are configured for passengers and provide operational support to assigned commands.

TG-3A
Brief: Single-seat, medium-performance sailplane used for cross-country and spin training.
Function: Cross-country and spin trainer.
Operator: USAFA.
First Flight: not available
Delivered: circa 1960.
IOC: circa 1960.
Production: not available
Inventory: three.
Unit Location: USAFA, Colo.
Contractor: Schweizer Aircraft.
Accommodation: one pilot.
Dimensions: span 40 ft, length 21 ft 7 in, height 7 ft 3 in.
Weight: 700 lb.
Ceiling: FL 250 ft.
Performance: speed 114 mph, glide ratio 23:1, range dependent on soaring conditions.
COMMENTARY
The **TG-3A** is a medium-performance sailplane that allows students to master basic flight maneuvers while solo before progressing to a more advanced sailplane. With the exception of the fabric covered horizontal stabilizer and control surfaces, the aircraft is all-metal construction. It is primarily used for cross-country training and high-altitude wave flight with up to six-hour flight duration.

TG-4A
Brief: Conventional two-place tandem, basic training sailplane used to introduce all USAFA cadets to flight.
Function: Flight introduction.
Operator: USAFA.
First Flight: not available
Delivered: October 1984.
IOC: not available
Production: not available
Inventory: 14.
Unit Location: USAFA, Colo.
Contractor: Schweizer Aircraft.
Accommodation: two (student pilot and instructor).
Dimensions: span 51 ft, length 25 ft 9 in, height 9 ft 4 in.
Weight: gross 1,040 lb.
Ceiling: 14,000 ft.
Performance: speed 98 mph, glide ratio 23:1.
COMMENTARY
The **TG-4A** has an all-metal airframe with aluminum covering on wings and vertical tail and a one-piece canopy for increased visibility. USAFA introduces all cadets to flight through the Soar-for-All program using the TG-4A. It can perform aerotow, stall recovery, slow flight, steep turn, and rectangular traffic pattern maneuvers.

TG-7A
Brief: A conventional two-place, side-by-side, fixed gear, low-wing, motorized glider that is equipped with spoilers and used to simulate the flight characteristics of the TG-4A and reduce the number of sorties needed to solo.
Function: Trainer.
Operator: USAFA.
First Flight: not available
Delivered: 1984.
IOC: not available
Production: not available
Inventory: nine.
Unit Location: USAFA, Colo.
Contractor: Schweizer Aircraft.
Power Plant: one Lycoming 0-235-L2C 4-cylinder engine, 112 hp.
Accommodation: two (student pilot and instructor).
Dimensions: span 59 ft 6 in, length 27 ft 6 in, height 7 ft 8 in.
Weight: gross 1,850 lb.
Ceiling: 14,000 ft.
Performance: speed 136 mph, range 230 miles.
COMMENTARY
The **TG-7A** motor glider is a single-engine, fixed gear, conventional configuration, low-wing monoplane of all-metal construction with side-by-side seating. Students use it to practice multiple pattern, aerial maneuvers, and landing procedures, reducing by half the number of sorties needed to achieve a solo flight.

TG-9A
Brief: Medium-performance sailplane with tandem seating used for spins, aerobatics, and cross-country soaring.
Function: Trainer.
Operator: USAFA.
First Flight: not available
Delivered: October 1984.
IOC: not available
Production: not available
Inventory: four.
Unit Location: USAFA, Colo.
Contractor: Schleicher GmbH, Germany.
Accommodation: two tandem.
Dimensions: span 55 ft 9 in, length 27 ft 5 in, height 5 ft.
Weight: gross 1,320 lb.
Ceiling: FL 250 ft.
Performance: speed 150 mph, glide ratio 34:1, range dependent on soaring conditions.
COMMENTARY
The **TG-9A** (ASK-21) sailplane has a midwing configuration with a T-tail and air brakes on the upper wing surface. It is used primarily for spin training and aerobatic demonstrations. It is used at the regional and national level for cross-country and aerobatic competition.

TG-11
Brief: Conventional two-place, side-by-side, self-launched, high-performance sailplane used for cross-country training.
Function: Trainer.
Operator: USAFA.
First Flight: not available
Delivered: Summer 1995.
IOC: not available
Production: not available
Inventory: two.
Unit Location: USAFA, Colo.
Contractor: Stemme GmbH, Germany.
Power Plant: one Limbach L-2400 EB1.AD 4-cylinder engine, T-O 93 hp at 3,400 rpm, cruise 80 hp at 3,000 rpm (S/L).
Accommodation: two side by side.
Dimensions: span 75 ft 6 in, length 27 ft 7 in, height 5 ft 8 in.
Weight: gross 1,874 lb.
Ceiling: 17,450 ft powered cruise, FL 250 ft.
Performance: speed 168 mph, 138 mph powered cruise, glide ratio 50:1, range 860 miles powered.
COMMENTARY
The **TG-11** self-launched, high-performance sailplane has a folding propeller that is stored behind a retractable propeller dome on the aircraft nose during soaring flight. It is used primarily for dual cross-country training, field selection, and advanced sailplane training.

T-41 Mescalero
Brief: Short-range, high-wing trainer used primarily for aerodynamic and navigation courses.
Function: Training, support.
Operator: USAFA.
Delivered: 1969.
Inventory: three.
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 ft 2 in, length 26 ft 6 in, height 8 ft 11 in.
Weight: gross 2,550 lb.
Ceiling: 16,000 ft.
Performance: speed 182 mph, range 690 miles.
COMMENTARY
The **T-41,** a military version of the Cessna 172, is an all-metal, strut-braced, high-wing monoplane. It is also used for Aero 456 flight testing, USAFA flying team support, and orientation flights.

UV-18 Twin Otter
Brief: Modified utility transport used for parachute jump training.
Function: Paradrop.
Operator: AETC.
First Flight: May 1965 (commercial version).
Delivered: 1977.
IOC: 1977.
Production: three.
Inventory: three.
Unit Location: USAFA, Colo.
Contractor: de Havilland Aircraft of Canada.
Power Plant: two Pratt & Whitney Canada PT6A-27 turboprops, each 620 ehp.
Accommodation: crew of two and up to 20 passengers.
Dimensions: span 65 ft, length 51 ft 9 in, height 19 ft 6 in.
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 the US Air Force Academy.

Helicopters

HH-60G Pave Hawk

Brief: Specially modified helicopters used for SAR and support missions.

Function: SOF heavy-lift helicopter.

Operator: ACC, AETC, PACAF, ANG, AFRC.

First Flight: October 1974.

Delivered: 1982–present.

IOC: circa 1982.

Production: 105.

Inventory: 104.

Unit Location: Eglin AFB, Fla., Holloman AFB, N.M., Kadena AB, Japan, Kirtland AFB, N.M., Moody AFB, Ga., NAS Keflavik, Iceland, Nellis AFB, Nev. ANG: Francis S. Gabreski IAP, N.Y., Kulis ANGB, Alaska, Moffett Federal Airfield, Calif. AFRC: Davis–Monthan AFB, Ariz., Patrick AFB, Fla., Portland IAP, Ore.

Contractor: Sikorsky.

Power Plant: two General Electric T700-GE-700/701C turboshafts, each 1,620 (continuous) shp.

Accommodation: crew of three or four; 11–14 troops, up to six litters, or internal or external cargo.

Dimensions: rotor diameter 53 ft 7 in, length of fuselage 64 ft 8 in, height 16 ft 8 in.

Weight: empty 12,330 lb, max gross 22,500 lb.

Ceiling: 14,200 ft.

Performance: max speed 222 mph, max range, with reserves, 373 miles (internal fuel), 500 miles (auxiliary tank).

Armament: two 7.62 mm miniguns, with provision for two .50 caliber machine guns in cabin doors.

COMMENTARY

One hundred four Black Hawk helicopters were modified to **HH-60G** Pave Hawk configuration for use by active duty, ANG, and AFRC air rescue units for SAR and various mission-support activities worldwide. The Pave Hawk is a highly modified version of the Army Black Hawk helicopter, featuring an upgraded communications/navigation suite that includes INS/GPS/Doppler navigation systems, Satellite Communications (SATCOM), secure/anti-jam communications, and a Personnel Locating System (PLS) that provides range/bearing data to compatible survivor radios.

Further modifications include an automatic flight-control system, NVG lighting, FLIR, color weather radar, engine/rotor blade anti-ice system, retractable in-flight refueling probe, internal auxiliary fuel tanks, and an integral rescue hoist. Combat enhancements include RWR, IR jammer, flare and chaff countermeasures dispensing system, and two 7.62 mm machine guns.

MH-53 Pave Low

Brief: Specially outfitted heavy-lift helicopters used by Air Force Special Operations Forces for infiltration/exfiltration as well as CSAR missions.

Function: SOF heavy-lift helicopter.

Operator: AETC, AFSOC.

First Flight: March 1967.

Delivered: from July 1987 (MH-53J).

IOC: 1988 (MH-53J).

Production: not available

Inventory: 38.

Unit Location: AETC: Kirtland AFB, N.M. AFSOC: Hurlburt Field, Fla., Osan AB, South Korea, RAF Mildenhall, UK.

Contractor: Sikorsky.

Power Plant: two General Electric T64-GE-100 turboshafts, each 4,330 shp.

Accommodation: crew of six; 38 troops.

Dimensions: rotor diameter 72 ft 3 in, length of fuselage (without refueling probe) 67 ft 2 in, height 25 ft.

Weight: gross 50,000 lb.

Ceiling: 16,000 ft.

Performance: speed 164 mph, max range 630 miles, unlimited with air refueling.

Armament: mounts for any combination of three 7.62 miniguns and .50 caliber machine guns.

COMMENTARY

MH-53H. Older version of the helicopter, all of which, together with all HH/CH-53B/Cs, were upgraded to MH-53J Pave Low III "Enhanced" standard from 1986.

MH-53J. A long-range deep penetration helicopter, adverse weather capable and equipped for extended operations when air refueled. Equipped with a nose-mounted FLIR, an integrated digital avionics suite that includes TF/TA radar, Kalman filtered navigation suite (GPS, INS, Doppler), Projected Map Display, secure UHF, VHF, FM, HF communications, PLS, SATCOM, hover coupler, rescue hoist, mission commander's C^2 panel, armor plating, and an ECM suite with radar and IR missile jammers, flare/chaff dispensers, RWR, and missile launch detectors.

A Service Life Extension Program (SLEP) upgraded the aircraft's hydraulics, wiring, and basic airframe structure for increased gross weight, and an automated blade/pylon fold system optimized for shipboard compatibility. All aircraft modified to support aircrew eye/respiratory protection system.

MH-53M. MH-53J helicopters upgraded to Pave Low IV standard, delivered from 1999. Upgrades include the interactive defensive avionics suite/multimission advanced tactical terminal capability which integrates on-board EW systems with off-board, over-the-horizon, near-real-time intelligence, and mission software improvements. Cockpit modifications include three MFDs, integrated digital map, and mission commander situation awareness panel in the cabin area.

TH-53A. Six TH-53As (modified USMC CH-53As) are used by the 58th SOW as basic qualification trainers. Modifications include the installation of General Electric T64-GE-100 engines, air refueling probe, and standard USAF avionics and communications equipment.

UH-1 Iroquois

Brief: Modified Bell helicopter used to support Air Force ICBM facilities and for administrative airlift.

Function: Utility helicopter.

Operator: AETC, AFMC, AFSOC, AFSPC, AMC, PACAF.

First Flight: circa 1956.

Delivered: from September 1970.

IOC: circa 1970.

Production: 79.

Inventory: 62.

Unit Location: Andrews AFB, Md., Fairchild AFB, Wash., F.E. Warren AFB, Wyo., Hurlburt Field, Fla., Kirtland AFB, N.M., Malmstrom AFB, Mont., Minot AFB, N.D., Vandenberg AFB, Calif., Yokota AB, Japan.

Contractor: Bell.

Power Plant: Pratt & Whitney Canada T400-CP-400 Turbo "Twin-Pac," 1,290 shp.

Accommodation: two pilots and 14 passengers or cargo, or external load of 4,000 lb.

Dimensions: rotor diameter (with tracking tips) 48 ft 2 in, fuselage length 42 ft 4 in, height 14 ft 4 in.

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.

***MH-53J** Pave Low III* (MSgt. Val Gempis)

***UH-1N** Iroquois* (Guy Aceto)

Strategic Missiles

AGM-86 Air Launched Cruise Missile

Brief: A small, subsonic, unmanned, winged air vehicle, currently deployed on B-52H aircraft, which can be equipped with either a nuclear or conventional warhead and can be used to help dilute air defenses and complicate an enemy's air defense task.

Function: Strategic air-to-surface cruise missile.

Operator: ACC.

First Flight: June 1979 (FSD).

Delivered: from 1981.

IOC: December 1982, Griffiss AFB, N.Y.

Production: 1,700+.

Inventory: 1,600.

Unit Location: Barksdale AFB, La., Minot AFB, N.D.

Contractor: Boeing.

Power Plant: Williams/Teledyne CAE F107-WR-10 turbofan, 600 lb thrust.

Guidance: AGM-86B: inertial plus Terrain Contour Matching (TERCOM); AGM-86C: inertial plus GPS.

Warhead: AGM-86B: W80-1 nuclear; AGM-86C: blast/fragmentation conventional; AGM-86D: hard target penetrating warhead.
Dimensions: length 20 ft 9 in, body diameter 2 ft, wingspan 12 ft.
Weight: 3,200 lb.
Performance (approx): speed Mach 0.6, range 1,555 miles.
COMMENTARY
AGM-86A. A prototype cruise missile, developed in the mid-1970s. Slightly smaller than the later versions, it never entered production.
AGM-B. First production version, the B is programmed for precision 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.
AGM-86C. A non-nuclear version, developed from 1986, the Conventional Air Launched Cruise Missile (CALCM) was first used operationally during the Persian Gulf War and has since been widely used in combat operations. CALCM provides the warfighter with an adverse weather, day/night, air-to-surface, accurate, standoff outside theater defenses strike capability, with a range greater than 575 miles and a 3,000-lb class warhead. CALCM is equally effective for stand-alone, clandestine/punitive strikes, and fully integrated theater warfare. Boeing is currently under contract to convert 322 Bs to conventional configuration, the first of which was delivered November 1999. One hundred thirty-two will feature new Block 1A enhancements with improved accuracy and increased immunity to electronic jamming.
AGM-86D. CALCM penetrator version with a Lockheed Martin AUP-3(M) warhead. The last 50 of the 322 CALCM conversions will be to AGM-86D configuration. The CALCM penetrator will provide the warfighter with a cost-effective, standoff outside theater defenses capability against a wide range of hardened, deeply buried targets. Final delivery expected late 2001.

AGM-129 Advanced Cruise Missile
Brief: A stealthy, long-range, winged air vehicle equipped with a nuclear warhead and designed to evade enemy air and ground-based defenses in order to strike hard, heavily defended targets at standoff distances.
Function: Strategic air-to-surface cruise missile.
Operator: ACC.
First Flight: July 1985.
Delivered: June 1990–August 1993.
IOC: circa 1991.
Production: 461.
Inventory: not available
Unit Location: Barksdale AFB, La., Minot AFB, N.D.
Contractor: General Dynamics/McDonnell Douglas (now Boeing).
Power Plant: Williams International F112-WR-100 turbofan.
Guidance: inertial, with TERCOM update.
Warhead: W80-1 nuclear.
Dimensions: length 20 ft 10 in, body width 2 ft 3 in, wingspan 10 ft 2 in.
Weight: 3,709 lb.
Performance (approx): range 1,865 miles.
COMMENTARY
AGM-129A. Embodying stealth technology, the AGM-129A has improved range, accuracy, survivability, and targeting flexibility, compared with the AGM-86B. Developed by General Dynamics, McDonnell Douglas was certified as second source for this advanced system, which is deployed on B-52H aircraft.

LGM-30G Minuteman III (Guy Aceto)

LGM-30 Minuteman
Brief: A solid-fuel, intercontinental-range ballistic missile capable of being fired from silo launchers and delivering a thermonuclear payload of one to three warheads with high accuracy over great distances.
Function: Strategic surface-to-surface ballistic missile.
Operator: AFSPC.
First Flight: February 1961.
Delivered: 1962–December 1978.
IOC: December 1962, Malmstrom AFB, Mont.
Production: 1,800.
Inventory: 500.
Unit Location: F.E. Warren AFB, Wyo., Malmstrom AFB, Mont., Minot AFB, N.D.
Contractor: Boeing.
Power Plant: stage 1: Thiokol M-55 solid-propellant motor, 210,000 lb thrust; stage 2: Aerojet–General SR19-AJ-1 solid-propellant motor, 60,300 lb thrust; stage 3: Thiokol SR73-AJ-1 solid-propellant motor, 34,400 lb thrust.
Guidance: inertial guidance system.
Warheads: one–three Mk 12/12A MIRVs (downloaded to one).
Dimensions: length 59 ft 10 in, diameter of first stage 5 ft 6 in.
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 7,000 miles.
COMMENTARY
Minuteman remains a key element in the US strategic deterrent posture. It is a three-stage, solid-propellant ICBM, housed in underground silos for which an upgrade program was completed in 1980 to provide increased launch facility protection.
LGM-30A/B. Minuteman I version deployed in the early 1960s. The last Minuteman I missile was removed from its silo at Malmstrom AFB, Mont., in February 1969. USAF had deployed 150 A and 650 B models in 16 squadrons.
LGM-30F. Minuteman II version incorporated a larger second stage, an improved guidance package, greater range and payload capability, and hardening against the effects of nuclear blast. IOC was reached in October 1965 at Grand Forks AFB, N.D. USAF deployed 450 in nine squadrons.
LGM-30G. The Minuteman III became operational in June 1970, providing improved range, rapid retargeting, and the capability to place three Multiple Independently Targetable Re-entry Vehicles (MIRVs) on three targets with a high degree of accuracy. USAF initially deployed 550 in 11 squadrons.
A single re-entry vehicle configuration has been demonstrated, planned for, and is being worked in accordance with strategic arms control negotiations. Currently a total of 500 Minuteman IIIs are based at Minot AFB, N.D.; F.E. Warren AFB, Wyo.; and Malmstrom AFB.
An extensive life extension program is ensuring Minuteman's continuing viability. Major upgrades include refurbishment of liquid propulsion post-boost rocket engine, remanufacture of the solid-propellant rocket motors, replacement of the environmental control system, repair of launch facilities, and installation of updated, survivable communications equipment and a C^2 sustainment program.

LG-118 Peacekeeper
Brief: A solid-fuel intercontinental-range ballistic missile capable of delivering a thermonuclear payload of 10 warheads with high accuracy over great distances.
Function: Strategic surface-to-surface ballistic missile.
Operator: AFSPC.
First Flight: June 17, 1983.
Delivered: June 1986–December 1988.
IOC: December 1986, F.E. Warren AFB, Wyo.
Production: 50.
Inventory: 50.
Unit Location: F.E. Warren AFB, Wyo.
Contractor: Lockheed Martin.
Power Plant: first three stages: solid-propellant; fourth stage: storable liquid; by Thiokol, Aerojet, Hercules, and Rocketdyne, respectively.
Guidance: inertial guidance system.
Warheads: 10 Avco Mk 21 MIRVs.
Dimensions: length 71 ft, diameter 7 ft 8 in.
Weight: approx 195,000 lb.
COMMENTARY
LG-118A. Developed initially in response to an increased Soviet strategic threat, the ending of the Cold War caused the US to cap deployment at only 50 Peacekeeper missiles in the FY90 budget and to cease development of a rail-garrison mode of deployment.
Housed in converted Minuteman III silos, Peacekeeper is a four-stage ICBM that carries up to 10 independently targetable re-entry vehicles. It is more accurate and has a greater payload and range than the Minuteman III. Its greater resistance to nuclear effects and its more capable guidance system provide a greatly improved ability to destroy very hard targets. These attributes, combined with its prompt response, provide a decisive deterrent. Peacekeeper will be scheduled for retirement under the provisions of the START II treaty; however no retirement action will occur until its terms come into force.

Tactical Missiles and Weapons

AIM-7 Sparrow
Brief: A supersonic, medium-range, semiactive radar-guided air-to-air missile with all-weather, all-altitude, and all-aspect offensive capability and a high-explosive warhead, carried by fighter aircraft.
Function: Air-to-air guided missile.
First Flight: December 1983 (AIM-7M).
Delivered: from 1956.
IOC: April 1976 (AIM-7F).
Production: sustainment phase.
Inventory: classified.
Contractor: Raytheon/Hughes; General Dynamics.
Power Plant: Hercules Mk 58 Mod 0 boost–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 ft 4 in.
Weight: launch weight 504 lb.
Performance (estimated): max speed more than Mach 3.5, range more than 30 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 in 1975, had a larger motor, Doppler guidance, improved ECM, and better capability over both medium and "dogfight" ranges. USAF produced approximately 5,000, but none are now in USAF service.
AIM-7M, a joint Navy–USAF project to produce a monopulse version of Sparrow aimed at reducing cost and improving performance in the ECM and look-down clutter regions. It began operational service in FY83. This version provides all-weather, all-altitude, all-aspect capability and equips USAF F-15s, F-16s (ADF), and Navy F-14s and F-18s.

AIM-9 Sidewinder
Brief: A supersonic, short-range, passive 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: 1983–98 (AIM-9M current operational variant).
IOC: circa 1983 (AIM-9M).
Production: sustainment phase (AIM-9M); LRIP from November 2000 (AIM-9X).
Inventory: classified.
Contractor: Raytheon/Loral.
Power Plant: Thiokol Mk 36 Mod 11 solid-propellant rocket motor.
Guidance: solid-state passive IR homing guidance.

AIM-9** Sidewinder* (top) ***EGBU-15 (center) ***AIM-120** AMRAAM* (bottom) (Guy Aceto)

Warhead: high-explosive, weighing 20.8 lb.
Dimensions: length 9 ft 5 in, body diameter 5 in, finspan 2 ft 1 in.
Weight: launch weight 190 lb.
Performance: max speed above Mach 2, range 10+ miles.

COMMENTARY

Early versions. AIM-9A was the prototype version. The AIM-9B, initial production version, entered the inventory in 1957 and was effective only at close range during day. These shortcomings were eliminated on subsequent AIM-9E/H/J/P versions. The third-generation Sidewinder, AIM-9L, added a more powerful solid-propellant rocket motor as well as tracking maneuvering ability. Production and delivery began in 1976; production ended in 1981.

AIM-9M, a joint Navy–USAF project aimed at producing an improved version of AIM-9L with all-altitude, all-aspect, launch-and-leave intercept capability. Carriage options include: A-10, F-14, F-15, F-16, F-16 ADF, and F-18. This version has increased Infrared Counter-Countermeasures (IRCCM) capability, improved background discrimination, and a reduced-smoke rocket motor. First flight of prototype was in February 1978. Full production began in FY81.

AIM-9M-9. A recently completed modification to improve IRCCM capability of early missiles.

AIM-9X is the result of a Navy–Air Force program, derived from a jointly funded demonstration and validation contract. Raytheon is the EMD contractor. The AIM-9X program recently completed a successful operational assessment and gained Defense Acquisition Board approval to enter into LRIP. The flight test program has completed 11 live guided-missile firings with nine kills of QF-4 target drones. USAF plans to buy 5,080 missiles.

The AIM-9X incorporates advanced technologies such as a focal plane array imaging seeker, high off-boresight sensor, and a highly maneuverable jet-vane control system. The missile utilizes the existing AIM-9M rocket motor, warhead, and fuze. It will be integrated with the joint helmet mounted cueing system to maximize its high off-boresight capability. It will be employed on F-15, F-16, F/A-18, F-22, and potentially JSF aircraft.

AIM-120 AMRAAM

Brief: A new-generation supersonic, medium-range, active radar-guided air-to-air missile with a high-explosive warhead.
Function: Air-to-air guided missile.
First Flight: December 1984.
Delivered: 1988–present.
IOC: September 1991.
Production: more than 12,000 planned for USAF/USN.
Inventory: classified.
Contractor: Raytheon.
Power Plant: Alliant boost-sustain solid-propellant rocket motor.
Guidance: inertial and 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 ft 1 in.
Weight: 335 lb.
Performance: cruising speed approx Mach 4, range more than 20 miles.

COMMENTARY

A joint project between Navy and USAF, the AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) is a replacement for the AIM-7 Sparrow. The AIM-120 equips F-15, F-16, F/A-18, and F-22 fighters. (The F-22 will only carry the C model.) Inertial and command inertial guidance and active radar terminal homing provide launch-and-maneuver capability. Significant improvements in operational effectiveness over the AIM-7 include increased average velocity, reduced miss distance, improved fuzing, increased warhead lethality, multiple target engagement capability, improved clutter rejection in low-altitude environments, enhanced electronic protection capability, increased maximum launch range, a reduced-smoke motor, and improved maintenance and handling.

AIM-120A was the first production version, delivered by Hughes in 1988 to the 33rd TFW at Eglin AFB, Fla.

AIM-120B/C are upgraded, reprogrammable variants of the AIM-120. The AIM-120C currently in production has smaller, clipped control surfaces to provide for internal carriage capability in the F-22.

AGM-65 Maverick

Brief: A tactical, TV– or Imaging-Infrared–guided air-to-surface missile carried by fighters and designed for use in CAS, interdiction, and defense suppression missions, having standoff capability and high probability of strike against a wide range of targets.
Function: Air-to-surface guided missile.
First Flight: August 1969.
Delivered: from August 1972.
IOC: February 1973.
Production: sustainment phase.
Inventory: 7,300 AGM-65A/B/H/K (EO guidance); 12,000 AGM-65D/G (IR guidance).
Contractor: Raytheon.
Power Plant: Thiokol TX-481 solid-propellant rocket motor.
Guidance: self-homing, EO guidance system (IIR on D and G models).
Warhead: AGM-65A/B/D/H 125-lb high-explosive, shaped charge; AGM-65G/K 298-lb blast fragmentation.
Dimensions: length 8 ft 2 in, body diameter 1 ft, wingspan 2 ft 4 in.
Weight: launch weight (AGM-65A) 462 lb, (AGM-65G) 677 lb.
Performance: range 0.6 to 14 miles.

COMMENTARY

Maverick missiles were first employed by USAF in Vietnam and were used extensively during the Persian Gulf War. They currently equip A-10, F-15E, and F-16 aircraft for use against tanks and columns of vehicles and in the SEAD role.

AGM-65A. The basic Maverick is a launch-and-leave, TV–guided air-to-surface missile that enables the pilot of the launch aircraft to seek other targets or leave the target area once the missile has been launched. Production was initiated in 1971, following successful test launches over distances ranging from a few thousand feet to many miles and from high altitudes to treetop level.

AGM-65B. A version with a "scene magnification" TV seeker that enables the pilot to identify and lock on to smaller or more distant targets.

AGM-65D. System developed to overcome limitations of the TV Maverick, which can be used only in daylight and clear-weather conditions. This version has an IIR seeker as well as a lower-smoke motor. IIR Maverick became operational on A-10s in February 1986.

AGM-65G. Uses the IIR seeker with an alternate 298-lb blast fragmentation warhead for use against hardened targets. Software has been modified to include options for targeting ships and large land targets as well as mobile armor. This version also has a digital autopilot and a pneumatic, rather than hydraulic, actuation system. USAF received its first G model in 1989.

AGM-65H. AGM-65B modified with an upgraded TV seeker providing significant reliability, maintainability, and performance improvements over the AGM-65B seeker and double the standoff range.

AGM-65K. AGM-65G modified with the same upgraded TV seeker as in the AGM-65H to provide a TV–guided version of the Maverick with the 298-lb blast fragmentation warhead.

AGM-84 Harpoon

Brief: An adverse weather capable, sea-skimming, active radar-guided, anti-ship cruise missile system capable of being fired from B-52H aircraft, ships, and submarines.
Function: Air-to-surface anti-ship missile.
First Flight: March 1974 (for USN).
Delivered: from 1977 (USN).
IOC: circa 1985 (USAF).
Production: sustainment phase.
Inventory: 68.
Contractor: McDonnell Douglas (now Boeing).
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 488 lb.
Dimensions: length 12 ft 7 in, body diameter 1 ft 1 in, wingspan 3 ft.
Weight: 1,145 lb.
Performance: speed high subsonic, range more than 57 miles.

COMMENTARY

Harpoon and its launch control equipment provide USAF the capability to interdict ships at ranges well beyond those of other aircraft. Originally acquired to equip two squadrons of now-retired B-52G aircraft for maritime anti-surface operations, the Harpoon all-weather anti-ship missile currently arms conventional-mission B-52Hs.

AGM-84D is a variant of the USN Harpoon that has been adapted for use on B-52 bombers, which can carry eight missiles.

***AGM-65** Maverick* (SrA. Stan Parker)

AGM-88 HARM

Brief: An air-to-surface tactical missile designed to seek and destroy enemy radar-equipped air defense systems, using an advanced guidance system that senses and homes in on enemy radar emissions.

Function: Air-to-surface anti-radiation missile.
First Flight: April 1979.
Delivered: 1982–98.
IOC: circa 1984.
Production: sustainment phase.
Inventory: currently 7,500.
Contractor: Raytheon.
Power Plant: Thiokol smokeless, dual-thrust, solid-propellant rocket motor.
Guidance: passive homing guidance system, using seeker head that homes on enemy radar emissions.
Warhead: high-explosive fragmentation, weighing 145 lb.
Dimensions: length 13 ft 9 in, body diameter 10 in, wingspan 3 ft 9 in.
Weight: 807 lb.
Performance: cruising speed supersonic, altitude limits S/L to 40,000 ft, range more than 10 miles.

COMMENTARY

The High-speed Anti-Radiation Missile (HARM) exhibits great velocity along with an ability to cover a wide range of frequency spectrums through the use of programmable digital processors in both the carrier aircraft's avionics equipment and in the missile. The combination gives this second-generation anti-radiation missile greatly improved capability over first-generation Shrikes and Standards. The AGM-88 proved highly effective against enemy ground radar during the Persian Gulf War and continues in use in current operations. HARMs equip F-16 Block 50/52s dedicated to the SEAD mission.

AGM-88A. A factory-programmed version used to equip the now-retired F-4G Wild Weasel to increase its lethality in electronic combat.

AGM-88B. Older versions of the AGM-88B are being upgraded with the new, enhanced capability guidance seeker currently equipping the C version.

AGM-88C. This current production version has a more lethal warhead, containing tungsten alloy cubes, rather than steel, and the enhanced-capability AGM-88C-1 guidance head.

Erasable electronically programmable read-only memory has been retrofitted on USAFE, PACAF, and ACC HARMs, permitting changes to missile memory in the field. Current upgrade initiatives are aimed at increasing capability of both B and C versions against target shutdown, blanking, and blinking and at reducing potential damage to friendly radars in the target area; home-on jamming capability will be added to the C. Further upgrades under development will introduce GPS precision navigation capability.

AGM-130

Brief: A powered TV– or IIR–guided air-to-surface missile, carried by the F-15E and designed for high- and low-altitude strikes at standoff ranges against heavily defended targets.

Function: Air-to-surface guided and powered bomb.
First Flight: 1984.
Delivered: November 1992–present.
IOC: 1994.
Production: sustainment phase.
Inventory: 490 (as of Sept. 30, 2000).
Contractor: Boeing.
Guidance: TV or IIR seeker, or DME transponder.
Warhead: Mk 84 bomb (2,000-lb unitary) or BLU-109.
Dimensions: length 12 ft 10 in, body diameter 1 ft 6 in, wingspan 4 ft 11 in.
Weight: launch weight 2,917 lb.
Performance: cruising speed subsonic, ceiling in excess of 30,000 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 Iraq and the Balkans.

AGM-130A, with the Mk 84 warhead.

AGM-130C, with the BLU-109/B penetrating warhead.

AGM-142 Have Nap

Brief: A medium-range standoff attack missile that is carried by USAF B-52Hs to provide this long-range aircraft with a conventional precision strike capability.

Function: Air-to-surface guided missile.
First Flight: 1990.
Delivered: 1992.
IOC: June 1992.
Production: 240.
Inventory: 186.
Contractor: Rafael (Israel).
Power Plant: solid-propellant rocket motor.
Guidance: inertial, with data link, TV, or IIR homing.
Warhead: high-explosive, 750-lb blast/fragmentation or 800-lb penetrator.
Dimensions: length 15 ft 11 in, body diameter 1 ft 9 in, wingspan 5 ft 9 in.
Weight: 2,998 lb.
Performance: range approx 50 miles.

COMMENTARY

The AGM-142 missile system provides a conventional, precision, standoff hard target penetrator weapon for the B-52H. The system consists of a standoff, air-to-ground EO precision guided missile, weapon data link pod, and associated support and training equipment. Initial operational test and evaluation launches were completed in May 1990. There are six variants of the AGM-142.

AGM-142A. TV seeker with 750-lb blast/frag warhead.

AGM-142B. IIR seeker with 750-lb blast/frag warhead.

AGM-142B-1. IIR-Z seeker with 750-lb blast/frag warhead.

AGM-142C. TV seeker with 800-lb penetrator warhead.

AGM-142D. IIR seeker with 800-lb penetrator warhead.

AGM-142D-1. IIR-Z improved seeker with 800-lb penetrator warhead.

AGM-154 Joint Standoff Weapon

Brief: First in a joint USAF and Navy family of low-cost, highly lethal glide weapons with a standoff capability, usable against heavily defended targets.

Function: Air-to-surface guided missile.
First Flight: December 1994.
Delivered: from 2000.
IOC: 2000 (USAF).
Production: 6,000 (planned).
Inventory: 60 (as of Sept. 30, 2000).
Contractor: Raytheon.
Guidance: INS/GPS.
Dimensions: length 13 ft 4 in.
Weight: 1,065–1,500 lb.
Performance: range: low-altitude launch 17 miles, high-altitude launch 40+ miles.

COMMENTARY

A medium-range, INS/GPS–guided, standoff air-to-ground weapon designed to attack a variety of soft and armored area targets (fixed, relocatable, and mobile) during day/night/adverse weather conditions. JSOW enhances aircraft survivability, as compared to current interdiction weapon systems, by providing the capability for launch aircraft to stand off outside the range of enemy point defenses. JSOW accuracy and launch-and-leave capability will allow several target kills per aircraft sortie. Integration of JSOW is currently on F-16 Block 50 and B-2 aircraft, with follow-on capability on B-1B, B-52, F-15E, and F-16 Block 30/40.

AGM-154A. The baseline BLU-97 variant for use against area targets; in full-rate production.

AGM-154B. The BLU-108 variant providing anti-armor capability; began production in FY99.

AGM-154C. The third variant (used by Navy only), JSOW/Unitary integrates an IIR terminal seeker and a 500-lb unitary warhead.

AGM-158A Joint Air-to-Surface Standoff Missile

Brief: An advanced weapon designed to attack heavily defended targets with high precision at great standoff range.

Function: Air-to-surface guided weapon.
First Flight: April 8, 1999.
Delivered: TBD
IOC: FY03 (planned).
Production: 2,400 (USAF planned); TBD (Navy).
Inventory: TBD
Contractor: Lockheed Martin.
Power Plant: Teledyne Continental Motors.
Dimensions: 14 ft.
Weight: 2,250 lb.
Performance: 1,000-lb class warhead (both versions).

COMMENTARY

JASSM is intended to be an affordable, stealthy standoff cruise missile with autonomous guidance and conventional warhead for use against high-value, heavily defended, or mobile targets. The missile will use an IR seeker for terminal guidance, with GPS/INS for mid-course and backup terminal guidance. EMD program commenced November 1998. DOD plans to use JASSM on threshold aircraft B-52H and F-16. Objective aircraft include B-1B, B-2, F/A-18E/F, F-15E, F-117, and P-3C.

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.
Inventory: 122,416 (CBU-87); 280 (CBU-103).
Contractor: Aerojet General/Honeywell.
Guidance: none (CBU-87).
Dimensions: length 7 ft 8 in; diameter 1 ft 4 in.
Weight: 950 lb.
Performance: dispenses 202 BLU-97 Combined Effects Bomblets over an area roughly 800 ft by 400 ft.

COMMENTARY

The CBU-87 Combined Effects Munition dispenses 202 BLU-97 shaped charge anti-personnel/anti-materiel fragmentary/incendiary bomblets over the target in a rectangular pattern. It is currently delivered by USAF and Navy aircraft as an unguided gravity weapon. Density and size of the area covered depends on release parameters and spin rates. During Desert Storm USAF dropped 10,035 CBU-87s.

CBU-103. USAF is retrofitting its inventory of CEMs with the WCMD tail kit. The WCMD will improve the munitions delivery accuracy when released from medium to high altitude. Tail kit purchases are based on available funding.

CBU-89/104 Gator

Brief: The CBU-89 Gator is an anti-armor/anti-personnel mine dispenser used by USAF and Navy fighters and bombers for interdiction.

Function: Scatterable mines.
Production: sustainment phase.
Inventory: 9,236 (CBU-89).
Contractor: Aerojet General/Honeywell.
Guidance: none (CBU-89).
Dimensions: length 7 ft 8 in; diameter 1 ft 4 in.
Weight: 710 lb.
Performance: dispenses 72 BLU-91 anti-armor and 22 BLU-92 anti-personnel mines.

COMMENTARY

The CBU-89 Gator dispenser holds 94 mines, of which 72 are anti-tank and 22 are anti-personnel. The mines are dispersed over the target in a rectangular pattern. The

***AIM-120** AMRAAM* (top) ***AIM-9** Sidewinder* (center) ***AGM-88** HARM* (bottom) (Guy Aceto)

anti-tank mines, which can be fuzed for up to a 72-hour delay, have a magnetic influence fuze to sense armor.

CBU-104. USAF is retrofitting its inventory of Gators with the WCMD tail kit, which will improve the munitions delivery accuracy when released from medium to high altitude. Tail kit purchases are based on available funding.

CBU-97/105 Sensor Fuzed Weapon

Brief: The CBU-97 SFW is an anti-armor cluster munition used by fighters and bombers for multiple kills per pass against moving and stationary land combat vehicles.

Function: Wide-area cluster munition.
First Flight: circa 1990.
Delivered: from 1994.
IOC: 1997.
Production: 5,000 (planned).
Inventory: classified.
Contractor: Textron Systems.
Guidance: IR sensors in each warhead search for targets, then detonate over them.

GBU-28 (SrA. Jeff Fitch)

GBU-24 *Paveway III* (Cindy Farmer)

Dimensions: length 1 ft 8 in; diameter 1 ft 4 in.
Weight: 927 lb.
Performance: delivers 40 lethal projectiles over an area of about 500 ft by 1,200 ft.
COMMENTARY

The CBU-97 Sensor Fuzed Weapon comprises an SUU-66/B tactical munitions dispenser with an FZU-39 fuze. 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 a projectile. Each SFW can deliver a total of 40 lethal projectiles. The projectiles' IR sensors can detect a vehicle's infrared signature; if no target is detected, the warhead detonates after a preset time. The SFW's primary targets are tanks, armored personnel carriers, and propelled targets. It also provides direct attack capability and interdiction against C^2 centers.

The SFW is currently delivered as an unguided gravity weapon from the B-1, B-2, B-52H, F-15E, and F-16. The Air Force is completing development of an improved version, leading to reduced cost and increased capability. Among ongoing changes, the service is adding a laser range finder to enable the SFW to detect targets based on height as well as IR signature, a multimission warhead for softer targets, and a wider attack area.

CBU-105. USAF is retrofitting its inventory of SFWs with the WCMD tail kit, which will improve the munitions delivery accuracy when released from medium to high altitude.

GBU-15

Brief: An unpowered glide weapon carried by the F-15E and used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface guided munition.
First Flight: 1975.
Delivered: from 1983.
IOC: 1983.
Production: more than 2,000.
Inventory: 1,650 (as of Sept. 30, 2000).
Contractor: Boeing and Raytheon.
Guidance: TV or IIR seeker.
Warhead: Mk 84 bomb (2,000-lb unitary) or BLU-109.
Dimensions: length 12 ft 10 in, body diameter 1 ft 6 in, wingspan 4 ft 11 in.
Weight: 2,450 lb.
Performance: cruising speed subsonic.
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 a so 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.

During Desert Storm F-111F pilots used GBU-15 glide bombs with great effect to address numerous targets.

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 due for completion FY01.

GBU-24

Brief: A precise air-to-ground penetrating glide bomb equipped with an advanced guidance kit.

Function: Air-to-surface guided bomb.
First Flight: GBU-24A/B (USAF) in service May 1985; GBU-24B/B (Navy) June 1992.
Delivered: from 1986.
IOC: 1986.
Production: USAF 14,000; Navy 12,000.
Inventory: classified.
Contractor: Raytheon.
Guidance: semiactive laser.
Dimensions: length 14 ft 2 in.
Weight: 2,350 lb.
COMMENTARY

GBU-24A/B. This is an air-to-ground weapon equipped with a third-generation Laser-Guided Bomb guidance kit called Paveway III integrated with a BLU-109 penetrating warhead. The kit consists of an advanced guidance section and high-lift airframe. It is extremely precise and highly effective against a broad range of high-value hard targets. The system can be employed from low, medium, and high altitudes, providing operational flexibility through the use of an adaptive digital autopilot and large field-of-regard, highly sensitive scanning seeker.

The GBU-24A/B adapts to conditions of release, flies an appropriate midcourse, and provides trajectory shaping for enhanced warhead effectiveness. The weapon is deployed on the F-15E and F-16. The GBU-24A/B was highly successful in the Persian Gulf War.

GBU-27

Brief: A precise air-to-ground penetrating glide bomb equipped with an advanced guidance kit.

Function: Air-to-surface guided bomb.
First Flight: not available
Delivered: from 1988.
IOC: 1988 (unconfirmed).
Production: approx 3,000.
Inventory: classified.
Contractor: Lockheed Martin.
Guidance: semiactive laser.
Dimensions: span 5 ft 6 in, length 13 ft 11 in.
Weight: 2,170 lb.
COMMENTARY

To meet the unique requirements of the F-117A, the GBU-24A/B was adapted to GBU-27 standard, incorporating specific guidance features to accomplish this mission. The GBU-27 is extremely precise and was used to great effect in the Persian Gulf War.

EGBU-27. Integrates GPS/INS guidance into the existing GBU-27 laser seeker to provide adverse weather capability and improved target location. Entered production in FY98.

GBU-28

Brief: A large 5,000-lb-class air-to-ground penetrating glide bomb equipped with an advanced laser guidance kit, used for striking and destroying hard underground targets.

Function: Air-to-surface guided bomb.
First Flight: February 1991.
Delivered: circa 1991.
IOC: 1991.
Production: approx 500.
Inventory: classified.
Contractor: Raytheon.
Dimensions: length 19 ft 2 in, diameter 1 ft 2 in.
Weight: 4,676 lb.
Performance: classified.
COMMENTARY

Under USAF's rapid-response program, the GBU-28 laser-guided bunker-busting weapon was developed for Desert Storm for use against deeply buried, hardened C^2 facilities. Four of the GBU-28 weapons were used during the war: two for testing and two by F-111Fs against a bunker complex Feb. 27, 1991. Guidance is by a modified GBU-27 system.

EGBU-28. Integrates GPS/INS guidance into the existing GBU-28 guidance control unit to provide adverse weather capability and improved target location. Entered production in FY99.

GBU-31/32/XX 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–present (production weapon).

IOC: 1998.

Production: USAF 62,000; USN 25,496 (planned).

Inventory: 3,870.

Contractor: Boeing.

Dimensions: Mk 84 with JDAM 12 ft. 9 in; BLU-109 with JDAM 12 ft 5 in; 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 15 miles, 42 ft 11 in CEP with GPS; 99 ft CEP with INS only.

COMMENTARY

JDAM will upgrade 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 will take over and, with periodic GPS updates to the INS, will guide the weapon to its target. JDAM is intended for use on a variety of aircraft, including the B-1B, B-2, B-52, F-14, F-15E, F-16, F-22, F-117A, F/A-18C/D and E/F, AV-8B, and JSF.

GBU-31. Variant that adds an INS/GPS guidance kit to the 2,000-lb general-purpose Mk 84 bomb or the 2,000-lb BLU-109 penetrator. First used in combat March 24, 1999.

GBU-32. Variant that adds an INS/GPS guidance kit to the 1,000-lb general-purpose Mk 83 bomb or the 1,000-lb BLU-110 penetrator. Under development.

GBU-XX. Variant that adds an INS/GPS guidance kit to the 500-lb general-purpose Mk 82 bomb. Under development.

Wind-Corrected Munitions Dispenser

Brief: A tail kit to be fitted to CBU 87/89/97 dispenser weapons. When dropped from high altitude its inertial guidance system corrects for launch transients and wind effects to enhance accuracy.

Function: Guidance tail kit.

First Flight: February 1996.

Delivered: FY00.

IOC: FY00.

Production: 40,000 (planned).

Inventory: 280 (as of Sept. 30, 2000).

Contractor: Lockheed Martin.

Dimensions: length 1 ft 5 in, diameter 1 ft 3 in.

Weight: 100 lb.

Performance: range about eight miles.

COMMENTARY

USAF is to modify 40,000 standard tactical munition dispensers with guidance kits to compensate for wind drift on downward flight from high altitudes. WCMD kits each have an INS guidance unit, movable tail fins that pop out in flight, and a signal processor. A WCMD tail kit is fitted on inventory cluster weapons: CEM (CBU-103), Gator (CBU-104), and SFW (CBU-105). Successful flight testing began in February 1996; WCMDs are now operational on F-16 and B-52 aircraft. Objective aircraft are B-1, F-15E, F-22, and F-117.

Launch Vehicles

Atlas

Brief: An expendable, medium-lift launch vehicle whose primary mission is the launch into space of the Defense Satellite Communications System (DSCS) satellite and other national missions.

Function: Medium expendable spacelift vehicle.

Operator: commercial (AFSPC oversight).

First Launch: December 1957; February 1992 (Atlas IIA); December 1993 (Atlas IIAS); May 2000 (Atlas III).

IOC: September 1959.

Launches Scheduled: three (FY01); three (FY02).

Unit Location: Cape Canaveral AFS, Fla., Vandenberg AFB, Calif.

Contractor: Lockheed Martin.

Power Plant: Atlas II: uprated Rocketdyne MA-5 propulsion system in Atlas stage, comprising central sustainer motor and two boosters; total thrust 490,000 lb. Atlas IIAS version adds four Thiokol Castor IVA Solid Rocket Motors (SRMs), providing an average thrust of 112,000 lb. Atlas III: two-chamber RD-180 built by NPO Energomash of Russia. The RD-180 is a throttleable engine fed by liquid oxygen and kerosene propellants, providing a total sea-level rated thrust of 860,200 lb. Atlas IIIA uses a Centaur upper stage in the single-engine (RL10A-4-1) configuration; Atlas IIIB uses a stretched Centaur stage powered by either one or two RL10A-4-2 engines.

Dimensions: Atlas IIA/IIAS: length 81 ft 7 in, max body diameter 10 ft. Atlas IIIA: length 170 ft 2 in, diameter 10 ft, with standard 14-ft-diameter payload fairing; Atlas IIIB: length 174 ft 2 in with large payload fairing.

Launch Weight: 408,800 lb (Atlas IIA); 486,500 lb (Atlas IIIA).

Performance: Atlas IIAS capable of putting 19,050 lb into a Low Earth Orbit (LEO) from Cape Canaveral AFS, Fla. Range of payloads Atlas II through Atlas IIAS can lift into Geosynchronous Transfer Orbit (GTO) from Cape Canaveral is 4,900–8,150 lb and 13,650–15,900 lb to LEO from Vandenberg. Atlas IIIA capable of lifting up to 9,920 lb into GTO from Cape Canaveral.

COMMENTARY

Early Atlas launchers were refurbished Atlas ICBMs used from December 1957 to launch military payloads into space. Versions include Atlas D/E/F and SLV-3A and 3D with longer tanks and increased engine thrust, compatible, respectively, with the Agena and Centaur upper stages.

Atlas II. Upgraded version of the Atlas Centaur vehicle developed to meet USAF's continuing medium launch vehicle requirement. The familiar stage-and-a-half configuration of the original ICBM is retained. Changes include lower-cost advanced avionics, an improved flight computer, booster engines with greater thrust, and longer propellant tanks. The engine and tank changes were made to both the Atlas and Centaur stages.

The **Atlas IIAS** is essentially the same booster as the IIA but adds four Thiokol Castor IVA solid rocket motors.

The first Atlas II DSCS launch took place from Cape Canaveral AFS, Fla., on July 2, 1992.

Atlas III. Commercial version which includes a new Russian–designed and built single-stage Atlas RD-180 engine, additional lengthening of the Atlas booster, a single-engine Centaur upper stage for the Atlas IIIA, and a dual engine, stretched Centaur for the upcoming IIIB. The first Atlas IIIA mission successfully launched a commercial communications satellite May 24, 2000.

Atlas V. See EELV below.

Centaur Upper Stage

Brief: A high-energy upper stage with multiburn and extended coast capability.

Atlas/Centaur (DOD photo)

Function: High-energy upper stage.

Operator: commercial (AFSPC oversight).

First Launch: November 1963; earlier flight in May 1962 unsuccessful.

IOC: 1966.

Unit Location: Cape Canaveral AFS, Fla., Vandenberg AFB, Calif.

Contractor: Lockheed Martin.

Power Plant: for Atlas IIA/AS configuration, two Pratt & Whitney RL-10A-4-1 liquid oxygen/liquid hydrogen rocket engines, each 22,300 lb thrust; for Atlas IIIA, one RL-10A-4-1 engine; for Atlas IIIB/Atlas V, one or two RL-10A-4-2 engines, each 22,300 lb thrust; for Delta IV, one uprated RL-10B-2 engine; G–prime: two RL10A-3-3A engines, each with 16,500 lb thrust.

Dimensions: for Atlas IIA/AS/IIIA, length 33 ft, diameter 10 ft; for Atlas IIIB, length 38 ft 6 in; G–prime: length 29 ft, diameter 14 ft 2 in.

Launch Weight: D-2A (approx) 45,000 lb; G–prime-mod (approx) 53,000 lb.

COMMENTARY

Centaur was the first US high-energy upper stage and the first to use liquid hydrogen as a propellant. Its multiburn and extended coast capability were first used operationally during the 1977 Mariner Jupiter/Saturn missions.

D-1A. The D-1A version used with the Atlas demonstrated wide-ranging applications and capabilities. The nose section of Atlas was modified to a constant 10-ft diameter to accommodate the Centaur, which, in turn, provided most of the electronic C^2 systems for the launch vehicle. A 10-ft-diameter fairing protected payloads for Centaur D-1A.

D-2A. The D-2A, used with the current Atlas II, has been stretched 3 ft to include more propellant and thus has increased thrust. Payload fairings of either 11-ft or 14-ft diameter can be used. Centaur upper stages used in the Atlas IIIA will have a single RL-10A-4-1 engine; a dual engine, stretched version is applicable to the Atlas IIIB. The Centaur stage for Atlas V is virtually identical to that used on Atlas IIIB. Centaur stage for Delta IV has the uprated RL-10B-2 engine.

Centaur G–prime modified upper stage, with high-energy cryogenic propellants and multiple restart capability, for use with the Titan IVB, creating the greatest weight-to-altitude capability of any US launch vehicle by placing a 10,200-lb payload into Geosynchronous Earth Orbit (GEO).

Delta

Brief: An expendable, medium-lift launch vehicle now used to launch Navstar Global Positioning System satellites into orbit, providing navigational data to military and civilian users, and to launch civil and commercial payloads into low Earth, polar, geo transfer, and geosynchronous orbits.

Function: Medium expendable spacelift vehicle.

Operator: commercial (AFSPC oversight).

First Launch: May 13, 1960; Feb. 14, 1989 (Delta II); Aug. 26, 1998 (Delta III).

IOC: 1989 (Delta II).

Launches Scheduled: four (FY01); four (FY02).

Unit Location: Cape Canaveral AFS, Fla., Vandenberg AFB, Calif.

Contractor: Boeing.

Power Plant: stage 1: Boeing RS-27A liquid-propellant engine, 237,000 lb thrust; stage 2: Aerojet AJ10-118K engine, 9,750 lb thrust; stage 3: Thiokol STAR-48B solid-propellant motor, 14,920 lb thrust; nine strap-on SRMs, 100,270 lb thrust (s/l). Delta III stage 1: Boeing RS-27A liquid-propellant engine, 237,000 lb thrust; stage 2: Pratt & Whitney RL-10B-2 engine, 20,500 lb thrust; stage 3: Thiokol Star 48B (modified); nine strap-on SRMs producing 25 percent more thrust.

Dimensions: Delta II: length 125 ft, diameter 8 ft; bulbous payload fairing, max diameter 10 ft. Delta III: length 148 ft, diameter 1 ft; payload fairing, diameter 10 ft; payload fairing, diameter 13 ft.

Launch Weight: Delta II: 511,190 lb; Delta III: 663,200 lb.

Performance: Delta II: up to 11,100 lb to near Earth orbit, up to 4,010 lb to GTO, up to 2,000 lb to GEO. Delta III: up to 8,930 lb to GTO; up to 18,280 lb to Low Earth Orbit (LEO).

COMMENTARY

Delta I. Delta launch vehicle family began in 1959 with a contract to Douglas Aircraft Co. (now Boeing) for the production and integration of 12 space-launch vehicles. The Delta used components from USAF's Thor intermediate-range ballistic missile as its first stage and the Navy's Vanguard launch vehicle program as its second. The first Delta was launched from Cape Canaveral and had the ability to deliver a 100-lb spacecraft into GTO.

Delta II. Selected by the Air Force in 1987 to launch the Navstar GPS satellites, the Delta II is slightly larger than the earlier Delta rocket, to satisfy USAF's medium-payload requirement. The first launch took place in February 1989, and AFSPC continues to maintain a

fully operational 24-satellite constellation.

Delta II is a three-stage booster surrounded by nine solid-propellant Graphite Epoxy Motors. For LEO missions, stage 3 is typically not used. In December 1995, a newly assigned vehicle, complete with new avionics, an increased expansion ratio on three of the GEMs, and a new launch control system, successfully placed a NASA payload into orbit. Delta II will continue to support GPS by replenishing aging satellites as they fail and is supporting other DOD payloads.

Delta III. Developed to address the needs of the commercial market, Delta III increases GTO capacity to 8,930 lb. Notable features include a cryogenically propelled single-engine upper stage, bigger and more powerful strap-on SRMs than Delta II, three of which are equipped with thrust-vector control, and a larger composite fairing to house bigger payloads.

Delta IV. See EELV below.

Evolved Expendable Launch Vehicle: Delta IV/ Atlas V

Brief: EELV is USAF's spacelift modernization program to field two new families of expendable launch vehicles with an objective to reduce the cost of launch by 25 to 50 percent over current systems. Will eventually replace current Delta II, Atlas II, Titan II, and Titan IV launch vehicles.

Function: Medium/heavy expendable launch vehicle.

Operator: commercial (oversight AFSPC).

IOC: TBD

Launches Scheduled: first government FY02.

Unit Location: Cape Canaveral AFS, Fla., Vandenberg AFB, Calif.

Contractor: Boeing (Delta IV) and Lockheed Martin (Atlas V).

Power Plant: Delta IV: Rocketdyne RS-68 (Heavy, two additional core engines), 650,000 lb thrust; stage 2 (both): Centaur: Pratt & Whitney RL-10B-2. Atlas V: RD AMROSS LLC RD-180 (Heavy, two additional engines), 860,200 lb thrust; up to five strap-on solid rocket boosters; stage 2 (both) Centaur: one or two Pratt & Whitney RL-10A-4s, each 22,300 lb thrust.

Dimensions: Delta IV: length 235 ft, diameter (Medium) 13 ft, (Heavy) 16 ft 8 in. Atlas V: length 106 ft 2 in, diameter 12 ft 6 in.

Launch Weight: Delta IV: 565,000–1.6 million lb. Atlas V: 734,850–1.2 million lb.

Performance: Delta IV: (Medium) 9,200 lb to GTO; (Heavy) 29,000 lb to GTO. Atlas V: (Medium) 18,900 lb to LEO; (Heavy) 42,000 lb to LEO.

COMMENTARY

EMD and Initial Launch Services (ILS) contracts were awarded Oct. 16, 1998, to Boeing and Lockheed Martin. The ILS contracts cover the first 28 government EELV launches between FY02–06. Due to a recent realignment of the ILS contracts, Boeing has 21 of the launches and Lockheed Martin seven. The first commercial launch is scheduled for FY01. The first government medium launch is set for FY02, and the first government heavy launch is scheduled for FY02.

Inertial Upper Stage

Brief: An upper stage for use with DOD's Titan IV launcher as well as with NASA's shuttle.

Function: Upper stage for space launchers.

Operator: commercial (AFSPC oversight).

First Launch: October 1982.

IOC: circa 1982.

Unit Location: Cape Canaveral AFS, Fla., Vandenberg AFB, Calif.

Contractor: Boeing.

Power Plant: aft-stage SRM 41,700 lb thrust; forward-stage SRM 17,200 lb thrust.

Guidance: inertial.

Dimensions: length 17 ft, diameter 9 ft 6 in.

Launch Weight: 32,600 lb.

Performance: 5,350 lb into GEO when used on Titan IVB.

COMMENTARY

Serving as an upper stage for the Titan IV for DOD, as well as with the shuttle for NASA, the highly reliable IUS consists of an aft skirt, an aft-stage SRM, an interstage, a forward-stage SRM, and an equipment support structure.

Pegasus

Brief: A small winged launcher tasked to carry small payloads to LEO.

Function: Expendable launch vehicle.

Operator: commercial (AFSPC oversight for DOD payloads).

First Launch: April 5, 1990.

IOC: circa 1996 (DOD).

Launches Scheduled: none for DOD (FY01/02).

Contractor: Orbital Sciences/Alliant.

Power Plant: three solid-propellant motors developing 109,400 lb, 27,600 lb, and 7,800 lb thrust, respectively.

Titan IV (DOD Photo)

Guidance: inertial guidance.

Dimensions: length 49 ft, wingspan 22 ft, diameter 4 ft 2 in.

Launch Weight: 42,000 lb.

Performance: 850–1,050-lb payloads to LEO.

COMMENTARY

This three-stage winged vehicle was air-launched originally from a B-52. Orbital Sciences currently uses an L-1011 aircraft. Developed jointly as a private venture by Orbital and Hercules, the vehicle was under contract to the Defense Advanced Research Projects Agency (DARPA) for its initial two flights. In July 1991, it successfully placed seven minisatellites in orbit. The Air Force now manages DOD launches for the USAF space test program and the Ballistic Missile Defense Organization. The enhanced-performance Pegasus XL successfully launched a DOD payload into polar orbit March 8, 1996, following two earlier, unsuccessful launch attempts.

Taurus

Brief: A small ground-based launch vehicle for use in testing a quick-readiness, mobile launch facility.

Function: Expendable launch vehicle.

Operator: commercial (AFSPC oversight for DOD payloads).

First Launch: March 13, 1994.

IOC: March 13, 1994.

Launches Scheduled: none for DOD (FY01/02).

Contractor: Orbital Sciences.

Power Plant: four solid-propellant motors generating 495,400 lb, 109,140 lb, 26,900 lb, and 7,200 lb thrust, respectively.

Dimensions: length 89 ft, max body diameter 50–92 in.

Weight: gross 50,000 lb.

Performance: capable of lifting 3,000 lb to LEO and 800 lb to GTO using a Star 37 perigee kick motor.

COMMENTARY

A more powerful version of the Pegasus space launch vehicle, using an LGM-118 Peacekeeper missile first-stage addition and with the Pegasus wings removed. Taurus is ground-launched from regular launch complexes. The first launch, March 13, 1994, put two USAF and DARPA satellites into a 340-mile polar orbit.

Minotaur

Brief: Low-cost ground-based launch vehicle tasked to deliver small satellites into orbit.

Function: Expendable launch vehicle.

Operator: commercial (AFSPC oversight for DOD payloads).

First Launch: Jan. 26, 2000.

IOC: January 2000.

Launches Scheduled: none for DOD as of September 2000.

Contractor: Orbital Sciences.

Power Plant: first and second stages: deactivated Minuteman II rocket motors; third and fourth stages: Orion 50 and Orion 38 solid-propellant motors.

Dimensions: length 53 ft 7 in, alternative payload fairings for 3 ft 10 in or 5 ft diameter payloads.

Performance: capable of lifting up to 750 lb into orbit.

COMMENTARY

Minotaur is a low-cost, four-stage rocket for use in USAF's Orbital/Suborbital program. First and second stages comprise decommissioned motors from deactivated Minuteman II ICBMs; third and fourth stages utilize Orion motors derived from the Pegasus XL launcher, together with the guidance and control technology from that system. Two successful launches conducted in 2000.

Titan II

Brief: Modified ICBM used to launch military, classified, and NASA payloads into space.

Function: Expendable launch vehicle.

Operator: commercial (AFSPC oversight).

First Launch: April 1964 (NASA's Titan II–Gemini).

IOC: Sept. 5, 1988 (USAF).

Launches Scheduled: one (FY01); none (FY02).

Unit Location: Vandenberg AFB, Calif.

Contractor: Lockheed Martin.

Power Plant: stage 1 and 2: Aerojet liquid hypergolic propellant rocket engines; stage 1: 430,000 lb thrust; stage 2: 100,000 lb thrust.

Guidance: inertial guidance system.

Dimensions: stage 1 and 2: height 110 ft, diameter 10 ft; payload fairing heights 20, 25, and 30 ft, diameter 10 ft.

Launch Weight: 408,000 lb.

Performance: more than 4,200 lb to polar LEO.

COMMENTARY

Titan I. The Titan family was established in October 1955 when the Air Force awarded the then Martin Co. (now Lockheed Martin) a contract to build a heavy-duty space system. It became known as the Titan I, the nation's first two-stage and first silo-based ICBM.

Titan II. Titan I provided many structural and propulsion techniques that were later incorporated into the Titan II. The launcher was used in the 1960s for the manned Gemini flights.

Fourteen Titan II ICBMs were subsequently refurbished and modified to provide expendable space launch capability. Ten successful launches have included the launch of the space probe Clementine I toward the Moon in January 1994, marking the first US lunar mission since Apollo 17 in December 1972. Remaining refurbished Titan IIs are assigned to place Defense Meteorological Satellite Program (DMSP), National Oceanic and Atmospheric Administration (NOAA) satellites, and other government agencies' satellites into polar orbit.

Titan IV

Brief: A heavy-lift space launch vehicle used to carry DOD payloads such as Defense Support Program (DSP) and Milstar satellites into space. It is the largest unmanned space booster used by the Air Force.

Function: Heavy expendable spacelift vehicle.

Operator: commercial (AFSPC oversight).

First Launch: June 14, 1989 (Titan IVA); Feb. 23, 1997 (Titan IVB).

IOC: June 14, 1989.

Launches Scheduled: three (FY01); five (FY02).

Unit Location: Cape Canaveral AFS, Fla., Vandenberg AFB, Calif.

Contractor: Lockheed Martin.

Power Plant: Aerojet liquid hypergolic propellant rocket engines; stage 1: two engines 551,200 lb thrust each; stage 2: 106,150 lb thrust; two Alliant Techsystems SRMs, each 1.7 million lb thrust.

Guidance: digital avionics system on Titan IVB.

Dimensions: stage 1 and 2: height 119 ft 2 in, diameter 10 ft.

Launch Weight: 1.9 million lb.

Performance: 12,700 lb to GEO; 47,800 lb to LEO.

COMMENTARY

USAF's primary heavy-lift launcher, Titan IV was selected in 1985 to augment the space shuttle and is used to launch critical military payloads, including DSP and Milstar satellites. It is a growth version of the earlier Titan 34D, with stretched first and second stages, three-segment solid boosters, and a 16-ft 9-in–diameter payload fairing, with various heights of payload fairings available.

Titan IVA. The last Titan IVA was launched Aug. 12, 1998. This version was capable of placing a

32,000-lb payload into polar LEO and 39,000 lb into LEO. With a modified Centaur G–prime upper stage, it could place 10,200 lb into GEO, or with an alternative IUS, 5,200 lb into GEO.

Titan IVB. The latest Titan IVB version has mission-unique kits, providing a standard interface for payloads to permit launch-site processing, a new electrical system on the booster core, a new ground system, and upgraded SRMs with 25 percent improved performance. First Titan IVB launch from Cape Canaveral was made successfully Feb. 23, 1997.

Satellite Systems

Defense Meteorological Satellite Program

Brief: Satellites that collect air, land, sea, and space environmental data to support worldwide strategic and tactical military operations.

Function: Environmental monitoring satellite.

Operator: National Polar-orbiting Operational Environmental Satellite System (NPOESS) program office.

First Launch: circa 1960s (classified until 1973).

IOC: classified but in use during Vietnam War.

Constellation/on-orbit: Two.

Design Life: 48 months (Block 5D-2); 54 months (Block 5D-3).

Launch Vehicle: Titan II.

Unit Location: Suitland, Md.

Orbit Altitude: approx 500 miles.

Contractor: Lockheed Martin.

Power Plant: solar arrays generating 500–600 watts.

Dimensions: length 20 ft 2 in (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

The Defense Meteorological Satellite Program (DMSP) has been supporting US military operations for nearly 40 years. DMSP's primary mission is to provide high-resolution visual and infrared cloud imagery to support both strategic and tactical operations anywhere in the world. In addition, DMSP satellites provide critical land, sea, and space environment data required by US forces in any operating environment.

DMSP will be replaced by the tri-agency NPOESS late in this decade. NPOESS will consolidate current separate civil and military polar orbiting meteorological satellite systems into a single national program. NPOESS aims to provide increased capability to both civil and military users and avoid over $1.7 billion in costs by consolidating separate, but similar, weather satellite missions.

Block 5D-2. Two operational DMSP Block 5D-2 satellites survey the entire Earth four times a day. DMSP F-15, the last of the Block 5D-2 satellites, was launched in December 1999. The Block 5D-2 spacecraft host one primary sensor, the Operational Linescan System, and a number of secondary sensors to fulfill DOD requirements for weather satellite data.

Block 5D-3. DMSP F-16 was scheduled to launch in early 2001 and will be the first DMSP Block 5D-3 satellite to fly. (DMSP F-15, with a 5D-3 satellite bus but 5D-2 internal components, was launched Dec. 12, 1999, and is officially credited as the first 5D-3 launch.) The DMSP Block 5D-3 satellites have improvements in both the spacecraft bus and sensors that will provide for a longer and more capable mission. Successful flyout of the DMSP Block 5D-3 satellites will help ensure a seamless transition to the NPOESS program.

Defense Satellite Communications System

Brief: A spacecraft traveling in geosynchronous orbit used to transmit SHF high-priority C^2 communication.

Function: Communications satellite.

Operator: AFSPC.

First Launch: 1971 (DSCS II); 1982 (DSCS III); 2000 (DSCS III/SLEP).

IOC: Dec. 13, 1978 (DSCS II).

Constellation: five (III).

Design Life: 10 yr (III).

Launch Vehicle: Atlas II.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 22,000+ miles in geosynchronous orbit.

Contractor: Lockheed Martin.

Power Plant: solar arrays generating 1,269 watts, decreasing to 980 watts after 10 yr; 1,500 watts (SLEP).

Dimensions: rectangular body 6 ft x 6 ft x 7 ft; 38-ft span with solar arrays deployed.

Weight: 2,580 lb; 2,716 lb (SLEP).

COMMENTARY

Defense Satellite Communications System (DSCS) satellites provide worldwide secure voice high-data-rate transmission, operating in Super-High Frequency. The system is used for high-priority communications, such as the exchange of wartime information between deployed units, battlefield commanders, and defense officials. The military also uses the DSCS to transmit data on space operations and early warning to various systems and users.

DSCS II. No longer on orbit.

DSCS III. The first launch of the more advanced Phase III satellites was in 1982. Ten operational satellites are currently on orbit, with launches continuing until 2003. These satellites are nuclear hardened, can resist jamming, and are equipped with antennas capable of providing low-gain, Earth-field-of-view coverage and steerable, high-gain area coverage.

DSCS III/SLEP. First two of four SLEP–modified DSCS III are currently in orbit. First launched Jan. 21, 2000.

Defense Support Program satellite atop an Inertial upper Stage prior to launch. (NASA photo)

Defense Support Program System

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, Aerojet.

Power Plant: solar arrays generating 1,485 watts.

Dimensions: diameter 22 ft, height 32 ft 9 in, 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

Defense Support Program (DSP) satellites are a key part of North America's early warning system, capable of detecting missile launches, space launches, and nuclear detonations. Warning data is fed to NORAD and US Space Command early warning centers at Cheyenne Mountain AFS, Colo.

Since their first launch DSP satellites have provided an uninterrupted early warning capability to the US. Though not designed to spot and track smaller missiles, the system's capability was demonstrated during the Persian Gulf War, when the satellites provided warnings of Iraqi Scud attacks. Nineteen DSP satellites have been launched by USAF. Procurement will end with No. 23, and the last DSP satellite will be launched in FY03.

Global Positioning System

Brief: A constellation of orbiting space vehicles that provides highly precise and reliable navigation data, 24 hours a day, to military and civilian users around the world. Signals permit calculation of location within 300 feet.

Function: Worldwide navigation satellite.

Operator: AFSPC.

First Launch: Feb. 22, 1978.

IOC: Dec. 9, 1993.

Constellation: 24.

Design Life: six yr (II/IIA); 7.5 yr (IIR).

Launch Vehicle: Delta II.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 12,636 miles (IIA); 12,532 miles (IIR).

Contractor: Boeing and 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

The 24 satellites of the Navstar Global Positioning System (GPS) provide 24-hour navigation services, including accurate, three-dimensional (latitude, longitude, and altitude) position, velocity, and precise time; passive, all-weather operation; continuous real-time information; support to an unlimited number of users and areas. Support to civilian users was enhanced May 1, 2000, when signals previously available to military users only were opened to civilians. Concern over potential enemy use of GPS is being addressed under the Navwar and GPS modernization efforts; future GPS satellites will have two jam-resistant channels for military-only use, as well as two new civilian-only channels. There are currently 27 satellites on orbit: five Block II, 18 IIA, and four IIR.

Mapping, aerial refueling and rendezvous, precision guidance, and SAR operations are just a few examples of the many GPS applications.

Milstar Satellite Communications System

Brief: A satellite communications system that provides secure, jam-resistant worldwide C^2 communications for tactical and strategic forces in all levels of conflict, linking command authorities to ground forces, ships, submarines, and aircraft.

Function: Communications satellite.

Operator: AFSPC.

First Launch: Feb. 7, 1994.

IOC: July 1997 (Milstar I).

Constellation: three (three spares).

Design Life: 10 yr.

Launch Vehicle: Titan IV/Centaur.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 22,300 miles.

Contractor: Lockheed Martin.

Power Plant: solar arrays generating almost 5,000 watts.

Dimensions: length 51 ft, width 116 ft (with full solar array extension).

Weight: 10,000 lb.

Performance: The constellation will consist of three satellites in low-inclined geosynchronous orbit, providing worldwide coverage between 65° north and 65° south latitude.

COMMENTARY

Milstar is a joint-service communications system that provides secure, jam-resistant EHF communications. Operated by the 50th Space Wing, the constellation will link command authorities with a wide variety of resources, including ships, submarines, aircraft, and ground stations.

Currently serving tactical as well as strategic forces, the final three Milstar satellites (to be launched between 2001 and 2002) will include low-data-rate and

medium-data-rate payloads able to transmit higher data rates to highly mobile forces.

MILSATCOM Polar System
Brief: Satellite that provides secure, survivable communications, supporting peacetime, contingency, and wartime operations in the North Pole region.
Function: Communications satellite.
Operator: AFSPC.
First Launch: late 1997.
IOC: 1997.
Constellation: three.
Design Life: host satellite dependent.
Launch Vehicle: not available
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 25,300 miles.
Contractor: classified.
Power Plant: 410 watts consumed by payload (power from host solar array).
Dimensions: numerous items integrated throughout host.
Weight: 470 lb (payload).
COMMENTARY
USAF deployed a modified EHF payload on a host polar-orbiting satellite, providing an interim cheaper alternative to Milstar to ensure protected polar communications capability. Two further satellites are under development, with payload availability scheduled for 2003 and 2004.

Space Based Infrared System
Brief: Advanced surveillance system for missile warning, missile defense, battlespace characterization, and technical intelligence. System includes two main components: High with satellites in GEO and Highly Elliptical Orbit; and Low with satellites in LEO.
Function: Infrared space surveillance.
Operator: AFSPC.
First Launch: (planned) High GEO: FY04; Low: FY06.
IOC: TBD
Constellation: High: five GEO sats, two Highly Elliptical Orbit sensors; Low: (preliminary) 24 LEO sats.
Design Life: not available
Launch Vehicle: TBD
Unit Location: Buckley AFB, Colo.
Orbit Altitude: High at approx 22,300 miles; Low at 60–300 miles.
Contractor: Lockheed Martin (High); TRW and Spectrum Astro for preliminary system designs (Low).
Power Plant: not available
Dimensions: not available
Weight: not available
COMMENTARY
The follow-on to the DSP is the Space Based Infrared System **(SBIRS).** SBIRS is an integrated "system of systems" including a High component (satellites in GEO and sensors hosted on satellites in Highly Elliptical Orbit) and a Low component (satellites in LEO), as well as ground assets. It is being fielded in four increments. Increment 1 consolidates all DSP ground processing in one CONUS master control station at Buckley AFB, Colo. Increment 2 fields the High component starting in FY04. Increment 3 fields the Low component starting in FY06. Increment 4 will optimize the entire system and define requirements for further deployment. The High component is in the EMD phase of development, through a Lockheed Martin team, including Aerojet, Honeywell, and Northrop Grumman. The Low component should complete the program definition phase in early FY02. Two SBIRS Low program definition and risk reduction contracts were awarded to TRW and Spectrum Astro in August 1999.

Aerial Targets

MQM-107 Streaker
Brief: A jet-powered, variable speed, recoverable target drone.
Function: Aerial target.
Operator: ACC.
First Flight: not available
Delivered: from 1984 (B).
IOC: 1987.
Production: 70 (B); 221 (D); 78 (E).
Inventory: 44 (D); 78 (E).
Unit Location: Tyndall AFB, Fla.
Contractor: Raytheon (D model); Marconi (formerly Tracor) (E model).
Power Plant: initially on D model, one Teledyne CAE 373-8 engine, 950 lb thrust; MQM-107Ds delivered since 1989 have 950 lb thrust TRI 60-5 turbojets. Microturbo TRI 60-5 engine, 1,061 lb thrust or TCAE 373-8B (E model).
Guidance and Control: analog or digital, for both ground control and preprogrammed flight (D model); high–G autopilot provisions; digital autopilot and remote control by the Gulf Range Drone Control Upgrade System (GRDCUS), a multifunction C^2 multilateration system (E model).
Dimensions: length 18 ft 1 in, body diameter 1 ft 3 in, span 9 ft 10 in.
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* (Nathan Leong)

BQM-34 Firebee
Brief: A jet-powered, variable speed, recoverable target drone.
Function: Aerial target.
Operator: ACC.
First Flight: 1951; 1958 (BQM-34A).
Delivered: from 1951.
IOC: circa 1951.
Production: 1,800+.
Inventory: 49.
Unit Location: Tyndall AFB, Fla.
Contractor: Teledyne Ryan.
Power Plant: one General Electric J85-GE-100 turbojet, 2,850 lb thrust.
Guidance and Control: remote-control methods incl choice of radar, radio, active seeker, and automatic navigator developed by Teledyne Ryan; the current model of the BQM-34A is configured to accommodate the GRDCUS, which allows multiple targets to be flown simultaneously.
Dimensions: length 22 ft 11 in, body diameter 3 ft 1 in, span 12 ft 11 in.
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
More than 1,800 of these jet target vehicles have been delivered to USAF since initial development of the **BQM-34A** in the 1950s.
Current BQM-34As, with an upgraded General Electric J85-100 engine that provides a thrust-to-weight ratio of 1:1, enables this version to offer higher climb rates and 6 G maneuvering capability. A new microprocessor flight-control system provides a prelaunch and in-flight self-test capability. Used for weapon system evaluation.

QF-4
Brief: A converted, remotely piloted F-4 Phantom fighter used for full-scale training or testing.
Function: Aerial target.
Operator: ACC.
First Flight: August 1993.
IOC: not available
Inventory: 72.
Unit Location: Tyndall AFB, Fla. (detachment at Holloman AFB, N.M.)
Contractor: Marconi (formerly Tracor).
Power Plant: two General Electric J79-GE-17 turbojets, each with approx 17,000 lb thrust with afterburning.
Guidance and Control: remote-control methods incl the GRDCUS (Tyndall) and the Drone Formation and Control System (Holloman); will also accommodate the triservice Target Control System currently under development.
Dimensions: length 63 ft, height 16 ft 6 in, wingspan 38 ft 5 in.
Weight: mission operational weight 49,500 lb.
Performance: max speed Mach 2+, ceiling 55,000 ft, range (approx) 500 miles.
COMMENTARY
The F-4 was selected as the source aircraft for the replacement of the QF-106 Full-Scale Aerial Target (FSAT) 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. A complement of 326 F-4E, F-4G, and RF-4C aircraft have been identified for conversion to FSATs. ■

QF-4E (Ted Carlson)

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USAF Academy Outstanding Squadron

AFA Colorado Springs/Lance P. Sijan Chapter

Thursday, May 24—7 p.m.

The Air Force Association's 42nd Annual Outstanding Squadron Dinner will be held at The Broadmoor Hotel, Colorado Springs, Colo., on Thursday, May 24, to honor cadets of the United States Air Force Academy for the 2000–01 school year. Established in 1959, the Outstanding Squadron Trophy is one of the academy's most revered and coveted awards. The price for the dinner is $90 per person and $900 per table.

Featured speaker: Gen. John P. Jumper, commander, Air Combat Command.

If you have questions regarding the USAFA Outstanding Squadron Dinner, please contact Barbara Coffey, (800) 727-3337 ext. 5805, e-mail: bcoffey@afa.org, or Jeri Andrews, (719) 574-1500, e-mail: jandre02@harris.com.

Golf Tournament

The 2nd Annual Colorado Aerospace Education Foundation Charity Golf Tournament will take place on The Broadmoor East Course on May 23. Interested participants, please contact Howard Vasina, (719) 599-7368, e-mail: dhvasina@mindspring.com, or Sherry Gardner, (719) 637-2213, e-mail: sgardner@oao.com.

Symposium

SPACE OPS 2001, an unclassified one-day symposium on May 24, will cover the latest developments as the Air Force responds to the report of the Commission to Assess United States National Security Space Management and Organization. Speakers include Gen. Ed Eberhart, commander in chief, NORAD and SPACECOM, and commander, Air Force Space Command; Gen. John P. Jumper, commander, Air Combat Command; and Gen. Lester L. Lyles, commander, Air Force Materiel Command, as well as other key commanders and experts in civil and commercial space. Discussions will cover space control, space launch, protection of space infrastructure, and the utilization of space assets in combat.

The cost is $250 for AFA Industrial Associate Members and other civilian professionals. Government prices available. The symposium registration fee includes a continental breakfast, coffee breaks, lunch, and the Wednesday evening Ice Breaker Reception. Additional tickets to the Ice Breaker Reception can also be purchased for $50. Contact Judy Arnold, (719) 277-4028, fax: (719) 277-4372, e-mail: judy.arnold@lmco.com.

Reservations

For reservations at The Broadmoor Hotel, call (800) 634-7711 and identify yourself as an attendee of the Air Force Association symposium and or dinner.

"The Department of Defense finds this event meets the minimum regulatory standards for attendance by DOD employees. This finding does not constitute a blanket approval or endorsement for attendance. Individual DOD component commands or organizations are responsible for approving attendance of its DOD employees based on mission requirements and DOD regulations."

USAF photo by TSgt Justin Pyle

AFA State Contacts

Following each state name are the names of the communities in which AFA chapters are located. Information regarding these chapters or any of AFA's activities within the state may be obtained from the appropriate contact.

ALABAMA (Birmingham, Huntsville, Mobile, Montgomery): **Austin S. Landry,** 154 Lucerne Blvd., Birmingham, AL 35209-6658 (phone 205-879-2237).

ALASKA (Anchorage, Fairbanks): **Steven R. Lundgren,** 4581 Drake St., Fairbanks, AK 99709 (phone 907-452-1751).

ARIZONA (Green Valley, Phoenix, Prescott, Sedona, Sierra Vista, Sun City, Tucson): **Arthur W. Gigax,** 3325 S. Elm St., Tempe, AZ 85282-5765 (phone 480-838-2278).

ARKANSAS (Fayetteville, Hot Springs, Little Rock): **Jerry Reichenbach,** 501 Brewer St., Jacksonville, AR 72076-4172 (phone 501-988-1115).

CALIFORNIA (Apple Valley, Bakersfield, Edwards AFB, Fairfield, Fresno, Los Angeles, Merced, Monterey, Orange County, Palm Springs, Pasadena, Riverside, Sacramento, San Diego, San Francisco, Sunnyvale, Vandenberg AFB, Yuba City): **James H. Estep,** 6251 N. Del Rey Ave., Clovis, CA 93611-9303 (phone 559-299-6904).

COLORADO (Colorado Springs, Denver, Fort Collins, Grand Junction, Pueblo): **Terry Miller,** 65 Ellsworth St., Colorado Springs, CO 80906-7955 (phone 719-574-9594).

CONNECTICUT (Brookfield, East Hartford, Storrs, Stratford, Torrington, Waterbury, Westport, Windsor Locks): **Joseph R. Falcone,** 14 High Ridge Rd., Ellington, CT 06029 (phone 860-875-1068).

DELAWARE (Dover, New Castle County): **Ronald H. Love,** 8 Ringed Neck Ln., Camden Wyoming, DE 19934-9510 (phone 302-739-4696).

DISTRICT OF COLUMBIA (Washington): **Rosemary Pacenta,** 1501 Lee Hwy., Arlington, VA 22209-1198 (phone 703-247-5820).

FLORIDA (Avon Park, Broward County, Daytona Beach, Fort Walton Beach, Gainesville, Homestead, Hurlburt Field, Jacksonville, Leesburg, Miami, New Port Richey, Orlando, Palm Harbor, Panama City, Patrick AFB, Tallahassee, Tampa, Vero Beach, West Palm Beach): **David R. Cummock,** 2890 Borman Ct., Daytona Beach, FL 32124 (phone 904-760-7142).

GEORGIA (Atlanta, Savannah, Valdosta, Warner Robins): **Robert E. Largent,** 906 Evergreen St., Perry, GA 31069 (phone 912-987-2435).

HAWAII (Honolulu, Maui): **Michael E. Solomon,** 98-1217 Lupea St., Aiea, HI 96701-3432 (phone 808-292-2089).

IDAHO (Mountain Home, Twin Falls): **Dale W. Smith,** R.R. 1, Box 123, King Hill, ID 83633 (phone 208-366-2710).

ILLINOIS (Belleville, Chicago, Galesburg, Moline, Springfield–Decatur): **Keith N. Sawyer,** 813 West Lakeshore Dr., O'Fallon, IL 62269-1216 (phone 618-632-2859).

INDIANA (Bloomington, Columbus, Fort Wayne, Grissom ARB, Indianapolis, Lafayette, Marion, Mentone, Terre Haute): **William Howard Jr.,** 1622 St. Louis Ave., Fort Wayne, IN 46819-2020 (phone 219-747-0740).

IOWA (Des Moines, Marion, Sioux City, Waterloo): **Norman J. Beu,** 903 Blackhawk St., Reinbeck, IA 50669-1413 (phone 319-345-6600).

KANSAS (Garden City, Topeka, Wichita): **Jean M. Clifford,** 102 Drury Ln., Garden City, KS 67846 (phone 316-275-4317).

KENTUCKY (Lexington, Louisville): **Edward W. Tonini,** 12 Eastover Ct., Louisville, KY 40206-2705 (phone 502-581-1900).

LOUISIANA (Baton Rouge, New Orleans, Shreveport): **Peyton Cole,** 2513 N. Waverly Dr., Bossier City, LA 71111-5933 (phone 318-742-8071).

MAINE (Bangor, Caribou, North Berwick): **Eugene M. D'Andrea,** P.O. Box 8674, Warwick, RI 02888-0599 (phone 401-461-4559).

MARYLAND (Andrews AFB, Baltimore, College Park, Rockville): **George Apostle,** 905 Bay Hill Ln., Silver Spring, MD 20905 (phone 301-421-0180).

MASSACHUSETTS (Bedford, Boston, East Longmeadow, Falmouth, Hanscom AFB, Taunton, Westfield, Worcester): **Harry I. Gillogly III,** 1 Patten Ln., Westford, MA 01886-2937 (phone 617-275-2225).

MICHIGAN (Alpena, Battle Creek, East Lansing, Kalamazoo, Marquette, Mount Clemens, Oscoda, Traverse City, Southfield): **James W. Rau,** 466 Marywood Dr., Alpena, MI 49707 (phone 517-354-2175).

MINNESOTA (Duluth, Minneapolis–St. Paul): **Richard Giesler,** Rt. 1, Box 111, Sturgeon Lake, MN 55783-9725 (phone 218-658-4507).

MISSISSIPPI (Biloxi, Columbus, Jackson): **Gerald E. Smith,** 231 Theas Ln., Madison, MS 39110-7717 (phone 601-898-9942).

MISSOURI (Kansas City, St. Louis, Springfield, Whiteman AFB): **John D. Miller,** HCR 77, Box 241-5, Sunrise Beach, MO 65079-9205 (phone 573-374-6977).

MONTANA (Bozeman, Great Falls): **Regina L. Caln,** 426 Deerfield Ct., Great Falls, MT 59405 (phone 406-761-8169).

NEBRASKA (Lincoln, Omaha): **Richard Gaddie,** 7240 41st St., Lincoln, NE 68516-3063 (phone 402-472-6939).

NEVADA (Las Vegas, Reno): **Kathleen Clemence,** 35 Austrian Pine Cir., Reno, NV 89511-5707 (phone 775-849-3665).

NEW HAMPSHIRE (Manchester, Portsmouth): **Terry K. Hardy,** 31 Bradstreet Ln., Eliot, ME 03903-1416 (phone 603-430-3122).

NEW JERSEY (Andover, Atlantic City, Camden, Chatham, Forked River, Ft. Monmouth, Jersey City, McGuire AFB, Newark, Old Bridge, Toms River, Trenton, Wallington, West Orange): **Ethel Mattson,** 27 Maple Ave., New Egypt, NJ 08533-1005 (phone 609-758-2885).

NEW MEXICO (Alamogordo, Albuquerque, Clovis): **Peter D. Robinson,** 1804 Llano Ct. N.W., Albuquerque, NM 87107 (phone 505-343-0526).

NEW YORK (Albany, Binghamton, Buffalo, Rome, Jamestown, Nassau County, New York, Queens, Rochester, Staten Island, Syracuse, Westhampton Beach, White Plains): **Barry H. Griffith,** 5770 Ridge Rd., Lockport, NY 14094 (phone 716-236-2487).

NORTH CAROLINA (Asheville, Charlotte, Fayetteville, Goldsboro, Kitty Hawk, Raleigh, Wilmington): **Gerald V. West,** 4002 E. Bishop Ct., Wilmington, NC 28412-7434 (phone 910-791-8204).

NORTH DAKOTA (Fargo, Grand Forks, Minot): **James M. Crawford,** 1720 9th St. S.W., Minot, ND 58701-6219 (phone 701-839-7263).

OHIO (Cincinnati, Cleveland, Columbus, Dayton, Mansfield, Youngstown): **Fred Kubli,** 823 Nancy St., Niles, OH 44446-2729 (phone 330-652-4440).

OKLAHOMA (Altus, Enid, Oklahoma City, Tulsa): **Don Johnson,** 309 Camino Norte, Altus OK 73521-1183 (phone 580-482-1387).

OREGON (Eugene, Klamath Falls, Portland): **John Lee,** P.O. Box 3759, Salem, OR 97302 (phone 503-581-3682).

PENNSYLVANIA (Allentown, Altoona, Beaver Falls, Coraopolis, Drexel Hill, Harrisburg, Johnstown, Lewistown, Philadelphia, Pittsburgh, Scranton, Shiremanstown, Washington, Willow Grove, York): **Bob Rutledge,** 295 Cinema Dr., Johnstown, PA 15905-1216 (phone 724-235-4609).

RHODE ISLAND (Newport, Warwick): **David Buckwalter,** 30 Johnnycake Ln., Portsmouth, RI 02871-4110 (phone 401-841-6432).

SOUTH CAROLINA (Charleston, Clemson, Columbia, Myrtle Beach, Sumter): **Roger Rucker,** 112 Mallard Pt., Lexington, SC 29072-9784 (phone 803-359-5565).

SOUTH DAKOTA (Rapid City, Sioux Falls): **Ronald W. Mielke,** 4833 Sunflower Trail, Sioux Falls, SD 57108 (phone 605-339-1023).

TENNESSEE (Chattanooga, Knoxville, Memphis, Nashville, Tullahoma): **Joseph E. Sutter,** 5413 Shenandoah Dr., Knoxville, TN 37909-1822 (phone 423-588-4013).

TEXAS (Abilene, Amarillo, Austin, Big Spring, College Station, Commerce, Dallas, Del Rio, Denton, Fort Worth, Harlingen, Houston, Kerrville, San Angelo, San Antonio, Wichita Falls): **C.N. Horlen,** 11922 Four Colonies, San Antonio, TX 78249-3401 (phone 210-699-6999).

UTAH (Clearfield, Ogden, Salt Lake City): **Brad Sutton,** 5221 West Rendezvous Rd., Mountain Green, UT 84050-9741 (phone 801-721-7225).

VERMONT (Burlington): **Wayne S. Gibson,** 29 S. Myers Ct., South Burlington, VT 05403-6410 (phone 802-862-0427).

VIRGINIA (Alexandria, Charlottesville, Danville, Langley AFB, McLean, Norfolk, Petersburg, Richmond, Roanoke, Winchester): **Bill Anderson,** 3500 Monacan Dr., Charlottesville, VA 22901-1030 (phone 804-295-9011).

WASHINGTON (Seattle, Spokane, Tacoma): **Tom Hansen,** 8117 75th St. S.W., Lakewood, WA 98498-4819 (phone 253-984-0437).

WEST VIRGINIA (Charleston, Fairmont): **Samuel Rich,** P. O. Box 444, White Sulphur Springs, WV 24986 (phone 304-536-4131).

WISCONSIN (Madison, Milwaukee, General Mitchell IAP/ARS): **Chuck Marotske,** 5406 Somerset Ln. S., Greenfield, WI 53221-3247 (phone 414-325-9272).

WYOMING (Cheyenne): **Stephan Pappas,** 2617 E. Lincolnway, Ste. A, Cheyenne, WY 82001 (phone 307-637-5227).

AFA / AEF National Report

afa-aef@afa.org

By Frances McKenney, Assistant Managing Editor

AFA Hosts Foreign Air Attachés

The annual reception for foreign air attachés in Washington, D.C., sponsored by the Air Force Association and *Air Force* Magazine, gave more than 100 guests from foreign military services, US defense industry representatives, and senior US Air Force leaders an opportunity to meet informally.

New Zealand Air Commodore James S. Barclay, dean of the foreign air attachés, told the audience that AFA plays an important liaison role for the senior foreign military representatives. He said the attachés have appreciated invitations to AFA conferences and symposiums such as the Air Warfare Symposium in Orlando. Barclay, who returns to New Zealand in August, said such events give the foreign air attachés an opportunity to "put a face on the person behind the issues."

Barclay praised *Air Force* Magazine and its May Almanac issue, in particular. He mentioned enjoying the magazine's "Letters" column and its input from Air Force retirees whose opinion, he noted, "is very much highly regarded."

USAF Chief of Staff Gen. Michael E. Ryan was among the Air Force leaders at the gathering. AFA National President John J. Politi and Richard B. Goetze Jr., the Aerospace Education Foundation president, were among those representing AFA.

Photo by Paul Kennedy

John Politi, AFA National President (left), greets New Zealand's Air Commodore James Barclay, dean of the foreign air attachés, at* Air Force *Magazine's annual foreign air attaché reception.

Storm Pilot

ANG Lt. Col. Graham Buschor, whose rescue work was featured in last summer's popular movie "Perfect Storm," spoke at a recent meeting of the **Lindbergh/Sikorsky (Conn.) Chapter** in Stratford, Conn.

In October 1991, Buschor, who was copilot of an HH-60 Pave Hawk helicopter from the 106th Rescue Wing (ANG), Francis S. Gabreski IAP, N.Y., headed out in an unusually intense Atlantic Ocean storm to rescue the crew of a fishing boat. The storm prevented the rescue and a midair refueling for the helicopter, forcing the Guard crew to ditch in the ocean. Buschor and four others were rescued by the Coast Guard, but a fifth ANG crew member was never found. Today Buschor is the rescue wing's chief of safety.

The Lindbergh/Sikorsky Chapter was formed recently by merging the former Charles A. Lindbergh and Igor Sikorsky Chapters.

Blackwell at Dobbins

James A. "Micky" Blackwell, former executive vice president of Lockheed Martin's aeronautical systems business area, spoke to a January meeting of the **Dobbins (Ga.) Chapter** held at Dobbins Air Reserve Base.

Blackwell, who had been president of Lockheed Aeronautical Systems Co. in Marietta, Ga., in the early 1990s, has been working with the Georgia Military Affairs Coordinating Committee and visiting military installations in the state.

According to Chapter Secretary Gary R. Carruthers, Blackwell gave the audience of about 40 chapter members and cadets from Georgia Tech an update on military facilities in Georgia. He then fielded questions on how they might fare should they face base realignment actions in the future.

To Say Thanks

The **Gen. Carl A. "Tooey" Spaatz (N.Y.) Chapter** honored Rep. Benjamin A. Gilman (R–N.Y.) with a dinner hosted in February at the West Point Club.

Gilman is a 15-term Congressman and last year completed five years as chairman of the House Committee on International Relations. An Army Air Forces veteran (1942–45), he was a staff sergeant in the 19th Bomb Group, flying 35 missions over Japan.

Guest speaker for the evening was ANG Brig. Gen. Thomas P. Maguire Jr., commander of the 105th Airlift Wing (ANG), Stewart IAP, N.Y. He spoke about wing operations and the contributions of Gilman to the community. He helped special guest Rebecca Spaatz Nagel and Chapter President Bill Athanasidy present the chapter's Tooey Trophy to Gilman.

Members of several military organizations joined the more than 75 guests at this gathering, which included a color guard of senior en-

listed men and women from the 105th.

A complete list of military veterans in the 107th Congress is available on AFA's Web site (www.afa.org) under the Legislative Affairs section.

Galaxy of Top Performers

The **Delaware Galaxy Chapter** honored top performers in the Dover AFB, Del., area during an awards recognition reception on base in March.

Allen S. Hedgecock received a state-level Premier Salute Award, presented for service to the community and for fostering community–base relations. Harry E. Van Den Heuvel took home the state-level award named for the late Maj. Gen. Charles I. Carpenter, a former chief of Air Force chaplains, who was born in and later retired to Delaware.

Active duty honorees from the 436th Airlift Wing were Capt. John T. Knack, SMSgt. Mark S. Brejcha, MSgts. Kevin Vegas and Alma Bartolomeo, and SrA. Tanya Manning. From the 512th Airlift Wing (AFRC Assoc.), the military award recipients were Capt. John Sotham, MSgts. Charles Harrell and Thomas Runyon, TSgt. Charles Lafaver, and SrA. Catherine Milhoan.

Also receiving awards were several civilian employees and cadets from AFJROTC units from six local high schools. Casey Drosehn and Elmer Boyer Sr. received the two top Civil Air Patrol awards. Cadets Andrew Heilmann and Chris Marshall from the University of Delaware's AFROTC unit received a professional officer cadet and general military cadet award, respectively.

Photo by Greg Murry

AFA National Chairman of the Board Thomas McKee (left) presents keynote speaker Florida Gov. Jeb Bush with AFA mementos at the third annual Air Armament Summit's gala in Sandestin, Fla. Co-sponsored by the Eglin (Fla.) Chapter and the Air Armament Center, the three-day session involved discussions on air armaments and warfighters' future needs. Among those from government, industry, and academia present were Gen. Richard Myers, Joint Chiefs of Staff vice chairman, and Gen. John Jumper, commander, Air Combat Command.

Hearing From a Namesake

Lt. Col. Philip E. Colman, a World War II ace and namesake for the AFA chapter at Ft. Gordon, Ga., spoke at the chapter's January meeting.

As a first lieutenant in the China–Burma–India Theater, Colman had five aerial victories between July and September 1944. He also served in the Korean War and retired in 1983 as a wing operations officer in the Georgia Air National Guard.

At the **Lt. Col. Philip Colman Chapter** meeting, USAF members from the two Air Force units at the Army post were recognized for outstanding performance.

CAP Awards

The Civil Air Patrol announced in February the 13 winners of CAP grants funded by AEF. To determine the recipients of the $250 awards, the judges reviewed 70 applications submitted by AEF.

In announcing the grants, CAP noted that AEF has now provided more than $55,000 to CAP units to help fund their aerospace education programs. The grants were established by AEF in 1996.

In Florida, a committee from the **Central Florida Chapter** selected the local CAP group's Outstanding Cadet of the Year. The award recipient, Ryan Montgomery, received a $100 savings bond and a one-year membership to AFA, presented by Chapter President John T. Brock at the

Photo by John Miller

The Earl D. Clark (Mo.) Chapter sponsored a visit to Whiteman AFB, Mo., by local high school students interested in the Air Force as a future career. Maj. Gilbert Petrina (in front, in flight suit) is the chapter's president and hosted the March tour. He was also one of the B-2 pilots that the students had a chance to talk to. The group visited the flight line, a missile control facility, and the B-2 combat training facility. John Miller, state president, organized the tour and served as chaperone.

CAP annual awards banquet at Patrick AFB, Fla., in January. The CAP group reported that it has received more than $6,000 each year from the chapter.

Working With Youth

AFA National President Politi paid a special visit to the AFJROTC unit at Lake Brantley High School in Altamonte Springs, Fla., in February. The reason: Richard A. Ortega, Florida state vice president for aerospace education, said the unit "accomplished the unprecedented feat of recruiting 55 cadet patrons during the first membership quarter of 2001."

Central Florida Chapter's President Brock escorted Politi to the school, where Ortega joined them.

Ortega also reported that during remarks to the unit, Politi commended the cadets because in previous years their unit has consistently recruited large numbers of AFA cadet patrons.

While the focus in February was on the Lake Brantley AFJROTC unit, it's evident that Ortega has a history of encouraging young people. In fact, his mentoring initiatives go back at least 40 years.

ANG photo by CMSgt. Steve Hodgdon

ANG Lt. Col. Terry Hardy, New Hampshire state president (second from left), and CMSgt. William Houghton Jr. (third from left) present SSgt. Beverly Wallace with an AFA New Hampshire NCO of the Year award. Others receiving awards at a recent commander's call at the 157th Air Refueling Wing (ANG), Pease Intl. Tradeport ANGS, N.H., are (l–r) SSgt. Michael Ploof, SMSgt. David Caswell, and MSgt. Valerie Morgan. Houghton is a Brig. Gen. Harrison R. Thyng (N.H.) Chapter member; the awardees became Pease Chapter members.

Robert J. Quinn of the **West Palm Beach (Fla.) Chapter** recently wrote to "AFA/AEF National Report," saying: "[When I was] a young airman in the air police squadron, stationed at Osan AB, South Korea, in 1962, it was none other than Chief Master Sergeant Ortega who took several of us under his wing and encouraged us to improve our education, set our goals higher, and put us to work on successful career planning. He encouraged us, and even sat beside us, in University of Maryland classes and in a Toastmasters group. At least two of the group that the chief helped bootstrap retired as lieutenant colonels [Quinn is one], and another is a very successful vice president in the insurance industry."

Goodwill

Members of the **Miss Veedol (Japan) Chapter** and the Japanese American Air Forces Goodwill Association met at the Mutsu Officers Club at Misawa AB, Japan, in February. The Japanese visitors toured both the USAF and Japan Air Self Defense Force areas of the base and received a mission briefing on 35th Fighter Wing operations.

Over lunch, members of the two associations discussed how they promote aerospace power, accomplish their goals, and publicize their groups, reported TSgt. Jeffrey R. Benton, the chapter's publicity representative.

Heading the list of chapter officers at the luncheon were Col. David E. Geyer, president; Col. Daniel R. Kirkpatrick, vice president; and Lt. Edward T. Hudson, treasurer. The senior Japanese officers present included retired Lt. Gen. Toshikatsu Yama-

guchi and retired Lt. Gen. Nobushige Hirata.

According to Benton, the JAAFGA is only about five years old but the ties between the two groups are solid.

More AFA/AEF News

■ Republican Sen. John Warner of Virginia, Senate Armed Services Committee chairman, received the **Nation's Capital (D.C.) Chapter's** Distinguished American Award, in recognition of his leadership and more than 30 years of public service. A former Secretary of the Navy, Warner enlisted in the Navy for World War II. As a Marine in the Korean War, he was a first lieutenant in communications, serving with the First Marine Wing. Warner remained in the Marine Corps Reserve for 10 years.

■ At its March meeting, the **Blue Ridge (N.C.) Chapter** honored two chapter charter members, Claude R. Nelon and Lewis M. Epperson. Epperson joined AFA in 1957 and Nelon in 1959. Chapter Secretary William D. Duncan Jr. said the two formed the Blue Ridge Chapter in May 1978, with Epperson serving as its first president and Nelon as secretary. James L. Mulligan, state vice president (West), presented Epperson with an AFA Exceptional Service award for 2000. The chapter also recently donated $150 to the local CAP unit, for the purchase of hats, and $100 to the AFJROTC unit at East Henderson High School in East Flat Rock, N.C. The donation supported the cadet drill team's trip to Washington.

■ The **John C. Stennis (Miss.) Chapter** participated in a Valentines for Vets program with volunteers from Keesler AFB, Miss. The chapter donated hundreds of lollipops for the effort. Joining Chapter President Elia T. Vasilopoulos in distributing the sweets at the Biloxi (Miss.) Veterans Affairs Medical Center were chapter officers Sidney Marcus, Gayden Gladman, and Thomas A. Varble and chapter members Chris Moore, Hank Salcido, Richard Shave, and John A. Vasilopoulos. Elia Vasilopoulos said the chapter has made this Valentine's Day visit for several years and had discovered that lollipops were the veterans' favorite candy. "They are absolutely delighted" to receive them, she said. The Biloxi center has 400 extended care beds.

■ **Total Force (Pa.) Chapter** officers Patricia A. Accetta, president, and Lee W. Niehaus, membership vice president, visited Community Partners Kent D. McElhattan and his son Kenton E. McElhattan in December. They presented the elder McElhattan with a Jubilee of Liberty Medal, which honors veterans who took part in the Normandy invasion of France in June 1944. The medal was authorized by the Normandy government in 1991. Kent McElhattan was a B-24 aerial flight engineer in World War II. The chapter officers also presented the father and son with a Community Partner plaque.

■ AFA's Civilian Wage Employee of the Year 2000, David V. Bauch, received his award at a Pentagon ceremony in January from Lt. Gen.

AFA Conventions

May 4–5	Tennessee State Convention, Tullahoma, Tenn.
May 4–6	South Carolina State Convention, Columbia, S.C.
May 18–20	Mississippi State Convention, Columbus, Miss.
June 1–3	North Carolina State Convention, Wilmington, N.C.
June 15–17	New York State Convention, Hempstead, N.Y.
June 16–17	Washington State Convention, McChord AFB, Wash.
June 22–23	Iowa State Convention, Des Moines, Iowa
July 19–21	Virginia State Convention, Charlottesville, Va.
July 20–22	Texas State Convention, Fort Worth, Tex.
July 27–29	Florida State Convention, Tampa, Fla.
Aug. 10–11	Michigan State Convention, Oscoda, Mich.
Aug. 10–11	Oklahoma State Convention, Enid, Okla.
Aug. 10–12	Georgia State Convention, Robins AFB, Ga.
Aug. 10–12	Indiana State Convention, Indianapolis
Aug. 10–12	Minnesota State Convention, Sioux Falls, S.D.
Aug. 24–25	Missouri State Convention, Lake of the Ozarks, Mo.
Sept. 15–19	AFA National Convention, Washington
Sept. 21–22	Colorado State Convention, Colorado Springs, Colo.
Sept. 21–23	Delaware State Convention, Dover, Del.
Sept. 28–30	New Hampshire State Convention, Portsmouth, N.H.

John L. Woodward Jr., deputy chief of staff, communications and information, and James T. Hannam, president of the **Donald W. Steele Sr. Memorial (Va.) Chapter.** Bauch is an electronic equipment maker, installer, and repairer supervisor at the Air Force Pentagon Communications Agency.

■ Claude S. Morse, president of the **H.H. Arnold Memorial (Tenn.) Chapter,** presented AFA's Civilian Program Manager of the Year 2000 award to Clark W. Brandon Jr. Brandon is the deputy chief, environmental management and quality, at Arnold Engineering Development Center, Arnold AFB, Tenn.

■ **Harry S. Truman (Mo.) Chapter** President Patricia J. Snyder, Rodney Horton, who is the chapter's immediate past president, and James Snyder, state secretary, attended a dinner in Kansas City, Mo., honoring Gen. Richard B. Myers, vice chairman of the Joint Chiefs of Staff. The dinner was hosted by the local chapter of the Business Executives for National Security, a nonprofit advocacy group based in Washington. The Kansas City BENS chapter is a new Community Partner for the AFA chapter.

■ At the AFA board meeting held in conjunction with AFA's Air Warfare Symposium in Orlando, Fla., in February, AEF scholarships sponsored by William W. Spruance, national director emeritus and a member of the **Diamond State (Del.) Chapter,** were presented. The scholarships are named for Thomas J. McKee, John J. Politi, Jack C. Price, Richard B. Goetze Jr., John A. Shaud, Danny Marrs, John T. Correll, John O. Gray, and William L. Sparks. They were awarded to, respectively, Sarah G. Forte, Angelo M. Bonavita, John R. Ohlund, Christopher S. Harris, Shawn P. Walsh, Lloyd S. Richardson IV, Craig Michael Pachlhofer, Adrian J.R. Lamport, and Alexandria Hernandez.

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. ■

Unit Reunions

reunions@afa.org

1st AACS Mobile. Oct. 9–11 at the Ramada Inn in Middleton, RI. **Contact:** C.J. Furnia, 152 Taylor St., Granby, MA 01033 (413-467-3485) (cblm@the-spa.com).

1st Strategic Air Depot Assn, Honington–Troston, UK (1942–46). Oct. 27–30 in Branson, MO. **Contact:** Warren L. Stanley, 390 N. Winchester 5-1-G, Santa Clara, CA 95050.

9th BW. July 12–15 in Boise, ID. **Contact:** G. Hollingsworth, 4951 Old Freezeout Rd., Emmett, ID 83617-9578 (208-365-3938).

15th TCS (WWII). June 13–15 at the Hope Hotel at Wright–Patterson AFB, OH. **Contact:** Joe Yuhasz, 6926 S. 725 E., Unit B, Midvale, UT 84047-1488 (801-566-5752) (rjyuhasz45@aol.com).

41st Military Airlift Sq, former crew members and friends. June 21–24 in Pigeon Forge, TN. **Contact:** Scotty White (843-740-1435) (douglas.s.white@boeing.com).

43rd BG Assn, Fifth AAF (WWII). Oct. 28–Nov. 4 at the Inn at Opryland in Nashville, TN. **Contact:** Bethel Ray, 2110 New Castle Rd., Arrington, TN 37014-9140 (615-395-4737).

73rd BW Assn, including 497th, 498th, 499th, and 500th BGs, Saipan. May 16–20 at the Marriott in Wichita, KS. **Contact:** Cathy Debbrecht (phone: 316-778-1125 or fax: 316-778-1154) (bombwing73@aol.com).

81st FW (1951–93). Sept. 9–16 in Ipswich, UK. **Contacts:** Chuck Wrobel (651-439-9434) (cfwrobel@worldnet.att.net) or D.C. Hanto (813-963-5328) (dch13716@aol.com).

90th Aero Squadron Assn (formerly 90th BS Assn, Korea). Sept. 19–23 at the Radisson Inn in Colorado Springs, CO. **Contact:** Ted Statler, 3651 Vassar St., Colorado Springs, CO 80904-1356 (719-473-2900) (twstatler@att.net).

93rd TCS, 439th TCG (WWI). Sept. 12–16 at the Holiday Parkside Inn in Missoula, MT. **Contact:** Tom Morris, 456 St. Georges Ct., Satellite Beach, FL 32937-3840 (321-773-6960) (tomruth3@aol.com).

96th BW, Altus AFB, OK, and Dyess AFB, TX. Oct. 11–13 in Fort Worth, TX. **Contacts:** Keith Gillespie (817-292-6443) or Kirksey Parker (817-292-6814).

306th BW. Oct. 23–29 in Melbourne Beach, FL. **Contact:** Joe Demes, 1585 Mercury St., Merritt Island, FL 32953 (321-452-4417) (www.306thbw.org) (joedimps@aol.com).

340th BW, Whiteman AFB, MO, and supporting units. Sept. 9–12 in Las Vegas. **Contact:** Henry E. Whittle, 13707 Castle Grove Dr., San Antonio, TX 78231-1911 (888-340-BOMB) (henrywhittle@juno.com).

386th BG Assn, Eighth and Ninth AF (WWII). Oct. 24–28 at the Bay Harbor Hotel in Tampa, FL. **Contact:** Barnett B. Young, 5594 Buring Ct., Fort Myers, FL 33919 (phone or fax: 941-482-5059).

551st Airborne Early Warning and Control Wg, Otis AFB, MA; **553rd Recon Wg,** Otis AFB and Thailand; **552nd AEW&C,** McClellan AFB, CA; **Det. 1, 20th ADS, 79th AEW&C, 4701st AEW&C; 552nd ACW;** and former and present members of the AWACS community. June 28–July 1, at Tinker AFB, OK. **Contact:** http://www.551and552-aewc.org/joint_reunion.htm.

6147th TCG. July 30–Aug. 5 at the Radisson Hotel in Camphill, PA. **Contact:** Jack Fisher, 274 Bellemans Church Rd., Dauberville, PA 19533 (610-926-3588).

7330th Flying Training Wg (MAP), Germany (1953–60). July 19–22 at Harrah's Hotel and Casino in Las Vegas. **Contact:** Chuck Chlarson, 3763 Martingale Dr., Kingman AZ 86401-2995 (520-692-5397).

AFROTC Det. 750. May 10 at Saint Joseph's University in Philadelphia. **Contact:** Captain Michaud (215-871-8408).

Air Force Postal and Courier Assn. Oct. 12–15 at the Crowne Plaza Hotel in Pleasanton, CA. **Contact:** Jim Foshee, 3509 Deer Trail, Temple, TX 76504 (254-774-7303) (afpcafoshj@aol.com).

Air/Security Police, Wiesbaden, Germany, all years, including 60th, 517th, 7100th, 7122nd, and 7150th Sqs. Sept. 27–30 in Dayton, OH. **Contact:** Rowland D. Garver, 182 E. Fifth St., Peru, IN 46970 (765-473-7184).

America Volunteer Group/Flying Tigers. May 26–28 in Seattle. **Contact:** Thomas L. Reynolds (206-842-8137).

Aviano Reunion Assn. Oct. 4–7 at the USAF Museum in Greene County, OH. **Contact:** Emily Povey, 626 E. Davis Blvd., Tampa, FL 33606 (empofl@hotmail.com).

Bainbridge AB/Southern Airways School, alumni, employees, students, and permanent party military personnel. Aug. 31–Sept. 2 in Bainbridge, GA. **Contact:** Max E. Horn, 2114 High Rd., Tallahassee, FL 32303 (850-385-4419).

P-47 Thunderbolt Pilots Assn. May 3–5 at the Town & Country Hotel in San Diego. **Contacts:** Paul Jewell, 4849 Collwood Blvd., Apt. B, San Diego, CA 92115 (619-583-5388) or Bob Richards, PO Box 3299, Topsail Beach, NC 28445 (910-328-8781) (bobr@wilmington.net).

Pilot Training Class 49-C. Sept. 25–29 at the Hope Hotel at Wright–Patterson AFB, OH. **Contacts:** Don Peters, 40 Massey Dr., Westerville, OH 43081-1941 (614-890-1062) or Harold Patton, 2197 Watkins Rd., Columbus, OH 43207-3447 (614-491-0634).

Pilot Tng Class 51-G. Oct. 25–28 in Atlanta. **Contacts:** Alex Pisciotta Jr., 720 Old Oak Ridge, San Marcos, CA 92069 (760-744-3005) (amfalex@earthlink.net) or Ben Patterson, PO Box 346, Rutledge, GA 30663 (706-557-1920) (pattersonpeach1@aol.com).

RAF Bovingdon Assn, military and civilians, RAF Bovingdon, UK (1949–62). Sept. 27–Oct. 1 at the Shilo Inn in Spokane, WA. **Contact:** Carl Pollin, 6506 N. Howard, Spokane, WA 99209-4058 (509-467-5483) (farnorthpollin@aol.com).

USAF Communications/ATC, AACS/AFCS/AFCC personnel. Sept. 20–23 in Knoxville, TN. **Contact:** Mac Maginnis, 6032 S. Bell #4, Tacoma, WA 98408 (253-474-8128) (cmagin4375@aol.com) (www.aacsalumni.com). ■

Mail unit reunion notices well in advance 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.

Pieces of History

Photography by Paul Kennedy

Memphis Belle

The B-17 Flying Fortress Memphis Belle *became one of the most highly publicized aircraft of World War II and later was the subject of two movies.* Belle's *crew, which was assigned to the 324th Bomb Squadron, Bassingbourn, UK, bombed submarine pens, railroad facilities, and other sites in France and Germany between November 1942 and May 1943.* Belle *was among the first B-17s to complete 25 combat missions and was sent back to tour the US to help sell war bonds. Its pilot, Capt. Robert K. Morgan, named the bomber after his girlfriend, Margaret Polk of Memphis, Tenn. Today,* Memphis Belle *is on display in that city, in an open-air pavilion at Mud Island River Park.*

This real-time image may never win an award. But it could help win a war.

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