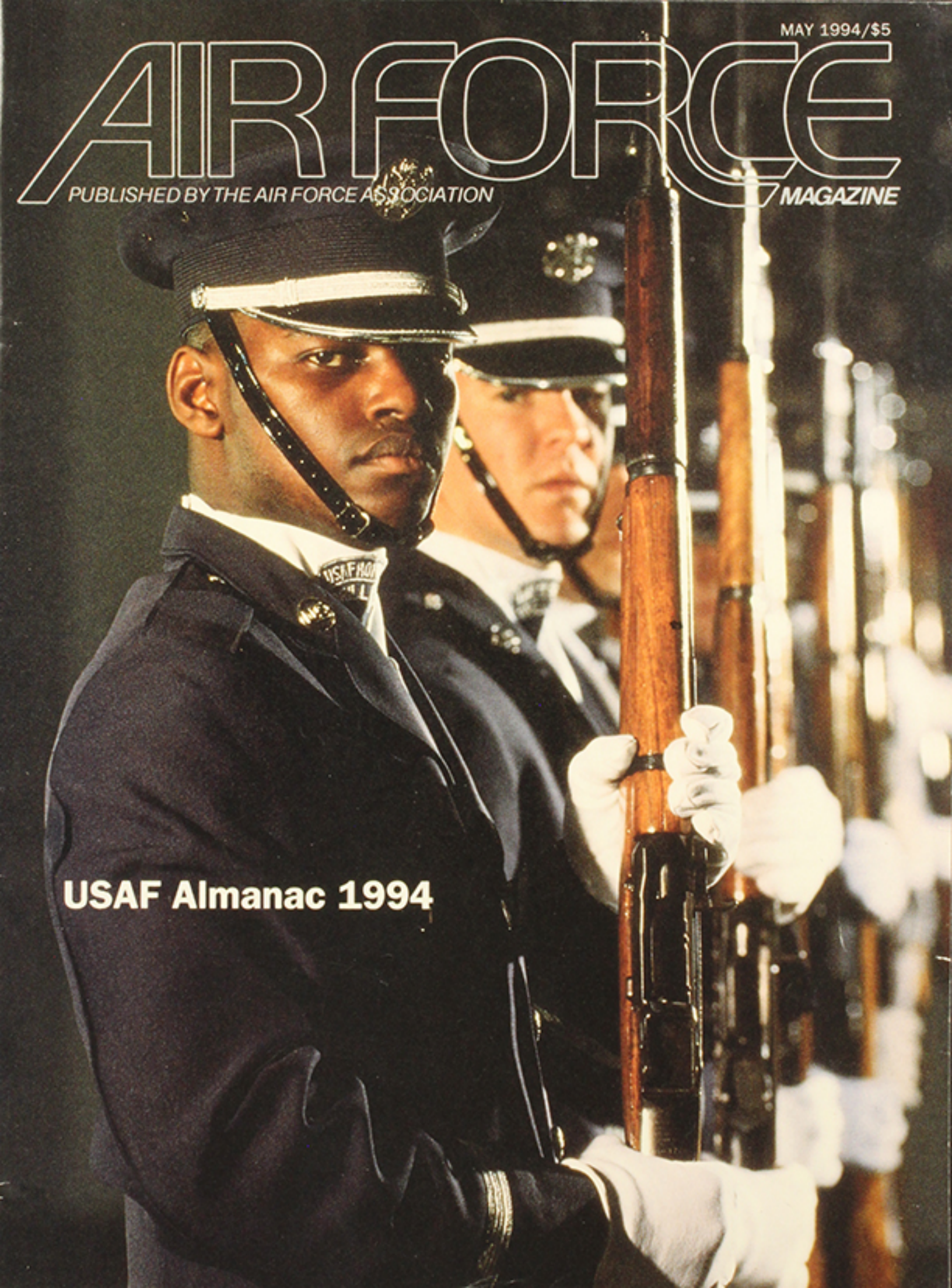


MAY 1994/\$5

# AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE



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# AIR FORCE

MAGAZINE

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**About the cover:** A1C Chris Eckford (now a senior airman with the 89th Security Police Squadron, Andrews AFB, Md.) and other members of the USAF Honor Guard Drill Team. USAF photo by MSgt. Fernando Serna.

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By John T. Correll, Editor in Chief

## Soft Power

**A** PIVOTAL question of strategy is when, how, and for what the nation will fight. Many of us believe that former Secretary of Defense Caspar Weinberger had the definitive word on that in his 1984 doctrine, which held that US forces should be committed to combat to achieve clear military objectives when a vital national interest is at stake. In such instances, he said also, force should be committed in decisive strength.

The Persian Gulf War of 1991 followed that prescription to the letter and demonstrated the enormous good sense of it. During his short tenure as Secretary of Defense, Les Aspin rejected the Weinberger Doctrine and espoused a "Limited Objectives" approach, with less restrictive standards for the use of force. This concept was field-tested in Somalia, where humanitarian relief turned into armed peacekeeping. In October, eighteen US Rangers died there in an engagement that wasn't supposed to be a war, trying to capture a warlord who was riding around on US aircraft a mere two months later.

Defense strategy is a subset of the broader national security strategy, which is why a document that is usually bland and read only by specialists is getting special attention this year. The February 1994 draft of "National Security Strategy of the United States" generated a spike on the political seismograph when it was leaked to the *Washington Post*. The surprise was a new term—"soft power"—written in by the State Department.

"Soft power" means emphasizing diplomacy, economics, and cultural relationships in a national security strategy broadened to cover such "transnational threats" as environmental change, AIDS, population growth, and decline in biological diversity. The State Department disavows any intent to lessen the strategic emphasis on military power, although the "international affairs resources budget" might need some adjusting.

"Soft power" is said to be the work of Deputy Secretary of State Strobe Talbott, a friend of President Bill Clinton since their Oxford days, when

they roomed together as Rhodes scholars. His opinions count in this Administration. Furthermore, the new focus on "transnational threats" fits a pattern of ideas that have been floated intermittently over the past year.

From the beginning, the Clinton Administration demonstrated great affinity for the United Nations and its activist secretary general, Boutros Boutros-Ghali, who leaps from talk of "peacekeeping" and "peacemaking" to "expanded peacekeeping" and "preventive deployment." He recognizes that the UN charter forbids in-

**From "assertive multilateralism" to "transnational threats," the ideas keep bubbling up.**

tervention in domestic affairs, but he advocates it anyway. During the 1992 election campaign, Mr. Clinton said Mr. Boutros-Ghali should have the UN rapid deployment force he wants but that it should be organized on a "voluntary" basis.

Last year, UN Ambassador Madeleine Albright expressed her enthusiasm for "assertive multilateralism." Concurrently, Morton Halperin, nominated for the newly created post of assistant secretary of defense for Democracy and Peacekeeping, argued that the US should act through international bodies to "guarantee" democracy and the results of free elections and should "surrender the right to intervene unilaterally" abroad.

Administration spokesmen retreated under fire to a more subdued position, but controversy rose again with a draft of Presidential Decision Directive 13, which would have committed American combat troops to UN command for international operations. A Senate resolution, passed

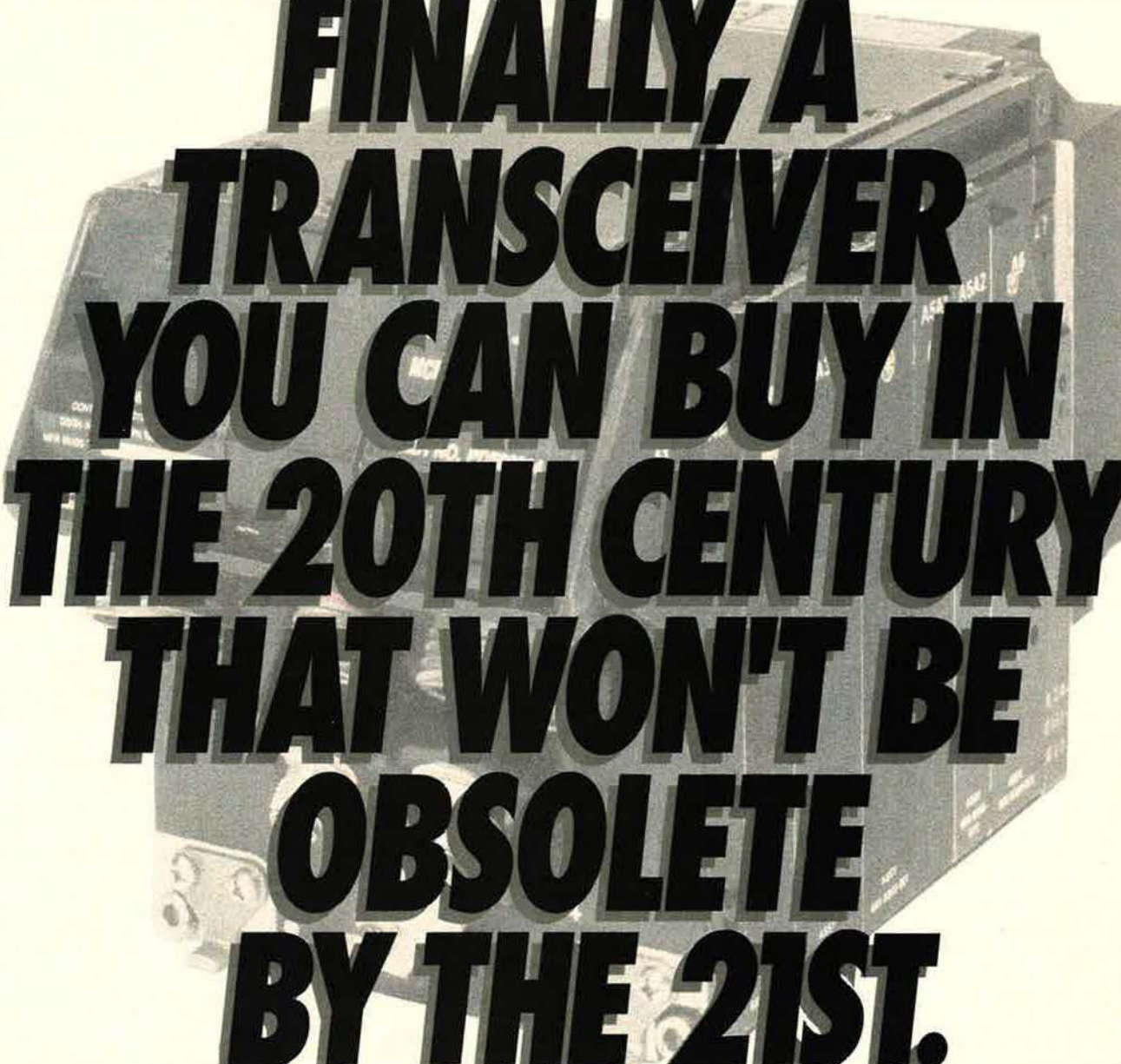
by a vote of 96-2, put a damper on that by demanding that the President consult Congress before placing troops under foreign command.

In September, senior Administration officials, paced by National Security Advisor Anthony Lake, proclaimed the US foreign policy theme to be "enlargement," featuring actions to promote democracy and market economies around the world. Mr. Lake's hope was that "multilateralism may one day enable the rule of law to play a far more civilizing role in the conduct of nations."

Administration officials are quick to reaffirm the traditional elements in the national security strategy. "Peacekeeping is not at the center of our foreign policy," Mr. Lake said in February. "Our armed forces' primary mission is not to conduct peace operations but to win wars. . . . This Administration has no intention of transferring troops into a standing world army." Every couple of months, however, another surprise bubbles up. The latest is "soft power" for responding to "transnational threats." These ideas seem to form a pattern, indicating some deep and persistent belief shared by many of those responsible for national security policy.

Perhaps we should not make too much of it, given the checks and balances of government. Perhaps we should accept at face value the repeated promises to preserve adequate military strength as an instrument of national security. Perhaps there is no submerged or fuzzy thought of sending US troops into engagements, "limited" or otherwise, that may be chosen and directed by international organizations.

Nevertheless, it is alarming to read works like "The Birth of the Global Nation," which Mr. Talbott wrote for *Time* magazine in July 1992. He predicted with approval that within the next hundred years, "nationhood as we know it will be obsolete; all states will recognize a single, global authority. A phrase briefly fashionable in the mid-20th century—"citizen of the world"—will have assumed real meaning by the end of the 21st." ■



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# Letters

## Harwit Responds

At the heart of John Correll's impassioned critique of the National Air and Space Museum and its parent institution, the Smithsonian [*War Stories at Air and Space*, April 1994, p. 24], lie two stark and simple questions. The first of these is more readily answered: Is the function of the museum to showcase the technology of aviation and spaceflight purely in terms of man's urge to go higher, further, faster? Or should we also show how America evolved in the twentieth century in response to opportunities these new technologies offered?

The law that established the museum is clear on this point. It directs that the "National Air and Space Museum shall memorialize the national development of aviation and spaceflight; collect, preserve, and display aeronautical and spaceflight equipment of historical interest and significance"; and "provide educational material for the historical study of aviation and spaceflight."

Exhibiting airplanes to highlight their historical significance or mounting a display dedicated to a historical study of aviation would seem consonant with that directive. Now comes the more difficult question: If such a historic study is to be undertaken, should it be celebratory? Or if not actually celebratory, should it remain silent on matters that are undeniably central?

Here Mr. Correll seems to opt for silence, at least in the context of the museum's planned exhibition "The Crossroads: The End of World War II, the Atomic Bomb, and the Origins of the Cold War." Early in his article, he acknowledges that "The *Enola Gay*'s task was a grim one, hardly suitable for glamorization." But he also admonishes the museum to display the aircraft in a patriotic manner that will instill pride in the viewer.

Patriotism is one thing. Given the ferocity of the fighting and the high casualty rates in the last few months of the war in the Pacific and given that the country had gone to enormous expense to perfect an atomic

bomb, wielding enormous destruction, President Truman's decision to drop the bomb was met with widespread relief in August 1945. Gen. Curtis LeMay and others, who were broadly knowledgeable, were of the opinion that the atomic bombing of Hiroshima and Nagasaki was unnecessary to end the war, but the fact is that it did take place.

The facts are also clear on the enormous destruction and human suffering that resulted.

Does this mean that the United States should apologize for its use of the atomic bomb to end World War II? Of course not! Should we show compassion for those who perished on the ground? As human beings, I believe we must. Should we take pride in the bombings? That's a tougher question. Pride in having found a way to end a terribly costly war? Yes. Pride in the extent of destruction? I can't see how.

Of course, every serviceman was jubilant and relieved as the war quickly ended in response to the two atomic bombs and the concurrent declaration of war by the Soviets. Even the tenacious Japanese had to admit defeat in the face of such adversity.

The exhibition that the National Air and Space Museum is planning for 1995 and the fiftieth anniversary of those events will seek to honor our veterans, who were willing to sacrifice their lives and often did. (The museum asks veterans who have pictures or memorabilia they would be willing to lend us for this exhibition to contact us.) It will show the circum-

stances that led to the development and ultimate use of the atomic bomb. It will show the immediate consequences of the bombings, the rapid increase of nuclear arsenals over the forty-year-long Cold War, and the present-day dismantling of nuclear weaponry.

Is this exhibition consistent with the legislation that established the museum? I believe it is, since its aim is to look at the historical significance of the *Enola Gay*. This is not solely my opinion. Plans for the exhibition have been carefully scrutinized by a committee that includes some of the nation's leading military historians and experts on the war in the Pacific, among them [Air Force Historian] Dr. Richard Hallion and Edwin Bears, chief historian for the National Park Service, a wounded veteran of the Pacific war and organizer of the fiftieth-anniversary commemoration of Pearl Harbor in December 1991.

In closing, let me say that the museum invites and welcomes the comments of readers of *AIR FORCE Magazine*. Though my vision for the museum differs from John Correll's, his concerns are important to me. I hope the above response helps *AIR FORCE Magazine* readers better understand our intentions.

Martin O. Harwit  
Director, National Air and  
Space Museum  
Washington, D. C.

■ *Editor in Chief John T. Correll replies:*

*Two points require clarification. First, the phrase "to display the Enola Gay in a patriotic manner that will instill pride in the viewer" is not mine. The article had it in quotation marks, attributed to Dr. Harwit, who used those words at least twice in September 1993 when writing to veterans to reassure them of the museum's intentions. Second, I asked Dr. Richard Hallion if the Center for Air Force History was indeed satisfied with the exhibition plan. He said, "The exhibit, as currently structured, is not one we would have done. We feel that though the museum has made*

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## Letters

*considerable progress over its original concepts, it still needs to show that the central issue behind dropping the bomb was shortening the war and possibly saving upwards of 500,000 Allied troops."*

### Land War's Decisive Element

Nothing you have printed to date indicates that AIR FORCE Magazine realizes that the land phase of the Gulf War brought to fruition a concept Army aviators have been talking about since I first encountered the idea in the early 1960s—a "war fought one foot above the ground."

You ran an article that duly noted the role of the AH-64 in destroying Iraqi electronic warfare systems and ground-controlled interception assets at the beginning of the air war [*"The Choppy World of Army Aviation,"* January 1994, p. 56].

What you have not told your readers is that it was American and French air cavalry that accomplished the true envelopment of the Iraqis and that the time-consuming and hugely expensive movement of heavy armored forces to the theater of operations was a waste of time and money.

It is all spelled out in the command briefings of the Army's XVIII Airborne Corps and 101st Airborne Division (Air Assault), as presented in the months following their return to the United States by officers who planned and conducted the whole affair. At the time of the premature cease-fire, one brigade of the 101st was blocking one of the two escape routes and another was ready and able to block the remaining route, while six attack helicopter battalions flying in relays were raking the fleeing Iraqi columns under oil-fire clouds that high-performance aircraft could not penetrate.

What that says is that Army Aviation is now the decisive element of land warfare. With a twenty-to-one mobility advantage and precision guided munitions, air cavalry centered on the attack helicopter can paralyze any heavy armored force by cutting its communications and destroying it in detail. And that says airpower is now a seamless whole.

William V. Kennedy  
Wiscasset, Me.

### Disputing Hackworth's Ideas

I strongly concur with your excellent refutation of Col. David H. Hackworth's denigration of airpower [*"Shooting Blind,"* March 1994, p. 2]. Very probably, in the nine wars of which he boasts, he has rarely felt an urgent need for air support because it

has never been lacking, has always been on call.

Years ago in NATO planning, we discussed the possible loss of NATO command of the air. It was a pretty remote contingency, even then. Still, the last time US ground forces did not operate under the umbrella of US control of the air was in the Philippines in the first months of World War II, in the disastrous days of Bataan.

In the two generations since, planning, tactics, training, equipment—and success—all have been based on US domination of the air above the battlefield, to the degree that, as we see, air dominance is now taken for granted, like the air we breathe.

Lt. Col. John B. Coffey,  
USAF (Ret.)  
Moore Haven, Fla.

I would like to congratulate you on your outstanding editorial "Shooting Blind." It is about time someone with a large readership has called an incompetent "expert" to task for his ineptitude in writing about something about which he has no real knowledge.

It is gratifying that you feel the way I do. As a pilot with seventy-nine combat missions with Ninth Air Force during World War II, I am quite vocal about any uncomplimentary remarks made about my elected service.

We have enough trouble getting our point across to the Senate and House of Representatives in order to get adequate appropriations without the water getting muddied with David Hackworth's brand of misdirected blathering.

Distasteful as this is, it is only through discrediting these detractors that we can ever hope to maintain our true value to the defense of our country.

Stuart Moak  
Larchmont, N. Y.

John T. Correll's put-down of David Hackworth was long overdue. Trashing the other services is the epitome of tackiness. I have yet to meet an Air Force or Navy type who does not have the highest regard for the contributions of US ground forces.

The only failure of airpower, in my view, was the late entry of tankers into the inventory. Had B-29s been deployed as tankers and bombers as was suggested in 1943, they would have been a decisive factor long before the atom bomb was dropped. The global reach, global power, go-anywhere capability that the Air Force now enjoys, thanks to the tankers, could have prevented enormous problems we now have in the north Pa-



cific, if only the traditionalists in the Army Air Forces had heeded the advice of junior officers.

Hackworth and others need to be constantly reminded that wars are won by technology. . . .

William J. Spelliscy  
Orange, Calif.

It certainly was refreshing to read about Rep. Ike Skelton (D-Mo.) in the March 1994 issue [*"Skelton Seeks a Balance," "Capitol Hill," p. 8*]. It is comforting to know that at least one congressman has his head screwed on straight.

I must say I am rather disgusted with David H. Hackworth's ideas and opinions. They reflect the narrow-minded strategy that many of our military leaders showed during 1941, enabling Admiral Yamamoto to achieve his stunning victory at Pearl Harbor. I hope enough people will dispute Hackworth's ideas and prove to our Defense Department how wrong he is.

Alvin D. Walker  
Hoopeson, Ill.

I was glad to see someone give David Hackworth his due. We need to get your piece in a few other military journals where, up to now, he has been considered the darling of the ground combat arms. Yes, he is outspoken—but very short-sighted. . . .

We should remind readers that from the D-Day beaches to Berlin, the roads were paved with wrecked German aircraft. Ask any infantryman (except Hackworth, of course) how many times he was attacked by German aircraft during the fierce battles to victory. The answers would be a tribute to the air supremacy many of my contemporaries made possible during the air offensive in Europe.

Airpower set up Saddam Hussein's forces for the *coup de grâce*. The world knows that, but Hackworth refuses to concede that it happened. He has no doubt made some previous utterances that, at this juncture, would be embarrassing for him to change.

You put him in his place, and for that we are grateful.

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

### Environmental Considerations

"Fogbound in Space" [*January 1994, p. 22*] discusses several technical and policy problems involved in deciding how to advance the domestic launch vehicle industry. That environmental considerations may have a significant impact on these decisions was not mentioned. Environmental issues may help decide which

launchers we will be using several decades from now.

A problem in this regard is chlorine and aluminum oxide aerosols deposited in the stratosphere by solid rocket motors. Chlorine is widely assumed to be responsible for global ozone loss, and aerosols are implicated in the severe ozone loss over the Antarctic. Almost all industrial uses of chlorine that contribute to ozone loss will be banned, according to international law, by the turn of the century. Solid propellant rockets have so far avoided this regulation because they contribute only a few percent to the annual increase in stratospheric chlorine.

Over the next few decades, as the effects of past industrial chlorine use decline, continued use of the current fleet of launch vehicles will attract increasing attention because their contribution to stratospheric chlorine amounts will become a significant fraction of the total. Chlorine-based solid propellants could conceivably be regulated, perhaps even eliminated. Discussions of future launch system development should include environmental and regulatory issues.

Martin Ross  
Playa Del Rey, Calif.

### Who Manages Joint STARS?

I read with some surprise the January 1994 issue's "A Checklist of Major Aeronautical Systems" [*p. 63*], which included the Joint Surveillance and Target Attack Radar System.

Joint STARS is the flagship program of Electronic Systems Center at Hanscom AFB, Mass., not Aeronautical Systems Center at Wright-Patterson AFB, Ohio. While ASC does provide support to Joint STARS, current plans call for the program to be managed out of ESC for some time.

On the other hand, the 767 AWACS, a program managed by ESC with some engineering support from ASC, was correctly listed.

Kevin F. Gilmartin  
Electronic Systems Center  
Hanscom AFB, Mass.

### Not a Pilot

I was surprised to see the caption of my photo in the March 1994 issue, claiming I am an F-16 pilot [*"Lifeline to the Sky," p. 52*]. I am a banked pilot assigned to the 57th Test Group and attached to the 422d Test and Evaluation Squadron. I am in requalification training and will enter training to fly the F-16 in August. Only at the completion of that course will I consider myself "an F-16 pilot."

1st Lt. Shane Riza,  
USAF  
Las Vegas, Nev.



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By Brian Green, Congressional Editor

## The Deficit Hawks

Congressional efforts to cut government spending have put new pressure on the defense budget.

**A**LTHOUGH final action on the Fiscal Year 1995 defense budget is many months away, early signals are not encouraging. The Senate approved a resolution in March that significantly cut President Clinton's overall federal budget proposal—and pointed sharply to continued downward pressure on Defense Department spending.

The Senate budget plan chopped \$43 billion in budget authority and \$26 billion in outlays (the amount actually spent by the government) from the overall \$1.2 trillion budget over a five-year period.

The reduction was proposed by two "deficit hawks" on the Senate Budget Committee, Sens. J. James Exon (D-Neb.) and Charles E. Grassley (R-Iowa). They argued that in light of the current economic expansion, the government could make additional reductions without triggering a new economic downturn.

Many in Congress feared that defense would be hit hard by such decreases. The Senate Appropriations Committee signaled that a substantial portion of the cutback would come out of the Pentagon budget. Sen. Pete V. Domenici (R-N.M.) argued that the reduction "can only be considered a further risk to national security funding in the future."

The budget resolution did not specify what accounts would be reduced, but it excluded entitlement spending (such as Social Security, Medicare and Medicaid). Cuts were limited to "discretionary" spending—that one-third of the budget more or less evenly split between defense and nonentitlement domestic programs.

Senator Domenici and Senate Armed Services Committee Chairman Sam Nunn (D-Ga.) sponsored a measure to shift the burden of the cuts to entitlement spending—and thus spare defense. It was defeated

by a vote of 63-35. Supporters of the Domenici-Nunn amendment argued that the defense budget had already been cut too much and that more reductions would undermine the ability of the military to meet the demands placed on it. Sen. Dan Coats (R-Ind.) contended, "We either have to hold the line now on defense spending or we have to go back and redefine what our strategic objectives are going to be."

Sen. Conrad Burns (R-Mont.) noted that domestic and entitlement spending continue to increase, even as the defense budget is slashed. He argued, "We are harming military readiness with continued budget cuts. . . . If we continue on our current course, entitlement spending will have increased by almost forty percent between 1990 and 1999, domestic discretionary spending will have increased by twelve percent over that same time period, but defense spending will have decreased by thirty-five percent."

Sen. John Glenn (D-Ohio), one of nine Democrats who supported the Domenici-Nunn measure, recently asserted that defense cuts defined in the Bottom-Up Review have proceeded too far and that military forces today cannot fight and win two nearly simultaneous major regional conflicts. The personnel drawdown, he said, should be halted at the planned Fiscal 1995 level of 1.6 million troops for a few years.

The reports of both the House and Senate Budget Committees recognize a numerical deficiency in long-range bombers that leaves the Air Force short of meeting "essential defense requirements." The House resolution "assumes that at least seventy-four B-52H bombers will be retained," while the Senate Committee "strongly urges the Administration to reassess its recommendation to cut the B-52 force." The Air Force plans to keep forty B-52s funded for flying and another thirty-five in attrition reserve or backup status.

A few prominent defense-minded senators, including Senator Exon and Sen. Phil Gramm (R-Tex.), op-

posed the Domenici-Nunn amendment. "The Grassley amendment is a simple, straightforward amendment: cut discretionary spending by \$26 billion over the next five years," said Senator Gramm. "Do I believe we can do that without decimating defense? The answer is yes." Senator Exon was strongly critical of what he described as "ridiculous claims that this [cut] is going to devastate defense."

The House, when considering its budget resolution, rejected an amendment proposed by Rep. Barney Frank (D-Mass.) to cut overall Fiscal 1995 defense budget authority by \$2.4 billion. Although this cut was clearly aimed at defense spending, it did not specify program reductions.

Mr. Frank and his supporters argued that the diminished threats facing the US no longer justify large defense budgets. Their opponents argued that the Pentagon has absorbed huge reductions already, that the nation still faces many daunting threats, and that the military is operating at a high tempo.

The potential risk to defense was compounded by the failure of either resolution to reimpose "firewalls" between defense and domestic spending. These legal barriers, originally approved in 1990, allowed cuts in defense and domestic discretionary spending only for the purpose of deficit reduction. They were abandoned in 1993. The Senate Budget Committee rejected, by a 12-9 vote, one attempt to reimpose them, with all the Democrats opposed and all the Republicans in favor. The Republican alternative to the Administration budget plan, offered on the floor of the Senate, would also have revived the barriers. That measure, which would have provided an extra \$20 billion to defense over five years to cover now-unfunded inflation costs, failed by a vote of 58-42.

The budget battles will now shift to the House and Senate Armed Services Committees, which authorize defense programs, and the Appropriations Committees, which approve spending for specific programs. ■

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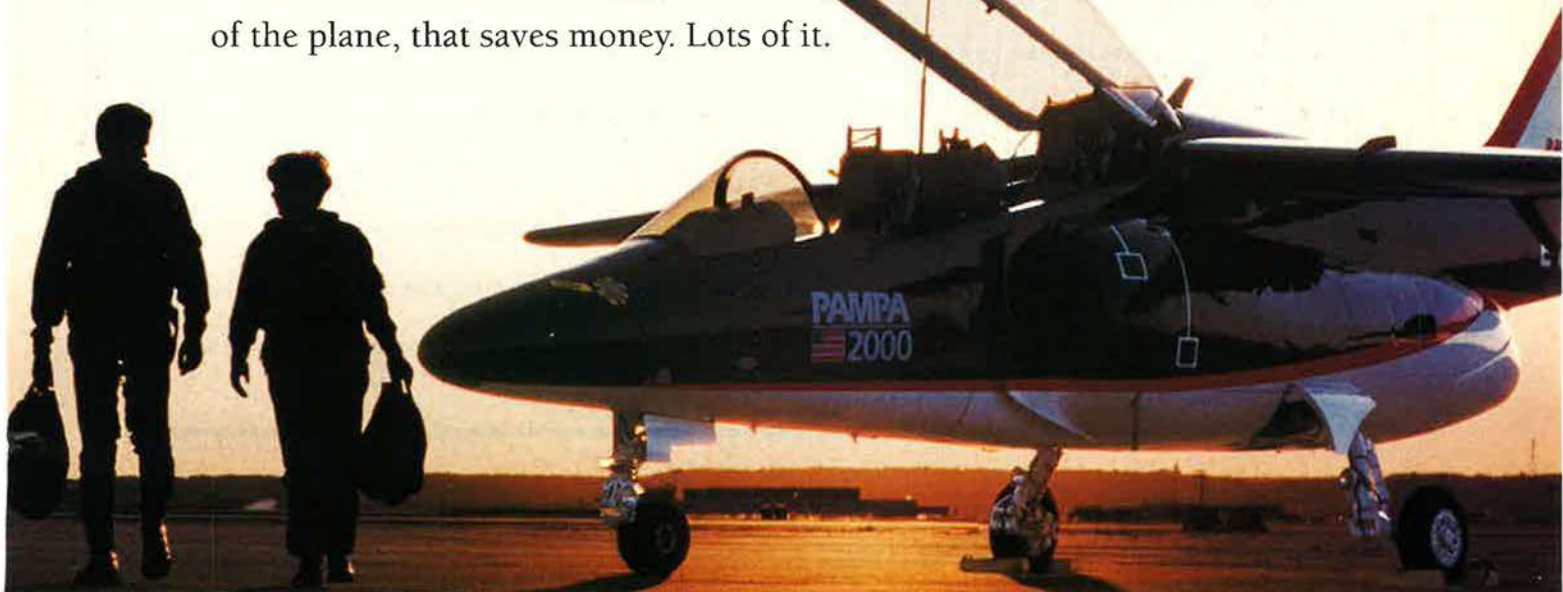
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## NORTHROP

# Washington Watch

By Robert S. Dudley, Executive Editor

## Another Year, Another Cut

Congressional concern about a "bomber gap" is just one worry about the shrinking Air Force budget.



The Air Force budget is dropping fast, but many in Congress have called on USAF to find a way somehow to keep more bombers on the ramp. They say the aircraft are vital to the

success of the Clinton Administration's defense strategy, which calls for the US to be prepared to fight multiple regional conflicts. "I am very concerned, and I know others are, about not having enough bombers to carry out a two-war scenario," warned Sen. Sam Nunn (D-Ga.), chairman of the Senate Armed Services Committee.

In a March hearing, Senator Nunn declared, "It's very obvious to me that we don't have enough [bombers] in this overall force structure." A Senate Budget Committee report charged that the Fiscal 1995 Pentagon budget, made public February 7, "does not meet essential defense requirements for long-range bombers." Sen. Kent Conrad (D-N. D.) claimed the Air Force was headed toward a force of only eighty-seven combat-coded B-1s, B-2s, and B-52s, a fact he said other lawmakers would be "very surprised to learn."

The perceived "bomber gap" was fast becoming a key issue—though not the only issue—for lawmakers assessing the capability of the much-reduced US armed forces to fight and win two "major regional conflicts" at roughly the same time—a planning goal the Pentagon used in its 1993 Bottom-Up Review of defense programs, budgets, and force structure. In the new strategy that emerged, bombers were cast in a starring role.

Senator Conrad pointed out that the Pentagon review saw a residual need for "up to" 184 bombers. Plans called for about 100 of these aircraft

to be combat-coded for conventional war, with the remainder being used for training, nuclear reserve, testing, and the like. Now the Pentagon reports it plans to retire or otherwise lay up more heavy bombers, eventually dropping the total number of bombers to 140 in 1999. According to Senator Conrad, the bomber share of USAF's new budget and program actually finances only 126 long-range aircraft. [See "Aerospace World," p. 15.] In late spring, the precise numbers were still in dispute.

### A "Swing Strategy"

Gen. Merrill A. McPeak, Air Force Chief of Staff, told the Senate Armed Services Committee that there was an element of risk in dropping to 100 deployable bombers but that the risk would shrink as USAF developed new precision guided munitions for bombers during the next few years.

The Pentagon claimed it would need 100 bombers to fight one major regional war but was initially fuzzy on what it would do if the second war broke out more or less at the same time. Rudy DeLeon, the new under secretary of the Air Force and a close associate of former Defense Secretary Les Aspin, explained to the Senate in March that USAF must be ready to shift bombers from the first war to the second and to plug any gaps with its fifty-four aging F-111 fighter-bombers. This "swing strategy" also was mentioned by Air Force Secretary Sheila Widnall in Senate testimony.

Senator Nunn questioned what would happen if all or most conventional bombers were still needed in the first war even after the second broke out: "That's going to be an issue in regard to B-52 retirement and whether we keep open the possibility of more bombers." USAF was taking steps that would permit the later reactivation of two B-1 squadrons and two B-52 squadrons, each containing twelve bombers. The Air Force reported that the total cost in annual appropriations would be \$350 million. Initial spare parts would cost another \$50 million.

The bomber dispute was but one contentious issue stemming from the White House's \$263.7 billion national defense budget for Fiscal 1995, the first installment of a five-year, \$1.3 trillion defense program covering 1995–99. Critics say that the plan cuts many corners on US force capabilities, failing to fully fund even its own declared requirements. The Administration acknowledges that its five-year funding projections fall \$20 billion short of what must be spent to support the Bottom-Up Review force.

The Air Force portion of the new funding blueprint seeks \$74.5 billion in budget authority. This marks a real, inflation-adjusted decline of \$776 million—about one percent—from 1994 levels. It devotes \$12.4 billion to research and development, \$18.2 billion to procurement, \$23.3 billion to operations and maintenance, \$19.2 billion to military personnel, and \$1.7 billion to construction and housing, with offsetting receipts of \$300 million.

The latest proposal represents the sixth straight year of cuts in budget authority for the Air Force (the ninth in the last ten years), and it will have predictable results. In the coming year, the total aircraft inventory will drop by 184 airplanes to 7,009 in the active and reserve forces. The Air Force will lay up another wing of F-16s and half a wing of F-15Cs. In 1989, the Air Force operated fifty-two big installations abroad; that number now stands at twenty-nine and will soon fall to only twenty-one.

The Air Force's active-duty end strength next year will decline to 400,051 troops, down 208,149 from a 1986 Cold War level of 608,200, meaning that the Air Force will have eliminated one out of every three airmen over that period. The last time Air Force end strength stood so low was in 1948, before the Berlin Airlift, but plans call for cutting the force further—to 390,000 by 1999.

### Emphasis on Here and Now

The new 1995 program continues to place major emphasis on current

operations at the expense of investment in equipping the future force. Current operations would consume \$42.5 billion, or 57 percent of the budget. Only \$32.3 billion, or forty-three percent, would be spent on research, development, and procurement of new weapons or on construction. The gap between operations and investment widened over the past year, and the service now is living heavily off built-up stocks of equipment and weapons.

"We can live off the stocks that we built up during the Cold War," said one Defense Department official. "We bought lots of things in the 1980s, so we don't need to be investing as heavily in buying current state-of-the-art weapon systems now."

In Fiscal 1995 (which begins October 1), funding for operations and maintenance, the key to combat readiness, will go up for the Army and Navy but not for the Air Force, where it will experience a one-year real decline of about five percent, mostly as a result of the sharp decline in USAF force structure. Even so, USAF leaders believe they can maintain a well-supplied, high-quality fighting force with the available money.

The service will continue to operate at a tempo that generates roughly the same number of flying hours per month for each aircrew as in 1994. Flying time for active-duty tactical fighter aircrews will even rise slightly, from 19.5 hours per crew per month to 19.7 flying hours per month. The planned flying hour program provides 19.9 hours in the cockpit per month for bomber crews, up about two hours per month over 1994. On the airlift side of the force, flying hours will be about the same as in 1994.

Elsewhere, the picture is not so bright. One Air Force document points out that though the new budget is "sufficient to support current force structure, field new or modernized systems on schedule, and sustain the infrastructure," the service had to "put demands on our logistics and infrastructure accounts" in order to stay within budget guidance. Depot-level repairs are funded at only ninety percent of requirement, depot-purchased equipment maintenance at eighty percent of requirement, and real property maintenance at seventy-two percent.

Pentagon documents warn that the Air Force is seeing some shortages of war reserve spares for F-15E fighters and B-1B bombers. It also noted that a squeeze on spare parts funding may soon cause a decline in air-

craft mission capable rates and that spare parts would have to be borrowed from other units or from war reserve stocks to support peacetime training.

"As some senior leaders have indicated, we are starting to see warning signs again of a potential hollow force," claimed Air Force Secretary Widnall, though she was quick to add that service officials are not ignoring the warnings.

### Manpower Concerns

One major warning sign involves military personnel. Air Force officers are increasingly concerned about slack recruiting. Even with lower requirements for new troops each year, filling quotas is becoming difficult. Among those already in the service, there are signs of morale problems and unease brought about by the rapid drawdown of the force. Said Secretary Widnall, "The rate of change is a major source of stress on our people."

For Air Force officials, continued recruitment of high-quality personnel is essential. The Air Force plans to bring in approximately 31,000 military and 12,000 civilian members each year for the next few years. The Pentagon said it would allocate sufficient resources to make sure that at least ninety percent of all new recruits are high school graduates and that sixty percent are in the high-aptitude group, as measured by standardized tests. Current Air Force performance already exceeds those levels.

The Pentagon budget contains funds for a 1.6 percent pay raise for active-duty military members in 1995. The pay hike is less than the rate of inflation but more than many expected, given the fact that in 1994 President Clinton tried to freeze military pay and finally accepted a 2.2 percent military pay raise imposed by Congress.

"I'm personally delighted that we were able to get the pay raise at all," said one Pentagon official. "We fought very hard to make sure that we would be able to have a pay raise for the troops. Is it as high as I'd like to have? No. But I've got to tell you, I think it becomes a symbol of our commitment to them."

### Meager Modernization

Weapons modernization has been squeezed hard. "Look at aircraft," said a senior defense official, who noted that in 1985 all the services "were buying 900 combat aircraft. This year,

our budget is going to have 127 combat aircraft—and that's a stretch because forty-two of them are trainers and sixty of them are utility helicopters."

In 1993, the Air Force made its last planned purchase of stealthy B-2 bombers, buying four. The 1995 budget includes \$793 million for the B-2, but not for additional airplanes. The funds would be used to cover continued research, testing, and equipment needed to maintain and operate the airplanes. The budget requests \$120 million to develop and procure modifications for the B-1 bomber, many of which are aimed at equipping that airplane for nonnuclear missions.

The C-17 cargo airplane is the largest single expense item in the entire Pentagon budget. To continue the C-17 program, the budget includes about \$2.9 billion—\$2.7 billion for six airplanes and \$221 million to continue flight testing. The Pentagon announced in December that it would continue buying six airplanes annually through Fiscal 1996 and will then determine whether to buy more C-17s, buy commercial cargo airplanes, or both. The budget requests \$104 million to explore the possibility of resuming production of C-5 military cargo airplanes or adapting a commercial air freighter for military use.

The new USAF budget proposes \$100 million to terminate production of the F-16 fighter and \$564.2 million to buy two E-8 Joint STARS aircraft and components.

### Future Fighters

In the 1995 budget, the Air Force comes out reasonably strong on the fighter front. The Pentagon approved the expenditure of \$2.5 billion next year to continue developing the F-22, the stealth replacement for the F-15, to ensure air superiority for decades. Procurement money for the Lockheed-built jet is scheduled to start flowing in 1996, with production to end in 2011.

Initially, the Air Force planned to buy 750 of the hot new aircraft. The service later lowered the planned buy to 648, and the number stayed there until this spring. The Air Force confirmed that it now plans to reduce the overall F-22 production run to 442 aircraft—a reduction of more than forty-one percent from original plans. The new number will provide for four wings of fighters, with 100 fighters in each, and forty-two F-22s for pipeline and attrition reserve purposes. Total program cost has been set at

\$71.6 billion, measured in 1994 dollars.

The Air Force budget sets aside \$100 million this year as its share of the cost of the USAF-Navy Joint Advanced Strike Technology program, which is designed to produce experimental airplanes that will test technologies for future combat aircraft. The Navy also is contributing \$100 million.

The 1995 program focuses on providing new armament for bombers to use in theater war scenarios. A key component is the AGM-137 Triservice Standoff Attack Missile (TSSAM), a stealthy, conventional cruise missile capable of air and ground launch. The air-launched version is being developed for Air Force and Navy fighter and bomber aircraft. The Air Force will spend \$373.9 million this year to procure the weapon and \$81.6 million to continue development.

The Air Force also intends to spend \$85 million in R&D money to further develop the Joint Direct Attack Munition, \$49 million on the Joint Standoff Weapon, and \$113.5 million on the Sensor-Fuzed Weapon. "Taken together, these advanced munitions and sensors will provide US forces with more highly concentrated firepower to blunt an armored invasion in the

opening phase of a regional conflict," said Mr. Aspin.

#### Lost in Space

The Air Force budget contains some \$440 million to produce additional Defense Support Program spacecraft. There will be no funding for the Follow-On Early Warning Satellite, and the Air Force will avoid \$4.4 billion in FEWS costs over the next five years. It will, however, spend \$150 million this year on a replacement program, ALARM (Alert, Locate, and Report Missiles).

The budget requests nearly \$600 million to continue developing and building launch rockets already in service, but Air Force leaders want to develop new types. "Our space-launch vehicles also require modernization," said Secretary Widnall. "The current systems are derived from 1960s technology, and they are costly and often unresponsive to user needs. . . . We, along with NASA and the commercial sector, must step out smartly to scrub our requirements and pursue a national launch solution that is robust, reliable, and cost-effective."

Modernization programs for strategic forces have been completed or severely curtailed, and funding for strategic nuclear forces is the lowest

it has been in more than thirty years. The Pentagon reported that 500 Minuteman III missiles will be deployed at three bases. All Minuteman IIIs will be downloaded to single warheads. Peacekeeper missiles will be retired by 2003.

#### Return of Procurement?

There are signs that the steep decline in defense procurement might be ending. The Bottom-Up Review concluded that it was essential to proceed with selective modernization of key weapon systems to maintain the technological superiority of US forces. After a long decline, funding is planned to start increasing in 1996 and rise by twenty percent by the end of the decade. That shift depends on whether the Pentagon and the services can achieve major reductions in overhead and drastically overhaul the defense acquisition system.

"We cannot sustain these low levels of procurement for long," Secretary of Defense William J. Perry testified to the Senate Armed Services Committee last February. "There will come a time when we have used up that excess inventory, and then we will have to start building at higher rates than we now are building." ■

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# Aerospace World

By Frank Oliveri, Associate Editor

## Study Will Decide Size of Bomber Force

The Fiscal Year 1995 defense budget does not provide enough funding for the 184 bombers called for in the new force structure that emerged from the 1993 Bottom-Up Review. The budget actually covers about 126 bomber aircraft, according to figures provided by the Air Force to Senate Budget Committee member Kent Conrad (D-N. D.).

Secretary of Defense William J. Perry told the panel that a strategic force study—which would be appended to the Bottom-Up Review—is being conducted by the Department of Defense to determine what the actual size of the bomber force should be.

The strategic study “should be finished in a few months,” he said. “In the [FY 1995] budget, we made the best estimate we could at the time we had to put the budget together as to what the bomber forces would be. That estimate could be overturned by the strategic study in the next few months. If that happens, we will come back to the Congress and present that different finding to you. . . . If the results of this study . . . indicate the need for more bombers, which it very well might, then we would adjust our budget accordingly, and we would recommend to the Congress accordingly.”

Senator Conrad quoted USAF figures that revealed a gap between what is in the force plan and what is contained in the Fiscal 1995 defense budget. Senator Conrad said the Bottom-Up Review called for 184 bombers, including B-52s, B-1Bs, and B-2s. Of the 184 aircraft, 100 would be combat-coded and the rest used for training, backup, and testing.

Of the 126 that are budgeted in Fiscal 1995, only eighty-seven bombers would be combat-coded, with the remainder falling in the other groups.

“I think it would be most unwise, and I think my colleagues would be very surprised to learn that we’re talking about having eighty-seven bombers combat-coded in this bud-



Reuters / Bettman

*Lt. Col. Mike Gannon examines part of a fuel tank from an AC-130 Spectre gunship from the 16th SOS, Hurlburt Field, Fla., that ditched just off the coast of Kenya in mid-March. Eight crew members lost their lives; seven survived. The accident is being investigated. (See story below.)*

get,” said the senator. “We deployed, just in Desert Storm, seventy-five B-52s. And I am told that for [nuclear war planning], we would need at least thirty-two B-52s held in reserve.”

Senator Conrad pointed out that it would cost about \$150 million more per year to maintain an additional twenty-seven B-52s.

### Perry: No New B-2s

Secretary Perry declared that the Pentagon has no plans to buy more than twenty B-2A bombers, the number already on order.

The Defense Secretary’s statement was contained in a February letter to Rep. Ronald Dellums (D-Calif.), chairman of the House Armed Services Committee. Mr. Dellums has been a staunch and persistent opponent of B-2 procurement, and he sought assurances that purchases of the stealthy bomber had ended.

The congressman has voiced concern that the Air Force might be planning to exceed the twenty-bomber cap by seeking more B-2s in outyear budgets, despite agreement between

the Pentagon and Congress to halt production at twenty airplanes.

In his letter, Secretary Perry defended Gen. John Michael Loh, commander of Air Combat Command, whom Mr. Dellums had blasted for saying the US should maintain a B-2 production capability because the nation may eventually need to procure more bombers. Dr. Perry said General Loh, in expressing that view, was merely doing his job. General Loh had observed that an immediate decision and investment would be needed to maintain that capability.

### Gunship Crash Claims Eight Airmen

On March 14, an AC-130 Spectre gunship crashed near Mombasa, Kenya, while conducting a routine mission in support of United Nations forces. Eight crew members died.

The AC-130, from the 16th Special Operations Squadron, 16th SOW, Hurlburt Field, Fla., lost an engine and was forced to crash-land about 200 yards off the coast of Kenya. Three of the six survivors stayed with

USAF photo by Capt. Jim Duffany



**Capt. Terry Brown, from the Air Force Operational Test and Evaluation Center, Kirtland AFB, N. M., observes Navy aircraft launching from USS Carl Vinson. Captain Brown and two other AFOTEC testers spent three weeks aboard the ship, helping the Navy assess the Joint Tactical Information Distribution System.**

the aircraft during the crash landing. The other three parachuted to safety.

The victims unsuccessfully attempted to parachute from the aircraft. All the dead crew members' parachutes were deployed. Most of the bodies were found near the aircraft in ten to fifteen feet of water. One crew member's body was never found. No distress call was made from the AC-130, indicating that the crew had little time to react to the engine problem.

Lost in the AC-130 crash were Capt. David J. Mehlhop, navigator; Capt. Anthony Stefanik, fire-control officer; Capt. Mark A. Quam, electronic warfare officer; MSgt. Roy S. Duncan, loadmaster; TSgt. Robert L. Daniel, sensor operator; SSgt. Brian P. Barnes, aerial gunner; SSgt. Mike E. Mosar, aerial gunner; and SSgt. William C. Eyster, sensor operator.

### Two USAF Craft Collide

Only nine days after the gunship tragedy, an F-16D and a C-130E, attempting to land at Pope AFB, N. C., collided. The downed F-16 hurtled into 500 members of the Army's 82d Airborne Division, Fort Bragg, N. C., who were preparing to load onto a C-141 transport for a routine mission.

Twenty-three paratroopers were killed in the March 23 accident, and 100 personnel were injured. The Army said ninety percent of the injured suffered severe burns. The C-130E, assigned to the 2d Airlift Squadron at Pope, landed safely, suffering only a damaged right horizontal stabilizer.

The F-16 crew members, from the 74th Fighter Squadron at Pope, ejected safely. The C-141, assigned to the 438th Airlift Wing at McGuire AFB, N. J., was destroyed.

The Air Force said that both aircraft were attempting to land. The F-16 hit the runway, sending a fireball rolling toward the paratroopers on the ground. Maj. Jim Hinnant, a Fort Bragg spokesman, said the troopers had two to three seconds to react

to the fireball before they were engulfed. Those facing the F-16 were able to react sooner.

The 44th Medical Brigade was on a field training exercise near the accident site and quickly deployed eight medevac helicopters, in addition to numerous ambulances. Most of the troopers on the ground were trained as combat lifesavers and aided their hurt comrades. The site was cleared of the wounded within forty-five minutes of the accident, the Army said.

### B-2 Becomes Spirit

Air Combat Command has officially named the B-2 bomber the Spirit.

The Air Force and Northrop, the B-2 contractor, held an official naming ceremony in March in Palmdale, Calif. Sen. Dianne Feinstein (D-Calif.), and Lt. Gen. Stephen B. Croker, commander of 8th Air Force, presided over the ceremony.

The first B-2 was named *Spirit of Missouri*. The second will bear the name *Spirit of California*, in honor of the California aerospace industry. The 509th Bomb Wing at Whiteman AFB, Mo., accepted the second B-2 in April.

### USAF F-16s Down Four Serb Jets

Air Force F-16s, operating under NATO command, downed four Bosnian Serb attack aircraft February 28 after the US warplanes twice warned the Serb jets to leave Bosnian airspace. The USAF attack on the Soko G-4 Super Galebs was NATO's first combat in its forty-five-year history.



**The US Department of Defense plans to return RAF Chicksands, UK, to the British Ministry of Defence in July. USAF intelligence units have occupied the base since 1950. The centerpiece of the post is the twelfth-century Chicksands Priory, pictured above as it looked from World War II through 1962.**

Photo via W. Grayson

Adm. Jeremy M. Boorda, commander in chief of NATO Southern Forces, said a NATO AWACS aircraft vectored two F-16 fighters, on patrol as part of Operation Deny Flight over Bosnia-Herzegovina, to an area where fixed-wing aircraft were operating in violation of the United Nations no-fly zone.

The lead fighter reported radar contact and made visual contact, identifying two G-4s. A short time later, the F-16s identified four more. At 5:35 a.m., Greenwich time, the AWACS warned the violators to land, exit the airspace immediately, or be engaged. Admiral Boorda said the aircraft did not respond.

At 5:42, the fighters on the scene again warned the Galebs but received no response. At 5:43, the NATO Combined Air Operations Center granted permission to engage. Almost simultaneously, the F-16s' flight leader saw the Galebs make a bombing maneuver and observed explosions. Admiral Boorda said reports from UN Forces Command nearby said that facilities in the vicinity were hit by at least eight bombs.

The lead F-16 fired an AIM-120 Advanced Medium-Range Air-to-Air Missile, destroying one Galeb. Two

minutes later, the same NATO fighter fired an AIM-9M Sidewinder missile, destroying a second Galeb. One minute later, the flight leader destroyed a third Galeb with a Sidewinder.

Two more US F-16s were vectored to the area by the AWACS to provide support. The lead aircraft of the second flight fired an AIM-9, downing a fourth G-4. Nine minutes later, the other two Galebs left the airspace over Bosnia. They were not pursued.

#### **USAF Civilians Suffer Reductions**

The Air Force reduced its civilian end strength from 261,000 in Fiscal 1989 to 202,000 in Fiscal 1993, according to John R. Graham, director, USAF Civilian Personnel Policy and Personnel Plans.

The cuts are directly related to base closures. The Air Force has closed twenty-six bases in the 1990s. Other causes of personnel reduction are withdrawals from overseas operations, program cuts, and budget-driven constraints on hiring. The service plans to cut roughly 30,000 more spaces by Fiscal 1999.

The Air Force is offering such incentives as optional retirement, early retirement, and assisted resignations

to its civilian personnel. The service provides outplacement programs, and some major commands have started internal programs to find people new jobs within the command. There are also plans for career assistance, priority job referrals, and access to job availability information.

#### **Smoking Banned in Defense Facilities**

The Department of Defense has taken a strong new stand against smoking, forbidding it anywhere in most of its hundreds of facilities.

The smoking ban, announced in March, does not include living quarters, clubs, recreation areas, and restaurants, the Pentagon said.

Today, about twenty-nine percent of Air Force members are smokers, down from forty-three percent fourteen years ago. The Air Force wants to cut the number to four percent by 1998.

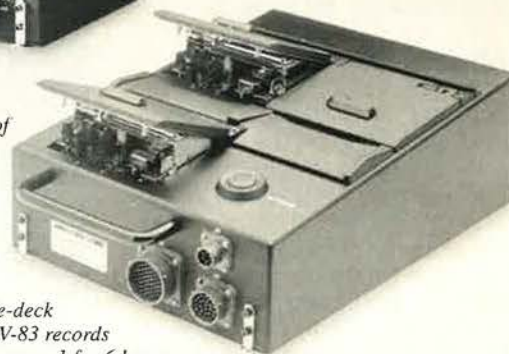
The new policy affects all military and Defense Department civilian personnel—about four million people stationed in the continental US and overseas. Said Sherri Wasserman Goodman, the deputy under secretary of defense for Environmental Security, "There's compelling evidence

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*In March, Lockheed Aeronautical Systems Co. fabricated the first parts for the new C-130J, scheduled for rollout in mid-1995. One obvious change to the C-130J is the six-blade propellers on each of its four engines. The J will have the versatility and airlift capability of its predecessors but with improved performance.*

that this policy will result in savings in several important areas in terms of lives saved, health costs avoided, work hours lost to sickness, and reduced housekeeping and maintenance expenses for our many buildings."

**Many in Congress Served in the Military**

Of the 535 members of the 103d Congress, 239 served in the military, including fifty-nine combat veterans.

Thirty-seven served in the Air Force, Air National Guard, Air Force Reserve, or Army Air Forces.

Of the combat veterans, thirty-two served in World War II, twenty-one in Vietnam, five in the Korean War, and one in the Persian Gulf War. Five combat veterans served in the Air Force or the Army Air Forces.

**Guardian Sword Slashes Costs**

The first Guardian Sword exercise, which brought together 100 missile experts from across the US, produced initiatives that could save the Air Force \$2.75 million over the next five years.

The Air Force said that its missile experts gathered at Vandenberg AFB, Calif., for the February exercise.

As a result of sharing their innovations with one another, missile maintainers reduced the time needed to install missile transporter environmental control systems by eighty percent, from fifteen hours to three. Another improvement: installing a new \$45 valve on the transporter's refrigerant system to recapture and reuse

freon that normally escapes into the atmosphere.

Missile launch officers also reduced the number of steps required to respond to an emergency execution message by thirty percent and improved communications capabilities with airborne launch control centers.

The Air Force said one of the largest savings items came from ICBM code controllers' efforts to authorize local repair of the launch enable con-

trol group signal panel. This system is essential for missile launch preparations. Local repair of each panel will save more than \$40,000.

**RCS Flaws Found in F-22 Design**

The F-22 team of Air Force and industrial designers has identified deficiencies in the fighter's radar cross section (RCS) signature, the service said in March.

Air Force officials said the problem is in the radio frequency spectrum. They said imperfections in drain holes and access panels on the bottom of the aircraft caused the problem and the internal workings of the aircraft were not involved.

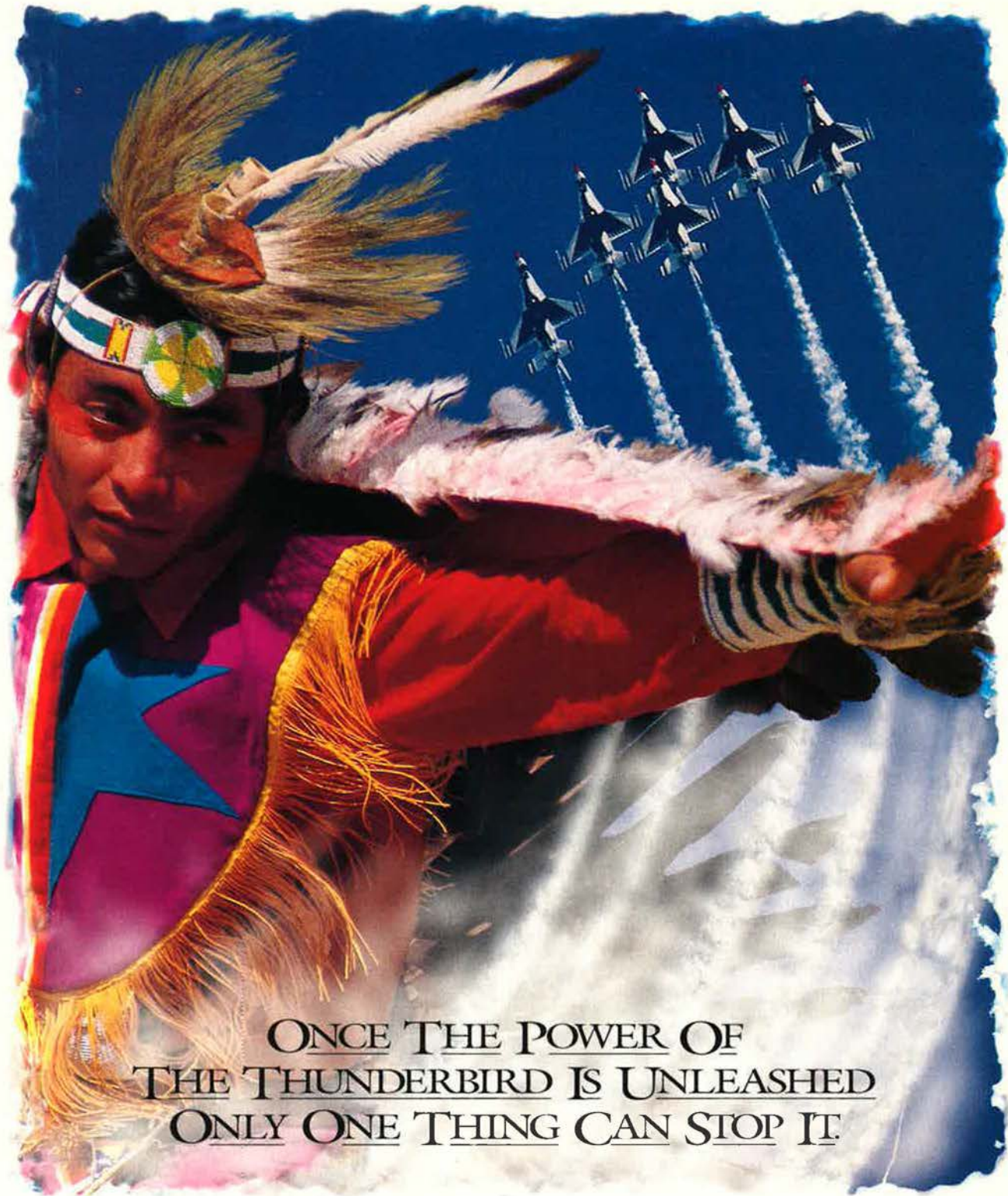
The problem was discovered before the Air Force locked in the final F-22 design. USAF officials used advanced, high-fidelity, analytical models and extensive radar range test data to identify the deficiency. Early discovery of the problem will reduce modification costs.

Air Force officials said that stealth deficiencies commonly exist in avionics (integrated forebody of the aircraft, including the nose shape and radar), propulsion (the inlet), and "bumps" (where external systems, such as auxiliary power units, connect with the aircraft). However, the new flaw was a surprise.

Program officials could not estimate the cost of fixing the problem, but changes are expected to be handled within the existing F-22 budget. The F-22's design will be finalized in 1995.



*Flight testing of the AGM-84 Harpoon antiship missile on the F-16 began in March at Edwards AFB, Calif. The testing will verify avionics systems integration of missile and aircraft. Lockheed Corp. produces the F-16, and McDonnell Douglas produces the Harpoon, the standard US antiship missile.*



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### Operation Computer Hope Begins

Active-duty and retired Air Force volunteers from Columbus AFB, Miss., collected and donated 1,700 computers to high school students throughout northeastern Mississippi, the Air Force announced in March. Their schools had lacked computer classes because they could not afford to buy the equipment.

Mississippi has the highest poverty rate in the United States and a

narrow tax base, making it difficult for administrators to find the money for computer labs in many rural public high schools.

Operation Computer Hope began in November 1992. Maj. Randy Gunter, USAF (Ret.), formerly of the 14th Operations Support Squadron at Columbus, was teaching computer applications at night under a school parent involvement program. Business technology training in most

Mississippi schools employed manual or electric typewriters. Major Gunter learned that Air Education and Training Command had about 1,000 NCR computer workstations that would eventually be sold for scrap metal.

"I knew the NCR system with existing software—word processing, spreadsheets, and database—would meet the curriculum requirements for computer literacy defined by the Mississippi Department of Education," he said.

Major Gunter approached AETC with the idea of declaring the computers "excess" and donating them to public schools near the base. AETC accepted the proposal. Under the new program, about 7,500 students will learn computer applications and keyboarding every year.

### 3,500 Troops Fall to AIDS

The Air Force reported in March that acquired immunodeficiency syndrome (AIDS) has caused the deaths of more than 3,500 active-duty personnel in the Army, Air Force, Navy, Marine Corps, and Coast Guard.

The human immunodeficiency virus (HIV) causes AIDS by destroying the body's immune system, making the victim vulnerable to many opportunistic infections. Eventually, this leads to death. According to current estimates, AIDS afflicts about 10,000 active-duty members, 1,400 of them Air Force personnel. When dependents and retired personnel are added, the overall number exceeds 16,000.

The Defense Department's premier laboratory working to combat this disease is the Cellular Pathology Laboratory in the division of Retrovirology at Walter Reed Army Institute of Research in Maryland. A team of seventy-five researchers has been assigned to find ways to protect military personnel who might interact with those who have been infected.

The lab is attempting to develop a vaccine that will protect service members. AIDS is a global disease that especially afflicts many Third World nations where military people are deployed for peacekeeping and humanitarian missions.

### Perry Launches JAST Program

In February, Defense Secretary Perry initiated the Joint Advanced Strike Technology (JAST) program, which will serve as the focal point for refining requirements and demonstrating technologies for future strike aircraft, the Pentagon said.

There is no lead service in the program. The Air Force, Navy, and

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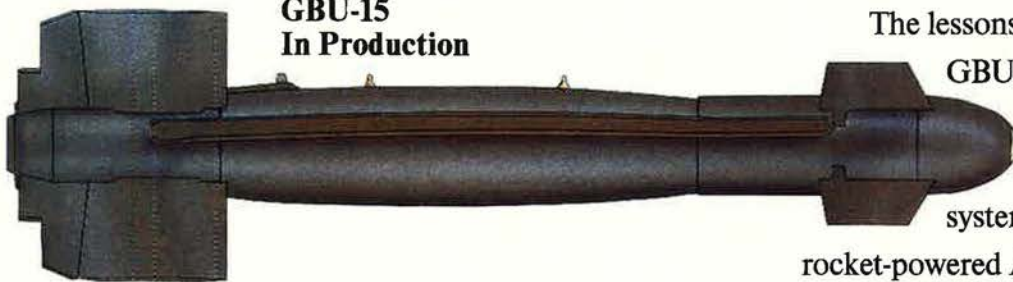
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Marine Corps will operate jointly. Air Force Brig. Gen. (Maj. Gen. selectee) George K. Muellner will be the JAST program director. He will report to Nora Slatkin, the assistant secretary of the Navy for Research, Development, and Acquisition. Rear Adm. Craig E. Steidle is the deputy program director.

JAST program investments will cover the following areas of common component development: engines, avionics, ground test equipment, training equipment, modern precision guided munitions, and advanced mission planning techniques. There will be a flying demonstration of advanced design concepts as well as manned and unmanned concepts.

The presidential budget requests \$201.4 million for JAST in Fiscal 1995, up from \$29.7 million in Fiscal 1994.

### USAF Promotes 2,541 Captains

In February, the Air Force selected 2,541 captains for promotion to major, exceeding USAF expectations that forty percent would be promoted, the service said.

Promotion results for line officers: in the promotion zone, 2,741 considered, 2,003 selected; above the promotion zone, 665 considered, ninety-one selected; below the promotion

zone, 6,393 considered, ninety-nine selected.

Judge Advocate General corps: in the promotion zone, sixty-eight considered, sixty-one selected; above the promotion zone, six considered, none selected; below the promotion zone, 155 considered, one selected.

Nurse corps: in the promotion zone, 193 considered, 141 selected; above the promotion zone, sixty considered, eleven selected; below the promotion zone, 573 considered, three selected.

Medical service corps: in the promotion zone, fifty-seven considered, fifty selected; above the promotion zone, thirteen considered, two selected; below the promotion zone, 123 considered, none selected.

Biomedical sciences corps: in the promotion zone, eighty-seven considered, seventy-one selected; above the promotion zone, twenty-four considered, five selected; below the promotion zone, 279 considered, three selected.

### B-2 Industrial Gap Is "Weakness"

Secretary of Defense Perry warned that a lack of planning for the bomber industrial base in the Fiscal 1995 defense budget should be considered a "weakness" in the President's defense plan.

In February, Dr. Perry told Sen. Daniel K. Inouye (D-Hawaii), chairman of the Senate Defense Appropriations Subcommittee, that the plan may be "rightly challenged and criticized" because of the assumptions that underlie it.

"It is very expensive to maintain a bomber industrial base," Dr. Perry said. "The most logical way of maintaining a bomber industrial base was to continue building B-2s. . . . We could make a very good use of the extra B-2 bombers if we had them."

He pointed out that one rationale for failing to maintain the bomber industrial base is that the US has a robust commercial base building large transport aircraft and the nation could, in time, shift to the production of bombers. "I do not commend that to you with a lot of enthusiasm," he said, noting the extreme complexity of the "specific techniques" of building stealth bombers.

Senator Inouye, a strong B-2 supporter, asked Dr. Perry how DoD would react if Congress should take the initiative and act on the bomber problem. Dr. Perry said that much would depend on what was taken out of the defense budget to support such a plan.

### Budget Gap Pushed to Future

Defense Secretary Perry told the House Budget Committee in February that there is a five-year, \$20 billion gap between defense funds and the defense program but that solutions will be pushed out to the Fiscal 1996-2001 Future Years Defense Program.

The shortage was caused by the Bottom-Up Review, unexpected pay raises, and higher-than-expected inflation.

"The rate of inflation in future years was projected to be higher than was estimated at the time the FY 1994 budget was developed," Dr. Perry said. "Because of this change, it was estimated that DoD would need about \$20 billion more to pay for the [defense] program over the FYDP period. Unlike legally mandated pay raises, these inflation estimates are likely to change several times during the year and may well result in inflation cost growth below the \$20 billion over five years now estimated."

The President opted not to budget for the multiyear inflation bill, which may or may not come due. DoD then took two actions. It incorporated the full cost implications of the pay raise in 1994 into the budget and repriced the defense program using current economic estimates.

## Senior Staff Changes

**RETIREMENTS:** B/G James L. Vick.

**PROMOTIONS:** To be Major General: Charles H. Roadman II.

**CHANGES:** M/G George T. Babbitt, Jr., from Dir., Supply, DCS/Log., Hq. USAF, Washington, D. C., to Dep. Dir., Acq. Mgmt., DLA, Cameron Station, Va. . . . M/G Jay D. Blume, Jr., from Cmdr., Lowry Training Ctr., AETC, Lowry AFB, Colo., to Spec. Ass't for Base Closure, Hq. USAF, Washington, D. C. . . . B/G Jeffrey G. Cliver from Cmdr., 18th Wing, PACAF, Kadena AB, Japan, to Dir., Ops., Hq. USAFE, Ramstein AB, Germany, replacing M/G Lee A. Downer.

M/G Lee A. Downer from Dir., Ops., Hq. USAFE, Ramstein AB, Germany, to Dir., Ops., Hq. ACC, Langley AFB, Va., replacing M/G (L/G selectee) Lawrence E. Boese . . . B/G Kenneth G. Miller from Dep. Ass't Sec'y of the Air Force (Mgmt. Policy and Prgm. Integration), Ass't Sec'y of the Air Force for Acq., Hq. USAF, Washington, D. C., to Dir., Supply, DCS/Log., Hq. USAF, Washington, D. C., replacing M/G George T. Babbitt, Jr. . . . Col. (B/G selectee) Andrew J. Pelak, Jr., from Dir., Mil. Personnel Policy, DCS/Personnel, Hq. USAF, Washington, D. C., to Dir., Mil. Personnel Policy, DCS/Personnel, Hq. USAF, Washington, D. C., and member of the Reserve Forces Plcy. Board.

Col. (B/G selectee) Steven R. Polk from Chief, Quality Div., Dir. for Prgms. and Eval., Hq. USAF, Washington, D. C., to ACS/Plans and Policy, UK Air Forces, NATO; and Dep. Cmdr. for NATO Affairs, 3d AF, USAFE, RAF High Wycombe, UK, replacing B/G Travis E. Harrell . . . B/G Eugene L. Tattini from Vice Cmdr., SMSC, AFMC, Los Angeles AFB, Calif., to Dep. Ass't Sec'y of the Air Force (Mgmt. Policy and Prgm. Integration), Ass't Sec'y of the Air Force for Acq., Hq. USAF, Washington, D. C. replacing B/G Kenneth G. Miller . . . B/G David L. Vesely from Vice Cmdr., Hq. Air Intelligence Agency, Kelly AFB, Tex., to Dir., Space Warfare Ctr., AFSPC, Falcon AFB, Colo., replacing M/G Robert W. Parker. ■





*SSgt. Lori Eppard of the 51st Fighter Wing, Osan AB, South Korea, is training to qualify for the Olympics in the five-kilometer race, which will be offered for the first time to women in 1996. She is the only enlisted member of the Armed Forces Cross-Country team. Sergeant Eppard does most of her training during lunch-time. Currently she is NCO in charge of military justice at Osan.*

**Turkey Orders Forty More F-16s**

The governments of Turkey and the US signed a Letter of Offer and Acceptance in February, increasing Turkey's total order of F-16s by forty to 240 aircraft, according to Lockheed Corp., the builder of the F-16.

The agreement provides for the additional F-16s to be delivered, beginning in 1998, from a factory operated near Ankara, Turkey, by TUSAS Aerospace Industries, Inc., a joint-venture company partly owned by Lockheed.

Approximately 136 aircraft have been delivered to Turkey to date. With the new Turkish order, Lockheed's F-16 backlog jumped above the 600-aircraft mark.

**Clementine I Reaches Mapping Orbit**

The Ballistic Missile Defense Organization's spacecraft *Clementine I* was placed in final lunar mapping orbit in February.

The spacecraft will circle the moon every five hours and, over the course of approximately seventy days, will map the entire surface of the moon using cameras operating in the ultraviolet, visible, and infrared spectrums.

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The images returned to Earth will be the first high-resolution images of the moon since the Apollo 17 lunar landing in 1972. *Clementine I's* principal mission is to space-qualify lightweight and miniaturized imaging sensors and component technologies for the next generation of DoD spacecraft.

BMDO plans for *Clementine I* to use the moon, a near-Earth asteroid, and the spacecraft's interstage adaptor to demonstrate lightweight component and sensor performance. The interstage adaptor was left in orbit around the Earth after its rocket motor fired to boost *Clementine I* out of its initial low-Earth orbit.

**US, Kazakhstan Sign Defense MOU**

In February, the US Department of Defense signed a Memorandum of Understanding and Cooperation on Defense and Military Relations with the Ministry of Defense of Kazakhstan.

The agreement, signed at the Pentagon by Defense Secretary Perry

and Kazakhstan's Minister of Defense, General of the Army Sagadat Kozakhmetovich Nurmagambetov, represents an attempt to broaden bilateral interaction and consultation in the areas of defense and security.

The agreement calls for periodic exchanges between top defense officials in both countries and annual meetings of the Bilateral Working Group on defense cooperation. Issues examined at the meetings will include expanding relations in defense and participation in the International Military Education and Training Program to facilitate communication and cooperation between officials of both countries.

**DoD Increases Community Assistance**

The Pentagon is trying to mitigate the effects of the force drawdown on personnel and communities by setting aside funds for community assistance.

Defense Secretary Perry told the Senate Defense Appropriations Sub-

committee in February that DoD set aside \$200 million for community assistance for 1995, which will attempt to offset the impact of base closures on communities dependent on those bases to support the local economy.

DoD will not try to fund or support large new commercial programs. Instead, Dr. Perry said, the focus will be on technical assistance in the "re-use" program "and helping [communities] put together the program that allows them to reestablish themselves [with] commercial businesses."

**CBO Evaluates CAS Options**

If the Air Force were to hand over the close air support mission to the Army, the subsequent reduction in the number of USAF CAS aircraft—about twenty-five percent of the total fighter force—could save about \$3.2 billion over five years compared to the current Administration plan. However, such a reduction would degrade USAF's flexibility in its other mission areas.

So says the Congressional Budget Office in its report, "Options for Reconfiguring Service Roles and Missions," released to the Senate Armed Services Committee in March. CBO said that the Army, with the increased capability of its attack helicopters and long-range artillery, had become much less dependent on the Air Force for CAS. CBO said the impact of the reductions outlined in its report were not evaluated in a quantitative way. Committee members commissioned the report, which evaluates budget implications of possible changes in service roles and missions.

**Last F-4Gs Leave USAF**

The last four F-4G Wild Weasel aircraft departed Spangdahlem AB, Germany, in February, ending an era of service to US Air Forces in Europe that spanned thirty years.

The last four Phantom IIs, assigned to the 81st Fighter Squadron, flew to Nellis AFB, Nev., where they joined the 561st FS. The 561st is the only active-duty F-4G squadron.

The departure of the F-4Gs made room for eighteen F-15s, which were transferred to the 53d FS from Bitburg AB, Germany. The 81st's flag moves to the A-10 squadron at Spangdahlem.

The first F-4 arrived at USAF in October 1965 at RAF Bentwaters, UK, which has closed as a result of the defense drawdown.

**Medical Supplies Sent to Belarus**  
Air Force and Army medical per-

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sonnel at RAF Upwood, UK, prepared about \$7 million in medical supplies, which were shipped to the former Soviet republic of Belarus as part of Operation Provide Hope, the Air Force said in March.

The supplies were part of Upwood's 608th Contingency Hospital, which was inactivated in November, and included lab equipment, anesthesia apparatus, sterilizers, X-ray systems, ventilators, operating tables, bandages, gloves, and antibiotics.

The items were sent to four hospitals in Minsk. The nine-year-old equipment will replace equipment that is about thirty years old.

#### News Notes

■ The Air Force plans to spend \$244 million in Fiscal 1995 for 420 new housing units, replacement of 1,293 old units, two new support centers, and improvements on 810 existing units on thirty-eight stateside bases and two overseas bases.

■ In February, after considering 131 applicants, the Air Force selected thirty-seven officers to attend test pilot school. Most of those selected will attend the Air Force Test Pilot School at Edwards AFB, Calif. One selectee will attend Navy Test Pilot School at NAS Patuxent River, Md.

■ In February, NASA assigned Lewis Research Center, Ohio, the responsibility for planning and development work that will lead to the first demonstration of a joint US-Russian Solar Dynamic Power System aboard the space station Mir in 1997. Lewis is performing in-line and support tasks for development of the photovoltaic power modules and electrical power distribution system for Mir.

■ The Air Force said in February that 6,346 personnel have applied for the Voluntary Separation Incentive, the Special Separation Benefit, and the fifteen-year retirement plan. However, the service needs about 2,300 officer and 17,000 enlisted losses above those expected through normal attrition and loss programs to meet Fiscal 1995 end strength requirements.

■ The Navy's Lightweight Exoatmospheric Projectile (LEAP) Suborbital Target Vehicle was successfully launched in February from NASA's Wallops Flight Facility, Va., Orbital Sciences Corp. said. The launch clears the way for Navy LEAP seabased intercept exercises this summer. The target vehicle is designed to emulate the flight trajectory and signature of a tactical ballistic missile.

■ June 22, 1994, marks the fiftieth anniversary of the GI Bill. In that time, the GI Bill has assisted more

than fourteen million former service personnel in receiving home ownership loans and more than twenty-one million with educational benefits.

■ Flight testing began in March at Edwards AFB, Calif., marking the final step toward full certification of the AGM-84 Harpoon antiship missile on the F-16. The new testing is designed to verify avionics systems integration of the missile and aircraft. The Harpoon is the standard US antiship missile.

■ Servicemen's Group Life Insurance premiums are going up for the first time ever, the Air Force said in March, but only by one cent per \$1,000 of coverage. Effective July 1, \$1,000 worth of coverage will cost nine cents instead of eight cents. That means that the premium for the maximum level of coverage, \$200,000, will increase from \$16 to \$18 per month. Nearly 2.8 million service members, or ninety-nine percent of the service, are currently covered under SGLI. Of those, fifty-five percent carry the maximum coverage.

■ More than 14,600 military personnel from all the services and the National Guard participated in North-

ern Edge '94, a joint training exercise at Fort Greely, Alaska, in March. Military units from Alaska, Idaho, North Carolina, and Okinawa reacted to simulated border disputes between two fictitious nations, the Air Force said. The exercise used the Joint Readiness Training Center's scenario for peace enforcement operations. The scenarios included patrolling a UN no-fly zone and supporting humanitarian relief efforts.

#### Obituary

Lt. Gen. Laurence C. Craigie, USAF (Ret.), the first US military pilot to fly a jet aircraft, died February 27 at the March AFB, Calif., base hospital of natural causes. He was ninety-two.

On October 2, 1942, General Craigie became the first American pilot to fly the secret Bell XP-59A after it had been flown twice by a civilian test pilot. The Concord, N. H., native is also credited with overseeing the development of eleven fighter aircraft, six bombers, two transports, and two trainers.

General Craigie was a veteran of World War II and the Korean War. ■

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- General-purpose UHF communications

The CTT(3) full-duplex version can simultaneously transmit one and receive three channels.

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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 Of-

fice of Public Affairs in its role as liaison with Air Staff agencies 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 agree (nor will they always agree with figures in 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

*Done*

### The Service and its Early Leaders

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

For USAF leaders since 1948, see “USAF Leaders Through the Years.” 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 September 28, 1947.

## 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 preexisting military agencies—the War Department and the Navy Department. Subordinate to DoD are the three military departments (Army, Navy, and Air Force), each headed by a civilian secretary.

The **Joint Chiefs of Staff (JCS)** constitute the corporate military leadership of the Department of Defense. The chairman and vice chairman of the JCS serve

full-time in their positions. The service chiefs are also the military heads of their respective services, although their 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 him.

Most units of the Air Force are assigned to one of the **major commands** (see p. 57). Major commands are headed by general officers and have broad functional or geographic responsibility. 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 they are increasingly under the command of generals. A USAF objective wing typically contains an **operations group**, which includes aircrews, intelligence units, and others; a **logistics group**, which can include maintenance and supply squadrons; and a **support group**, which can include such functions as security police and civil engineers.

Most individual officers and airmen are assigned to a **squadron**.

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

### Air Force Personnel Strength

Year	Strength	Year	Strength	Year	Strength
1907	3	1937	19,147	1967	897,426
1908	13	1938	21,089	1968	904,759
1909	27	1939	23,455	1969	862,062
1910	11	1940	51,165	1970	791,078
1911	23	1941	152,125	1971	755,107
1912	51	1942	764,415	1972	725,635
1913	114	1943	2,197,114	1973	690,999
1914	122	1944	2,372,292	1974	643,795
1915	208	1945	2,282,259	1975	612,551
1916	311	1946	455,515	1976	585,207
1917	1,218	1947	305,823	1977	570,479
1918	195,023	1948	387,630	1978	569,491
1919	25,603	1949	419,247	1979	559,450
1920	9,050	1950	414,277	1980	557,969
1921	11,649	1951	753,381	1981	570,302
1922	9,642	1952	971,474	1982	582,845
1923	9,441	1953	977,593	1983	592,044
1924	10,547	1954	947,918	1984	597,125
1925	9,670	1955	959,946	1985	601,515
1926	9,674	1956	909,958	1986	608,199
1927	10,078	1957	919,835	1987	607,035
1928	10,549	1958	871,156	1988	576,446
1929	12,131	1959	840,028	1989	570,880
1930	13,531	1960	814,213	1990	535,233
1931	14,780	1961	820,490	1991	510,432
1932	15,028	1962	883,330	1992	470,315
1933	15,099	1963	868,644	1993	444,351
1934	15,861	1964	855,802	1994	425,700 <sup>a</sup>
1935	16,247	1965	823,633		
1936	17,233	1966	886,350		

<sup>a</sup>Programmed

### USAF Educational Levels

(As of September 30, 1993)

Enlisted		
Level	Number	Percent
Below high school	49	0.01
High school	78,263	21.98
Some college (< 2 years)	178,667	50.17
AA/AS degree	38,134	10.71
2-3 years college	46,484	13.05
Baccalaureate degree	12,647	3.55
Master's degree or higher	1,882	0.53
<b>Total</b>	<b>356,126</b>	<b>100.00</b>

Line Officers		
Level	Number	Percent
Below baccalaureate/unknown	200	0.30
Baccalaureate degree	32,726	48.47
Master's degree	33,437	49.52
Doctoral and professional degrees	1,161	1.72
<b>Total</b>	<b>67,524</b>	<b>100.00</b>

Numbers are rounded and may not sum to totals.

### ICBMs and Spacecraft in Service

Type of system	FY '87	FY '88	FY '89	FY '90	FY '91	FY '92	FY '93
Minuteman II ICBM	450	450	450	450	450	375	0
Minuteman III ICBM	540	504	500	500	500	500	500
Peacekeeper ICBM	10	46	50	50	50	50	50
<b>Total ICBMs</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>925</b>	<b>550</b>
DMSP satellite	2	2			2	2	5
DSCS satellite	9	9			10	12	11
DSP satellite (data classified)							
GPS satellite	6	6		14	16	19	25
<b>Total satellites</b>	<b>17</b>	<b>17</b>	<b>15</b>	<b>26</b>	<b>28</b>	<b>33</b>	<b>41</b>

DMSP: Defense Meteorological Satellite Program DSCS: Defense Satellite Communications System DSP: Defense Support Program GPS: Global Positioning System

## Active-Duty Force Demographics

(As of September 30, 1993)

Grade	Total	Blacks	Women	Other Minorities
<b>Officers</b>				
General	297	5	3	2
Colonel	4,351	89	181	80
Lieutenant Colonel	11,181	432	849	191
Major	16,758	1,260	2,577	360
Captain	37,181	2,183	5,924	1,265
First Lieutenant	7,270	414	1,409	342
Second Lieutenant	7,035	422	1,308	429
<b>Total</b>	<b>84,073</b>	<b>4,805</b>	<b>12,251</b>	<b>2,669</b>
<b>Airmen</b>				
Chief Master Sergeant of the Air Force	1			
Chief Master Sergeant	3,612	501	118	65
Senior Master Sergeant	7,284	273	561	162
Master Sergeant	36,753	6,993	3,520	1,221
Technical Sergeant	52,322	9,727	6,429	2,059
Staff Sergeant	31,592	15,769	10,216	3,879
Sergeant/Senior Airman	96,597	16,764	17,416	4,833
Airman First Class	45,958	5,293	9,199	1,904
Airman	20,652	2,571	4,238	841
Airman Basic	11,355	1,486	2,243	532
<b>Total</b>	<b>356,126</b>	<b>60,387</b>	<b>53,940</b>	<b>15,496</b>
<b>Total personnel</b>	<b>440,199</b>	<b>65,192</b>	<b>66,191</b>	<b>18,165</b>

Average ages of military personnel ..... Officers 35, Enlisted 28

## Active-Duty Force by Grade

(As of September 30, 1993)

Grade	Number
<b>Officers</b>	
General	11
Lieutenant General	34
Major General	101
Brigadier General	151
Colonel	4,351
Lieutenant Colonel	11,181
Major	16,758
Captain	37,181
First Lieutenant	7,270
Second Lieutenant	7,035
<b>Total</b>	<b>4,073</b>
<b>Airmen</b>	
Chief Master Sergeant of the Air Force	1
Chief Master Sergeant	3,612
Senior Master Sergeant	7,284
Master Sergeant	36,753
Technical Sergeant	52,322
Staff Sergeant	31,592
Sergeant/Senior Airman	96,597
Airman First Class	45,958
Airman	20,652
Airman Basic	11,355
<b>Total</b>	<b>356,126</b>
<b>Total strength</b>	<b>440,199</b>

## Armed Forces Manpower Trends

(Figures in thousands)

	FY '88	FY '89	FY '90	FY '91	FY '92	FY '93	FY '94 <sup>a</sup>	FY '95 <sup>a</sup>
<b>Active-duty military</b>								
Air Force	576	571	539	511	470	444	426	400
Army	772	770	751	725	611	572	540	510
Marine Corps	197	197	197	195	185	178	174	174
Navy	593	593	582	571	542	510	472	442
<b>Total</b>	<b>2,138</b>	<b>2,130</b>	<b>2,069</b>	<b>2,002</b>	<b>1,808</b>	<b>1,705</b>	<b>1,611</b>	<b>1,526</b>
<b>Selected Guard and Reserve</b>								
Air Force Reserve	82	83	81	84	82	81	82	79
Air National Guard	115	116	117	118	119	117	118	116
Army National Guard	455	457	437	441	426	410	410	400
Army Reserve	313	319	299	300	303	276	260	242
Marine Corps Reserve	44	44	45	44	42	42	42	42
Naval Reserve	149	152	149	150	142	132	113	101
<b>Total</b>	<b>1,158</b>	<b>1,171</b>	<b>1,128</b>	<b>1,137</b>	<b>1,114</b>	<b>1,058</b>	<b>1,025</b>	<b>980</b>
<b>Direct-hire civilian</b>								
Air Force <sup>b</sup>	241	249	238	222	214	202	202	195
Army <sup>b</sup>	337	347	327	317	334	294	294	281
Navy/Marine Corps	338	343	331	319	309	285	268	245
Defense agencies	95	98	101	116	149	156	160	152
<b>Total<sup>b</sup></b>	<b>1,011</b>	<b>1,037</b>	<b>997</b>	<b>974</b>	<b>1,006</b>	<b>937</b>	<b>923</b>	<b>873</b>

Numbers are rounded and may not sum to totals.

<sup>a</sup>Programmed manpower as of FY 1995 Clinton Administration DoD budget

<sup>b</sup>Includes Army and Air National Guard technicians, who were converted from state to federal employees in FY 1969

## USAF Personnel Strength by Commands, FOAs, and DRUs

(DoD figures as of September 30, 1993)

	Military	Civilian	Total
<b>Major commands</b>			
Air Combat Command (ACC) .....	125,933	15,899	141,832
Air Education and Training Command (AETC) .....	65,044	13,738	78,782
Air Force Materiel Command (AFMC) .....	34,138	80,770	114,908
Air Force Space Command (AFSPC) .....	22,763	4,521	27,284
Air Force Special Operations Command (AFSOC) .....	8,479	439	8,918
Air Mobility Command (AMC) .....	60,223	11,888	72,111
Pacific Air Forces (PACAF) .....	35,783	8,553	44,336
United States Air Forces in Europe (USAFE) .....	39,640	7,975	47,615
<b>Total major commands</b> .....	<b>392,003</b>	<b>143,783</b>	<b>535,786</b>
<b>Field operating agencies (FOAs)</b>			
Air Force Audit Agency .....	29	790	819
Air Force Base Conversion Agency .....	4	207	211
Air Force Center for Environmental Excellence .....	49	297	346
Air Force Civil Engineer Support Agency .....	153	192	345
Air Force Civilian Personnel Management Center .....	1	1,111	1,112
Air Force Combat Operations Staff .....	194	12	206
Air Force Command, Control, Communications, and Computer Agency .....	4,266	2,333	6,599
Air Force Cost Analysis Agency .....	32	78	110
Air Force Doctrine Center .....	9	2	11
Air Force Flight Standards Agency .....	92	22	124
Air Force Frequency Management Agency .....	17	23	40
Air Force Historical Research Agency .....	33	50	83
Air Force Inspection Agency .....	165	23	188
Air Force Legal Services Agency .....	420	147	567
Air Force Logistics Management Agency .....	67	8	75
Air Force Management Engineering Agency .....	144	100	244
Air Force Medical Operations Agency .....	34	25	59
Air Force Medical Support Agency .....	50	297	347
Air Force Military Personnel Center .....	1,177	481	1,658
Air Force News Agency .....	392	145	537
Air Force Office of Special Investigations .....	1,623	444	2,067
Air Force Personnel Operations Agency .....	38	33	71
Air Force Program Executive Office .....	39	12	51
Air Force Real Estate Agency .....	0	13	13
Air Force Reserve .....	381	14,424 <sup>a</sup>	14,805 <sup>a</sup>
Air Force Review Boards Agency .....	16	58	74
Air Force Safety Agency .....	86	59	145
Air Force Security Police Agency .....	121	18	139
Air Force Services Agency .....	40	116	156
Air Force Studies and Analyses Agency .....	75	26	101
Air Force Technical Applications Center .....	1,159	3	1,162
Air Intelligence Agency .....	15,120	2,533	17,653
Air National Guard Headquarters .....	49	26,711	26,760
Air Reserve Personnel Center .....	127	540	667
Air Weather Service .....	1,006	232	1,238
Center for Air Force History .....	4	29	33
Joint Services Survival, Evasion, Resistance, and Escape Agency .....	26	43	69
7th Communications Group .....	698	290	988
<b>Total FOAs</b> .....	<b>27,932</b>	<b>51,921</b>	<b>79,853</b>
<b>Direct reporting units (DRUs)</b>			
Air Force District of Washington .....	1,520	1,101	2,621
Air Force Operational Test and Evaluation Center .....	563	209	772
United States Air Force Academy (excluding 4,335 cadets) .....	2,572	1,565	4,137
<b>Total DRUs</b> .....	<b>4,655</b>	<b>2,875</b>	<b>7,530</b>
<b>Total major commands, FOAs, DRUs</b> .....	<b>424,590</b>	<b>198,579</b>	<b>623,169</b>

<sup>a</sup>Includes Air Reserve technicians



## Specialties in the Enlisted Force

(As of September 30, 1993)

Code	Career Field	Assigned
10	First Sergeant	1,491
11	Aircrew Operations	7,493
12	Aircrew Protection	2,363
20	Intelligence	11,195
22	Geodetic	24
23	Visual Information	2,202
24	Safety	1,017
25	Weather	2,816
27	Command Control Systems Operations	13,184
30	Communications-Electronics Systems	17,984
32	Avionics Maintenance	2,039
34	Training Devices	1
36	Wire Communications Systems Maintenance	3,770
39	Maintenance Management Systems	2,205
40	Intricate Equipment Maintenance	182
41	Missile Systems Maintenance	3,138
45	Manned Aerospace Maintenance	78,227
46	Munitions/Weapons Maintenance	20,270
47	Vehicle Maintenance	4,573
49	Information Systems	17,156
54	Mechanical/Electrical	7,014
55	Structural/Pavements	7,359
56	Utilities	2,713
57	Fire Protection	5,277
59	Marine	41
60	Transportation	10,678
61	Services	842
63	Fuels	4,760
64	Supply	17,669
65	Contracting	1,364
66	Logistics Plans	812
67	Financial	4,848
70	Administrative	16,179
73	Personnel	10,018
75	Education/Training	2,565
78	Morale, Welfare, Recreation, & Services	5,552
79	Public Affairs	933
81	Security Police	26,359
82	Special Investigation	816
87	Band	877
88	Paralegal	828
89	Chaplain Management	525
90-92	Medical	24,201
98	Dental	3,105
99	Reporting/Special Duty	9,461

## Specialties in the Officer Force

(As of September 30, 1993)

Code	Utilization Field Title	Assigned
00	Commanders and Directors	2,720
02	International Politico-Military Affairs	311
09	Special Duty	1,821
10-14	Pilot	14,842
15, 22	Navigator	5,924
16	Air Traffic Control	369
17	Air Weapons Director	1,600
18	Missile Operations	1,972
19	Operations Management	1,452
20	Space Operations	1,549
23	Visual Information	96
25	Weather	952
26	Scientific	1,409
27	Acquisition Program Management	2,718
28	Development Engineering	4,828
31	Missile Maintenance	237
40	Aircraft Maintenance & Munitions	2,492
49	Communications-Computer Systems	4,932
55	Civil Engineering	1,841
60	Transportation	806
64	Supply Management	875
65	Acquisition Contracting/Manufacturing	1,308
66	Logistical Plans & Programs	840
67	Financial	1,109
70	Information Management	1,728
73	Personnel	1,036
74	Manpower Management	338
75	Education & Training	318
76	Mission Support	95
78	Morale, Welfare, Recreation, & Services	426
79	Public Affairs	420
80	Intelligence	2,827
81	Security Police	883
82	Special Investigations	480
87	Band	23
88	Legal	1,341
89	Chaplain	717
90	Health Services Management	1,333
91, 92, 99	Biomedical Sciences	2,617
93-96	Physician	4,290
97	Nurse	4,848
98	Dental	1,267

These figures do not include general officers or UPT/UNT/medical/law students.

## Air Force Installations

	FY '90	FY '91	FY '92	FY '93	FY '94	FY '95
<b>Major installations</b>						
US and possessions <sup>a</sup>	102	102	101	99	85	79
Foreign	37	37	23	22	17	15
Worldwide	139	139	124	121	102	94
<b>Minor installations</b>						
US and possessions <sup>a</sup>	107	104	105	105	110	113
Foreign	14	14	17	14	12	7
Worldwide	121	118	122	119	122	120

<sup>a</sup>Includes Air Force Reserve and Air National Guard

## Budget Terms Explained

Funding levels can be expressed in several ways. **Budget authority** is the value of new obligations that the 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.

## Defense Department Budget Topline and Service Shares

(\$ billions)

	FY '94	FY '95	FY '96	FY '97	FY '98	FY '99
<b>Budget authority</b> (current \$)	249.0	252.2	243.4	240.2	246.7	253.0
<b>Budget authority</b> (constant FY '95 \$)	254.5	252.2	237.2	227.7	227.4	226.7
<b>Outlays</b> (current \$)	267.4	259.2	249.1	244.6	244.7	245.5
<b>Outlays</b> (constant FY '95 \$)	273.3	259.2	242.8	231.9	225.6	220.1

	FY '91	FY '92	FY '93	FY '94	FY '95
<b>Service Shares</b> (budget authority, current \$ billions)					
Air Force	88.8	80.2	78.5	74.3	74.5
Army	72.5	67.0	63.6	56.9	60.8
Navy	94.9	84.8	82.6	74.8	78.4
Defense agencies, DoD-wide	25.0	38.9	34.2	42.7	38.5
<b>Total</b>	<b>276.0</b>	<b>270.9</b>	<b>258.9</b>	<b>248.7</b>	<b>252.2</b>
<b>Percentages</b> (budget authority)					
Air Force	30.3	29.6	30.3	29.9	29.5
Army	26.3	24.7	24.6	22.9	24.1
Navy	34.4	31.3	31.9	30.1	31.1
Defense agencies, DoD-wide	9.1	14.4	13.2	17.2	15.3

Fiscal 1995 figures are those contained in the Clinton Administration's budget request.

## Air Force Budget—A Ten-Year Perspective

(Budget authority in \$ millions)

	FY '85	FY '86	FY '87	FY '88	FY '89	FY '90	FY '91	FY '92	FY '93	FY '94
<b>Current dollars</b>										
Military personnel	19,313	19,225	21,054	21,613	21,851	21,777	22,755	21,381	20,141	17,952
Operations and maintenance	21,846	21,249	21,682	23,040	24,973	25,160	29,061	22,816	22,179	23,711
Procurement	41,838	38,197	31,959	26,701	30,981	30,276	24,041	23,249	21,803	17,969
RDT&E	13,485	13,109	14,903	14,617	14,696	13,507	12,207	12,867	12,979	12,152
Military construction	1,752	1,757	1,426	1,414	1,445	1,453	1,117	1,200	1,053	1,307
Family housing	885	793	798	828	921	870	888	1,112	1,212	923
Rev. and mgmt. funds	549	752	202	452	187	121	1,672	n/a	n/a	n/a
Trust and receipts	-246	-214	-399	-340	-369	-274	-485	-286	-221	-310
<b>Total</b>	<b>99,422</b>	<b>94,868</b>	<b>91,625</b>	<b>88,325</b>	<b>94,685</b>	<b>92,890</b>	<b>91,256</b>	<b>82,339</b>	<b>79,146</b>	<b>73,704</b>
<b>Constant FY '94 dollars</b>										
Military personnel	25,467	24,451	26,030	25,714	25,174	24,697	24,736	22,552	20,369	17,952
Operations and maintenance	27,911	27,270	27,220	28,415	29,503	28,970	30,111	24,195	22,701	23,711
Procurement	54,757	48,412	39,136	31,527	35,243	33,366	25,780	24,336	22,300	17,969
RDT&E	17,862	16,917	18,633	17,610	17,004	15,042	13,108	13,487	13,275	12,152
Military construction	2,301	2,240	1,757	1,676	1,649	1,601	1,198	1,257	1,076	1,307
Family housing	1,152	1,009	991	999	1,068	973	950	1,167	1,241	923
Rev. and mgmt. funds	728	971	253	552	219	136	1,803	n/a	n/a	n/a
Trust and receipts	-327	-276	-502	-415	-432	-308	-523	-300	-226	-310
<b>Total</b>	<b>129,851</b>	<b>120,993</b>	<b>113,518</b>	<b>106,078</b>	<b>109,427</b>	<b>104,478</b>	<b>97,162</b>	<b>86,694</b>	<b>80,737</b>	<b>73,704</b>
<b>Percentage real growth</b>										
Military personnel	26.2	-4.0	6.5	-1.2	-2.1	-1.9	0.2	-8.8	-9.7	-11.9
Operations and maintenance	6.2	-2.3	-0.2	4.4	3.8	-1.8	3.9	-19.7	-6.2	4.4
Procurement	12.4	-11.6	-19.2	-19.5	11.8	-5.3	-22.7	-5.6	-8.4	-19.4
RDT&E	6.7	-5.3	10.1	-5.5	-3.4	-11.5	-12.9	2.9	-1.6	-8.5
Military construction	5.7	-2.7	-21.6	-4.6	-1.6	-2.9	-25.2	4.9	-14.4	21.5
Family housing	6.9	-12.4	-1.8	0.8	6.8	-8.9	-2.3	22.8	6.4	-25.6
<b>Total</b>	<b>11.2</b>	<b>-6.8</b>	<b>-6.2</b>	<b>-6.6</b>	<b>3.2</b>	<b>-4.5</b>	<b>-7.0</b>	<b>-10.8</b>	<b>-6.9</b>	<b>-8.7</b>

Totals may not sum due to rounding.

# THE POWER OF MODERNIZATION



When you're out of gas  
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## Allowances for Quarters and Subsistence

Pay Grade	Single Full Rate	Partial Rate	Married Full Rate		
O-10	\$730.50	\$50.70	\$899.10		<b>Cash/In Kind</b>
O-9	730.50	50.70	899.10		
O-8	730.50	50.70	899.10	<b>Officers</b>	\$142.46/month
O-7	730.50	50.70	899.10		
O-6	670.20	39.60	809.70		
O-5	645.30	33.00	780.30	<b>Enlisted Members</b>	<b>E-1</b>
O-4	598.20	26.70	687.90		<b>&lt;4 Months</b>
O-3	479.40	22.20	569.40	When on leave or authorized to mess separately	\$6.28/day
O-2	380.10	17.70	486.30		\$6.80/day
O-1	320.10	13.20	434.40		
O-3E	517.50	22.20	611.70	When rations in-kind are not available	\$7.08/day
O-2E	440.10	17.70	552.00		\$7.67/day
O-1E	378.30	13.20	510.00	When assigned to duty under emergency conditions where no US mess facilities are available	\$9.39/day
E-9	443.40	18.60	584.40		\$10.16/day
E-8	407.10	15.30	538.40		
E-7	347.40	12.00	500.70		
E-6	314.70	9.90	462.30		
E-5	290.10	8.70	415.50		
E-4	252.30	8.10	361.50		
E-3	247.80	7.80	336.30		
E-2	201.30	7.20	320.10		
E-1	179.10	6.90	320.10		

Uniformed service members without dependents are due payment of these full rates of basic allowance for quarters. Partial rate payments are due uniformed service members without dependents who do not qualify for the full rate. Service Academy cadet pay is \$543.90 monthly, effective January 1, 1990.

## Annual Pay for Federal Civilians

(Effective January 1, 1993)

### 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	\$11,903	\$12,300	\$12,695	\$13,090	\$13,487	\$13,720	\$14,109	\$14,503	\$14,521	\$14,891
GS-2	13,382	13,701	14,145	14,521	14,683	15,115	15,547	15,979	16,411	16,843
GS-3	14,603	15,090	15,577	16,064	16,551	17,038	17,525	18,012	18,499	18,986
GS-4	16,393	16,939	17,485	18,031	18,577	19,123	19,669	20,215	20,761	21,307
GS-5	18,340	18,951	19,562	20,173	20,784	21,395	22,006	22,617	23,228	23,839
GS-6	20,443	21,124	21,805	22,486	23,167	23,848	24,529	25,210	25,891	26,572
GS-7	22,717	23,474	24,231	24,988	25,745	26,502	27,259	28,016	28,773	29,530
GS-8	25,159	25,998	26,837	27,676	28,515	29,354	30,193	31,032	31,871	32,710
GS-9	27,789	28,715	29,641	30,567	31,493	32,419	33,345	34,271	35,197	36,123
GS-10	30,603	31,623	32,643	33,663	34,683	35,703	36,723	37,743	38,763	39,783
GS-11	33,623	34,744	35,865	36,986	38,107	39,228	40,349	41,470	42,591	43,712
GS-12	40,298	41,641	42,984	44,327	45,670	47,013	48,356	49,699	51,042	52,385
GS-13	47,920	49,517	51,114	52,711	54,308	55,905	57,502	59,099	60,696	62,293
GS-14	56,627	58,515	60,403	62,291	64,179	66,067	67,955	69,843	71,731	73,619
GS-15	66,609	68,829	71,049	73,269	75,489	77,709	79,929	82,149	84,369	86,589

### Senior Executive Service

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
\$92,900	\$97,400	\$101,800	\$107,300	\$111,800	\$115,700

Beginning in January 1994, locality-based comparability payments are applied to General Schedule (GS) and Senior Executive Service (SES) positions in the continental United States. In other words, pay will be higher in areas of the US where the cost of living is higher. Because there are twenty-eight locality pay areas recognized by the Office of Personnel Management, there are in effect twenty-eight different GS and SES pay schedules based on the schedule above. Locality pay adjustments do not apply to employees already receiving special pay rates that exceed the locality differential nor to overseas employees.

### Hazardous Duty Pay

Pay Grade	Monthly Rate
O-10	\$110
O-9	110
O-8	110
O-7	110
O-6	250
O-5	250
O-4	225
O-3	175
O-2	150
O-1	125
E-9	200
E-8	200
E-7	200
E-6	175
E-5	150
E-4	125
E-3	110
E-2	110
E-1	110

### Aviation Career Incentive Pay

Phase I		Phase II	
Monthly Rate	Years of Aviation Service as an Officer	Monthly Rate	Years of Service as an Officer
\$125	2 or fewer	\$585	more than 18
156	more than 2	495	more than 20
188	more than 3	385	more than 22
206	more than 4	250	more than 25
650	more than		

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 twenty-fifth year of service. Grades O-6 and below with more than twenty-five years of service may receive \$250 per month for continued operational flying.

### Monthly Military Basic Rates of Pay

(Effective January 1, 1994)

Pay Grade	Years of Service														
	< 2	2	3	4	6	8	10	12	14	16	18	20	22	24	26
<b>Commissioned Officers<sup>a</sup></b>															
O-10	\$6,802	\$7,041	\$7,041	\$7,041	\$7,041	\$7,311	\$7,311	\$7,716	\$7,716	\$8,268	\$8,268	\$8,822	\$8,822	\$8,822	\$9,371 <sup>b</sup>
O-9	6,028	6,186	6,317	6,317	6,317	6,478	6,478	6,748	6,748	7,311	7,311	7,716	7,716	7,716	8,268
O-8	5,460	5,624	5,757	5,757	5,757	6,186	6,186	6,478	6,478	6,748	7,041	7,311	7,491	7,491	7,491
O-7	4,537	4,845	4,845	4,845	5,062	5,062	5,356	5,356	5,624	6,186	6,611	6,611	6,611	6,611	6,611
O-6	3,362	3,694	3,936	3,936	3,936	3,936	3,936	3,936	4,070	4,714	4,954	5,062	5,356	5,537	5,809
O-5	2,689	3,158	3,376	3,376	3,376	3,376	3,376	3,376	3,665	3,911	4,204	4,445	4,580	4,739	4,739
O-4	2,267	2,760	2,945	2,945	2,945	3,133	3,133	3,343	3,533	3,694	3,857	3,963	3,963	3,963	3,963
O-3 <sup>c</sup>	2,106	2,355	2,518	2,786	2,786	2,919	3,024	3,188	3,345	3,427	3,427	3,427	3,427	3,427	3,427
O-2 <sup>c</sup>	1,837	2,006	2,410	2,491	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543
O-1 <sup>c</sup>	1,595	1,660	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006
<b>Commissioned Officers With More Than Four Years of Active-Duty Enlisted Service</b>															
O-3E	—	—	—	2,786	2,919	3,024	3,188	3,345	3,478	3,478	3,478	3,478	3,478	3,478	3,478
O-2E	—	—	—	2,491	2,543	2,624	2,760	2,866	2,945	2,945	2,945	2,945	2,945	2,945	2,945
O-1E	—	—	—	2,006	2,143	2,222	2,303	2,383	2,491	2,491	2,491	2,491	2,491	2,491	2,491
<b>Enlisted Members</b>															
E-9	—	—	—	—	—	—	2,497	2,553	2,611	2,671	2,730	2,783	2,929	3,043	3,214
E-8	—	—	—	—	—	2,094	2,154	2,210	2,268	2,328	2,381	2,440	2,583	2,698	2,870
E-7	1,462	1,578	1,636	1,694	1,751	1,807	1,865	1,923	2,010	2,067	2,125	2,152	2,297	2,411	2,583
E-6	1,258	1,371	1,428	1,489	1,544	1,600	1,659	1,744	1,799	1,857	1,885	1,885	1,885	1,885	1,885
E-5	1,103	1,201	1,260	1,314	1,401	1,458	1,516	1,571	1,600	1,600	1,600	1,600	1,600	1,600	1,600
E-4	1,029	1,087	1,151	1,240	1,289	1,289	1,289	1,289	1,289	1,289	1,289	1,289	1,289	1,289	1,289
E-3	970	1,023	1,064	1,106	1,106	1,106	1,106	1,106	1,106	1,106	1,106	1,106	1,106	1,106	1,106
E-2	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933
E-1 <sup>d</sup>	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833

Amounts have been rounded to the nearest dollar. Basic pay while serving as Chairman of the Joint Chiefs of Staff is \$10,340.10; as Chief of Staff of the Air Force, \$9,016.80, regardless of cumulative years of service. Basic pay while serving as Chief Master Sergeant of the Air Force is \$3,906.90, regardless of cumulative years of service.

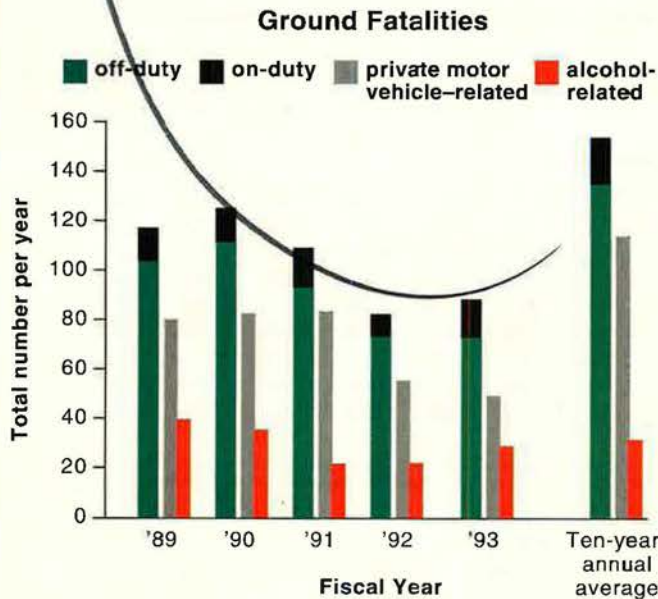
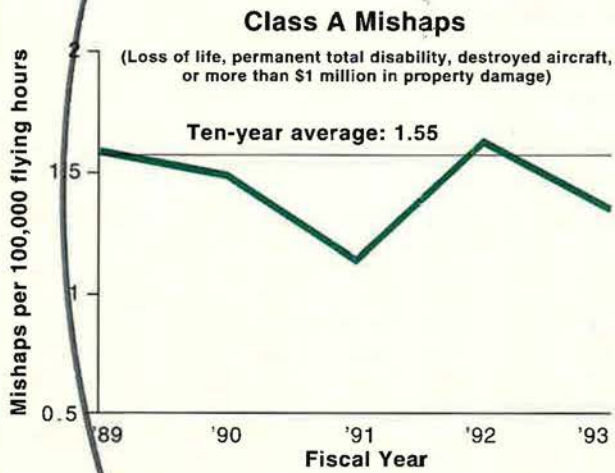
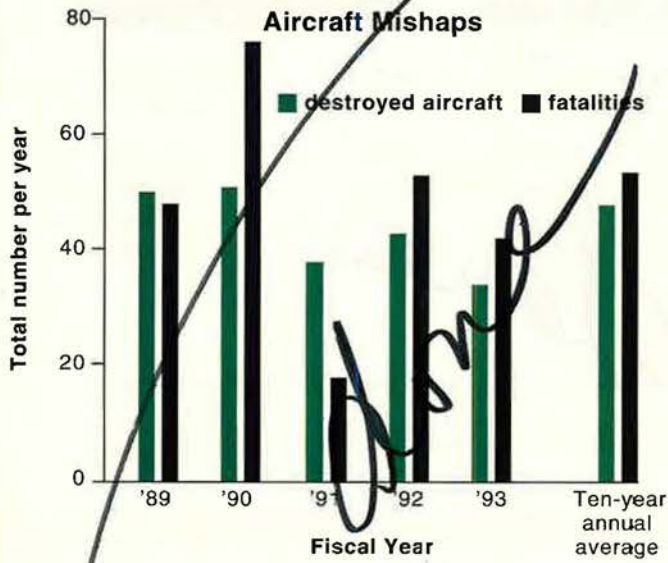
<sup>a</sup>Basic pay is limited to \$9,016.80, regardless of cumulative years of service.

<sup>b</sup>Amount used for benefits calculation only; actual basic pay rate does not exceed legal cap of \$9,016.80.

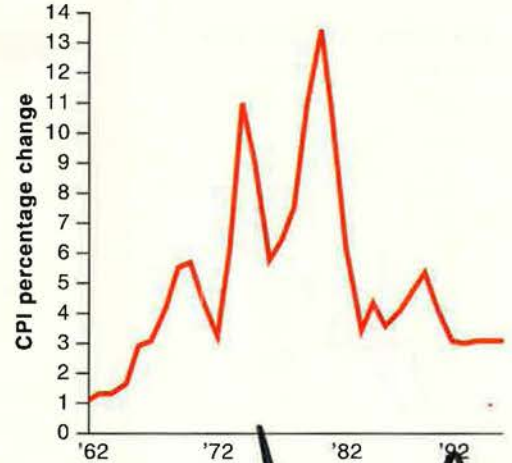
<sup>c</sup>Does not apply to commissioned officers who have been credited with more than four years' active service as enlisted members.

<sup>d</sup>Basic pay for E-1s with less than four months of service is \$770.10.

## Air Force Flight Safety

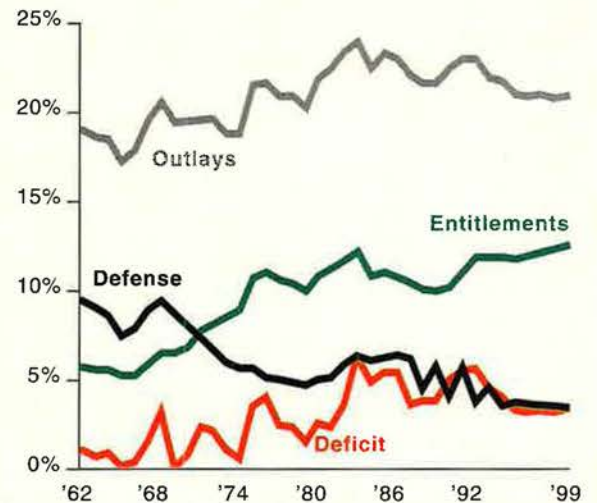


## Inflation Rates



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

Figures are from the Congressional Budget Office.



### Federal Budget Categories

(Current \$ billions)

Year	Outlays	Deficit	Entitlements	Defense
1962	\$106.8	\$5.9	\$32.3	\$52.6
1963	111.3	4.0	33.6	53.7
1964	118.5	6.5	35.7	55.0
1965	118.2	1.6	36.1	51.0
1966	134.5	3.1	39.9	59.0
1967	157.5	12.6	47.4	72.0
1968	178.1	27.7	56.1	82.2
1969	183.6	0.5	61.2	82.7
1970	195.6	8.7	68.7	81.9
1971	210.2	26.1	82.7	79.0
1972	230.7	26.4	96.8	79.3
1973	245.7	15.4	112.2	77.1
1974	269.4	8.0	127.1	80.7
1975	332.3	55.3	164.4	87.6
1976	371.8	70.5	189.7	89.9
1977	409.2	49.8	206.6	97.5
1978	458.7	54.9	228.4	104.6
1979	503.5	38.2	248.2	116.8
1980	590.9	72.7	291.5	134.6
1981	678.2	74.0	340.6	158.0
1982	745.8	120.1	372.7	185.9
1983	808.4	208.0	411.6	209.9
1984	851.8	185.7	406.3	228.0
1985	916.4	227.7	450.0	253.1
1986	990.2	238.0	459.7	273.8
1987	1,003.5	169.3	470.2	282.5
1988	1,054.1	194.0	494.2	290.9
1989	1,143.2	205.2	526.2	304.0
1990	1,252.7	278.0	567.4	300.1
1991	1,323.8	321.7	634.2	319.7
1992	1,380.9	340.5	711.7	302.6
1993	1,408.1	300.8	760.9	292.5
1994	1,474.0	284.0	803.0	279.8
1995	1,509.0	242.0	844.0	270.7
1996	1,577.0	245.0	890.0	261.0
1997	1,661.0	267.0	960.0	256.4
1998	1,736.0	272.0	1,026.0	256.6
1999	1,834.0	304.0	1,099.0	257.5

### Federal Budget Categories

(Constant Fiscal 1995 \$ billions)

Year	Outlays	Deficit	Entitlements	Defense
1962	\$530.2	\$29.3	\$160.3	\$261.1
1963	547.0	19.7	165.1	263.9
1964	574.9	31.5	173.2	266.9
1965	566.1	7.7	172.9	244.3
1966	634.1	14.6	188.1	278.1
1967	721.6	57.7	217.2	329.9
1968	791.4	123.1	249.3	365.3
1969	783.0	2.1	261.0	352.7
1970	790.6	35.2	277.7	331.1
1971	803.8	99.8	316.3	302.1
1972	845.1	96.7	354.6	290.5
1973	872.1	54.7	398.2	273.7
1974	900.4	26.7	424.8	269.7
1975	1,000.5	166.5	495.0	263.8
1976	1,026.1	194.6	523.5	248.1
1977	1,067.4	129.9	538.9	254.3
1978	1,123.5	134.5	559.4	256.2
1979	1,146.1	87.0	565.0	265.9
1980	1,208.5	148.7	596.2	275.3
1981	1,221.1	33.3	613.7	284.7
1982	1,211.1	190.2	608.9	303.7
1983	1,248.0	320.0	633.2	322.9
1984	1,259.0	276.8	605.6	339.9
1985	1,352.5	316.8	643.1	361.7
1986	1,365.1	328.3	634.2	377.7
1987	1,359.1	229.2	636.5	382.4
1988	1,390.5	253.5	645.8	380.1
1989	1,435.0	257.6	660.5	381.6
1990	1,500.5	333.0	679.6	359.5
1991	1,504.4	365.6	720.7	363.3
1992	1,507.0	371.1	775.6	330.0
1993	1,489.4	318.4	805.0	309.4
1994	1,513.8	291.7	824.7	287.4
1995	1,509.0	242.0	844.0	270.7
1996	1,528.1	237.4	862.4	252.9
1997	1,559.6	250.7	901.4	240.7
1998	1,579.5	247.5	933.5	233.5
1999	1,616.9	268.0	968.9	227.0

Figures in the tables above left and below are from the Congressional Budget Office and DoD; above right, derived from CBO. Fiscal 1994-99 figures are projections.

### Federal Budget Categories as Percentages of GDP

Year	Outlays	Deficit	Entitlements	Defense	Year	Outlays	Deficit	Entitlements	Defense
1962	19.3	1.1	5.8	9.5	1981	22.9	2.5	11.5	5.3
1963	19.0	0.7	5.7	9.2	1982	23.9	3.8	11.9	6.0
1964	18.9	1.0	5.7	8.8	1983	24.4	6.3	12.4	6.3
1965	17.6	0.2	5.4	7.6	1984	23.0	5.0	11.0	6.2
1966	18.2	0.4	5.4	8.0	1985	23.8	5.6	11.3	6.4
1967	19.9	1.6	6.0	9.1	1986	23.5	5.6	10.9	6.5
1968	21.0	3.3	6.6	9.7	1987	22.5	3.8	10.6	6.3
1969	19.8	0.1	6.6	8.9	1988	22.1	4.0	10.3	6.0
1970	19.9	0.9	7.0	8.3	1989	22.1	4.0	10.2	5.9
1971	20.0	2.5	7.9	7.5	1990	22.8	5.1	10.3	5.5
1972	22.1	2.3	8.4	8.9	1991	23.3	5.7	11.2	5.6
1973	19.2	1.2	8.3	6.1	1992	23.2	5.7	12.0	5.1
1974	19.2	0.6	9.1	5.8	1993	22.4	4.8	12.1	4.6
1975	22.0	3.7	10.9	5.8	1994	22.2	4.2	12.1	4.2
1976	22.1	4.2	11.3	5.3	1995	21.5	3.4	12.0	3.9
1977	21.3	2.6	10.8	5.1	1996	21.3	3.3	12.1	3.5
1978	21.3	2.5	10.6	4.9	1997	21.4	3.4	12.3	3.2
1979	20.7	1.6	10.2	4.8	1998	21.2	3.3	12.5	3.1
1980	22.3	2.7	11.0	5.1	1999	21.3	3.5	12.8	3.0

## The Civilian Force

(As of September 30, 1993)

General Schedule/Other		Wage Grade Positions	
Grade	Force	Grade	Force
1	73	1	81
2	150	2	769
3	1,695	3	468
4	7,510	4	256
5	14,984	5	2,302
6	8,097	6	1,671
7	10,952	7	2,827
8	1,602	8	5,439
9	15,014	9	5,001
10	1,002	10	16,484
11	17,381	11	4,552
12	20,863	12	2,057
13	9,562	13	299
14	3,881	14	129
15	1,312	15	2
16	0	<b>Total</b>	<b>42,337</b>
17	0		
18	0		
ST <sup>a</sup>	25		
SES <sup>b</sup>	172		
<b>Total</b>	<b>114,275</b>		

Wage Grade Leader Positions		Wage Grade Supervisory Positions	
Grade	Force	Grade	Force
1	1	1	23
2	13	2	38
3	6	3	45
4	2	4	91
5	38	5	169
6	37	6	287
7	49	7	378
8	109	8	619
9	285	9	1,007
10	772	10	1,435
11	134	11	535
12	35	12	263
13	0	13	180
14	0	14	275
15	0	15	176
<b>Total</b>	<b>1,481</b>	16	108
		17	62
		18	8
		<b>Total</b>	<b>5,699</b>

### Air Force Civilian Personnel: Average Age and Length of Service

Average length of service (overall)	15 years
General schedule	15 years
Federal wage system	16 years
Average age	45 years

Wage grades apply to full-time employees. Table does not include ANG technicians, local national employees, or nonappropriated-fund employees.

<sup>a</sup>Scientific and Technical

<sup>b</sup>Senior Executive Service

## Aircraft per Active-Duty USAF Squadron

(End FY 1993)

Aircraft Type	Number
A/OA-10	18
B-1B	11, 12, 16, or 17
B-52	10, 12-14, 16, or 19
C-5	11-18
C-9A	3-11
C-130	8, 10, 12, 13, 14, or 16
AC-130	9
EC-130H	5
HC-130P/N	5 or 10
MC-130	4, 6, or 10
MH-53J	4, 5, or 19
MH-60G	9
KC-10A	9 or 10
KC-135	8-12
C-141B	12-17
E-3	2 or 7
F-4	18
F-4G	18
RF-4	18
F-15	18 or 24
F-15E	18 or 24
F-16	18 or 24
F-111	18 or 24
EF-111A	24
F-117A	18
HH-60G	4, 5, or 8

For some types of aircraft, squadrons vary in size, as shown here. HC-130s, WC-130s, T-39s, and T-38s are counted as Total Unit Equipment, not by squadrons.





The T-Bird II from Lockheed/Aermacchi/  
Rolls-Royce plc/Textron Aerostructures

**Lockheed leads.**

## The fastest way to climb the learning curve.

The U.S. Air Force and Navy will soon choose their first new primary training aircraft in more than 30 years. The Lockheed team is offering the low-risk T-Bird II. The T-Bird II promises the entry-level student an aircraft that balances excellent low-end handling characteristics with the ability to fly faster and push the training envelope farther than any other plane in the JPATS competition.

The T-Bird II is here now: 190 are in service in eight countries, and more are coming off the line every day. The turbojet-powered T-Bird II will be quicker to get on station, and quicker to recover altitude lost between maneuvers. More training can be accomplished in the time allotted for each pilot.

It's clear that the T-Bird II will encompass that rare combination of training effectiveness and low risk, making it the best all-around value in the JPATS competition.

 **Lockheed**  
*Aeronautical Systems Company*

## USAF Total Force

	FY 1988	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994
<b>Air Force active-duty</b>							
Officers	105,100	103,700	100,000	96,600	90,400	84,073	80,876
Enlisted	466,900	462,800	430,800	409,400	375,700	356,126	340,724
<b>Total, Air Force military<sup>1</sup></b>	<b>572,000</b>	<b>566,500</b>	<b>530,800</b>	<b>506,000</b>	<b>466,100</b>	<b>440,199</b>	<b>421,600</b>
Career reenlistments (second-term)	51,500	39,400	44,600	41,500	49,100	38,300	42,600
Rate	86%	87%	82%	87%	88%	90%	90%
First-term reenlistments	26,500	18,100	23,600	22,500	21,000	17,600	12,200
Rate	50%	59%	51%	59%	59%	61%	59%
<b>Civilian personnel</b>							
Direct hire (excluding technicians)	208,600	214,917	204,129	188,259	170,549	158,631	158,682
Technicians: AFRES	9,111	10,061	9,596	9,527	10,467	9,827	10,392
ANG	23,409	23,688	24,119	24,703	24,741	24,958	24,267
Indirect hire—foreign nationals	12,041	11,909	11,031	10,172	8,652	8,246	8,180
<b>Total civilian personnel</b>	<b>253,161</b>	<b>260,575</b>	<b>248,875</b>	<b>232,661</b>	<b>214,409</b>	<b>201,662</b>	<b>201,521</b>
<b>Total military and civilian</b>	<b>825,161</b>	<b>827,075</b>	<b>779,675</b>	<b>738,661</b>	<b>680,509</b>	<b>641,861</b>	<b>623,121</b>
<b>Guard and Reserve</b>							
Air National Guard, Selected Reserve	115,221	116,061	117,786	117,786	119,083	117,162	117,700
Air Force Reserve, paid	82,116	83,214	83,814	84,539	83,396	80,562	78,172
Air Force Reserve, nonpaid	51,658	49,553	68,714	75,002	74,330	111,509	113,600
<b>Total Ready Reserve</b>	<b>248,995</b>	<b>248,828</b>	<b>270,314</b>	<b>277,327</b>	<b>276,809</b>	<b>309,233</b>	<b>309,472</b>
Standby	21,772	17,299	15,369	14,234	16,000	13,042	12,000
<b>Total Guard and Reserve</b>	<b>270,767</b>	<b>266,127</b>	<b>285,683</b>	<b>291,561</b>	<b>292,809</b>	<b>322,275</b>	<b>321,472</b>

Numbers are rounded and may not sum to totals. FYs 1988-93 are actual figures; FY 1994 is an estimate.  
<sup>1</sup>Does not include cadets

## Total Number of USAF Aircraft in Service and Flying Hours

	FY 1987	FY 1988	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993
<b>Type of aircraft</b>							
Bomber	393	422	412	366	290	248	225
Tanker	576	567	578	555	539	478	391
Fighter/interceptor/attack	3,033	3,027	2,896	2,798	2,497	2,000	1,848
Reconnaissance/electronic warfare	432	424	416	346	303	238	241
Cargo/transport	848	859	825	824	812	794	749
Search & rescue (fixed wing)	35	33	35	36	32	56	84
Helicopter (includes rescue)	191	200	205	212	213	206	203
Trainer	1,595	1,543	1,540	1,535	1,415	1,313	1,150
Utility/observation/other	110	120	140	141	88	89	95
<b>Total active-duty</b>	<b>7,213</b>	<b>7,195</b>	<b>7,047</b>	<b>6,813</b>	<b>6,189</b>	<b>5,422</b>	<b>4,986</b>
Air National Guard total	1,732	1,730	1,735	1,719	1,793	1,694	1,653
Air Force Reserve total	502	491	497	500	528	524	543
<b>Total active-duty, ANG, and AFRES</b>	<b>9,447</b>	<b>9,416</b>	<b>9,279</b>	<b>9,032</b>	<b>8,510</b>	<b>7,640</b>	<b>7,182</b>
Total aircraft, including foreign-government-owned	9,501	9,500	9,355	9,130	8,603	7,733	7,276
<b>Flying hours (in thousands)</b>							
USAF active-duty	2,883	2,752	2,830	2,760	2,551	2,195	1,993
Air National Guard	431	437	427	442	458	441	442
Air Force Reserve	149	151	155	164	157	154	149
<b>Total flying hours</b>	<b>3,463</b>	<b>3,340</b>	<b>3,412</b>	<b>3,366</b>	<b>3,166</b>	<b>2,790</b>	<b>2,584</b>

## Aircraft Type and Total and Primary Aircraft Authorized

(As of December 31, 1993)

**Total:** Actual number of aircraft in operation. **Primary Aircraft Authorized (PAA):** Aircraft provided for the performance of the operational mission. The PAA form the basis for allocation of manpower, support equipment, and flying-hour funds. The operating command determines the PAA required to meet the assigned missions. PAA also include test and training requirements. In some cases, such as when delivery schedules are slipped, the total number of aircraft in operation might be less than the authorization.

Type	Total	PAA
<b>Bomber</b>		
B-1	95	86
B-2	6	6
B-52	136	118
<b>Total</b>	<b>237</b>	<b>210</b>
<b>Cargo/transport</b>		
C-5	82	76
C-9	23	22
C-12	72	72
C-17	11	5
C-18	1	1
C-20	13	13
C-21	78	78
C-23	3	3
C-27	10	9
C-130	199	148
C-135	10	9
C-137	7	6
C-141	243	227
CT-39	1	1
CT-43	2	2
NC-130	3	3
NC-131	1	1
NC-141	4	4
NT-39	3	2
VC-25	2	2
<b>Total</b>	<b>768</b>	<b>684</b>
<b>Electronic warfare/combat</b>		
F-4G	27	20
EF-111	40	26
<b>Total</b>	<b>67</b>	<b>46</b>
<b>Fighter/attack</b>		
A-10	126	107
OA-10	89	72
OA-37	2	2
F-15	689	600
F-16	625	712
F-111	135	107
F-117	54	47
NF-16	1	1
YF-15	4	4
YF-16	1	1
YF-117	3	0
<b>Total</b>	<b>1,729</b>	<b>1,653</b>
<b>Helicopter</b>		
CH-53	5	0
HH-1	26	19
HH-3	6	6
HH-60	24	20
TH-53	6	4
UH-1	68	55
UH-60	18	0
NCH-53	2	0
<b>Total</b>	<b>155</b>	<b>104</b>

Type	Total	PAA
<b>Reconnaissance/battle management/C<sup>3</sup>I</b>		
DC-130	1	1
E-3	34	29
E-4	4	3
E-8	2	0
E-9	0	2
EC-18	6	6
EC-130	23	16
EC-135	21	16
EC-137	1	1
RC-135	19	15
<b>Total</b>	<b>111</b>	<b>89</b>
<b>Special Operations Forces</b>		
AC-130	19	18
HC-130	28	25
MC-130	31	27
MH-53	41	33
MH-60	16	14
<b>Total</b>	<b>135</b>	<b>117</b>
<b>Tanker</b>		
HC-130	6	6
KC-10	59	57
KC-135	316	264
NKC-135	3	3
<b>Total</b>	<b>384</b>	<b>330</b>
<b>Trainer</b>		
T-1	67	34
AT-38	47	37
T-37	531	340
T-38	618	441
T-39	4	4
T-41	100	47
T-43	12	12
NT-33	1	1
TC-135	2	2
TG-3	4	4
TG-4	10	10
TG-7	9	9
TG-9	4	4
<b>Total</b>	<b>1,409</b>	<b>945</b>
<b>Other</b>		
U-26	1	0
OA-37	2	2
UV-18	2	2
<b>Total</b>	<b>5</b>	<b>4</b>
<b>Total active-duty</b>	<b>5,000</b>	<b>4,182</b>

## USAF Personnel by Geographic Area

(As of September 30, 1993)

<b>Total military personnel</b>	<b>444,351</b>
<b>US territory and special locations</b>	<b>364,868</b>
<b>Total in foreign countries</b>	<b>79,483</b>
<hr/>	
<b>Western and southern Europe</b>	<b>42,688</b>
Germany	17,767
UK	13,661
Turkey	3,663
Italy	2,063
Spain	477
All other countries	5,057
<b>East Asia and Pacific</b>	<b>27,428</b>
Japan/Okinawa	15,403
South Korea	9,140
Guam	2,489
All other countries	396
<b>Africa, Near East, south Asia</b>	<b>355</b>
Saudi Arabia	188
Egypt	45
All other countries	122
<b>Western hemisphere</b>	<b>2,514</b>
Panama	2,292
Canada	102
All other countries	120
<b>Other areas</b>	<b>6,498</b>

## The Air National Guard Fleet

(As of September 30, 1993)

	Age in Years									Average	Total number
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24+		
A-10	—	—	—	32	71	—	—	—	—	12.9	103
C-5	—	—	—	—	—	—	1	11	—	22.5	12
C-12	—	6	6	—	—	—	—	—	—	6.9	12
C-21	—	—	4	—	—	—	—	—	—	6.0	4
C-22	—	—	4	—	—	—	—	—	—	8.7	4
C-26	18	11	—	—	—	—	—	—	—	2.4	29
C-130	25	22	31	14	19	—	—	—	96	17.7	207
KC-135	—	—	—	—	—	—	—	—	184	33.7	184
C-141	—	—	—	—	—	—	—	—	16	27.2	16
HH-60	2	14	—	—	—	—	—	—	—	4.2	16
F-4	—	—	—	—	—	—	—	30	48	25.7	78
F-15	—	—	—	—	29	123	2	—	—	15.8	154
F-16	24	150	202	319	135	—	—	—	—	8.9	830
T-43	—	—	—	—	—	—	3	—	—	19.4	3
<b>Total</b>	<b>69</b>	<b>203</b>	<b>247</b>	<b>365</b>	<b>254</b>	<b>123</b>	<b>6</b>	<b>41</b>	<b>344</b>	<b>14.6</b>	<b>1,652</b>
<b>Percent<sup>a</sup></b>	<b>4</b>	<b>12</b>	<b>15</b>	<b>22</b>	<b>15</b>	<b>7</b>	<b>&lt;1</b>	<b>3</b>	<b>21</b>		<b>100</b>

<sup>a</sup>Percentages have been rounded.

## The Air Force Reserve Fleet

(As of December 21, 1993)

	Age in Years									Average	Total number
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24+		
B-52H	—	—	—	—	—	—	—	—	2	32.5	2
A/OA-10	—	—	—	—	72	—	—	—	—	13.8	72
AC-130A	—	—	—	—	—	—	—	—	10	38.3	10
C-130E	—	—	—	—	—	—	—	—	45	30.4	45
C-130H	17	24	10	6	—	—	—	—	—	6.5	57
HC-130N	—	—	—	—	—	—	—	4	—	24.0	4
HC-130P	—	—	—	—	—	—	—	—	6	28.8	6
WC-130H	—	—	—	—	—	—	—	—	10	28.2	10
C-141B	—	—	—	—	—	—	—	—	34	27.6	34
KC-135E	—	—	—	—	—	—	—	—	30	34.9	30
KC-135R	—	—	—	—	—	—	—	—	21	32.6	21
F-16A/B/C/D	—	1	76	49	65	—	—	—	—	10.3	191
C-5A	—	—	—	—	—	—	—	22	10	24.7	32
HH-60G	16	9	—	—	—	—	—	—	—	3.4	25
<b>Total</b>	<b>33</b>	<b>34</b>	<b>86</b>	<b>55</b>	<b>137</b>	<b>—</b>	<b>—</b>	<b>26</b>	<b>168</b>	<b>17.2</b>	<b>539</b>
<b>Percent<sup>a</sup></b>	<b>6</b>	<b>6</b>	<b>16</b>	<b>10</b>	<b>25</b>	<b>—</b>	<b>—</b>	<b>5</b>	<b>31</b>		<b>100</b>

<sup>a</sup>Percentages have been rounded.

### Air Defense Unit Fin Flashes

Description	Aircraft	Unit and Location
<b>Air National Guard Units</b>		
Minuteman over Massachusetts	F-15A/B	102d FW, Otis ANGB, Mass.
Red stripe with "Happy Hooligans" logo	F-16A/B	119th FG, Hector Field, N. D.
Dark gray bison's skull against prairie/mountain profile	F-16A/B	120th FG, Great Falls IAP, Mont.
Subdued hawk with banner in talons	F-15A/B	123d FS (142d FG), Portland IAP, Ore.
White lightning bolt on gray field	F-16A/B	125th FG, Jacksonville IAP, Fla.
Black falcon with talons extended and "California" logo	F-16A/B	144th FW, Fresno Air Terminal, Calif.
Texas star on subdued jagged stripes with "Houston" logo	F-16A/B	147th FG, Ellington Field, Tex.
Stars of Little Dipper constellation and "Duluth" logo	F-16A/B	148th FG, Duluth IAP, Minn.
Black falcon with "Vermont" on subdued stripe	F-16A/B	158th FG, Burlington, Vt.
Stylized "Jersey Devil" and "New Jersey" logo	F-16A/B	177th FG, Atlantic City Airport, N. J.
<b>Air Defense Training Units (ANG)</b>		
Subdued eagle and "Oregon" logo	F-16A/B	114th FS (142d FG), Kingsley Field, Ore.
Starburst state flag and "Arizona" logo	F-16A/B	162d FTS, Tucson, Ariz.

### USAF Flying Squadrons by Mission Type

	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994 1st quarter
<b>Active forces</b>						
Strategic bomber	24	21	18	17	15	15
Air refueling	35	35	35	32	31	28
Strategic command & control	6	6	6	6	2	—
Intelligence	3	3	3	3	3	—
Strategic reconnaissance	1	0	0	0	0	0
Strategic interceptor	1	0	0	0	0	0
Fighter	79	79	70	61	61	56
Tactical reconnaissance	5	5	1	0	0	0
Tactical electronic warfare	4	4	2	3	3	3
Special operations forces	11	11	11	11	11	12
Tactical air command & control	3	3	3	9	9	—
Tactical air control	7	7	7	1	5	—
Weather	1	1	1	1	1	—
Rescue	7	7	7	8	8	8
Tactical airlift	12	12	12	12	12	11
Strategic airlift	20	21	21	21	21	17
Special mission	1	2	2	2	2	—
Aeromedical airlift	3	3	3	3	3	3
GLCM	3	2	0	0	0	0
ICBM	20	20	20	19	19	19
Space operations	3	4	6	8	8	6
Space communications	3	3	3	3	3	3
Space warning	7	7	7	7	7	10
Surveillance	5	8	8	9	9	7
Space launch	0	2	2	3	3	5
Range	0	0	3	3	3	2
<b>Total</b>	<b>264</b>	<b>266</b>	<b>251</b>	<b>242</b>	<b>239</b>	<b>205</b>
<b>Reserve forces</b>						
ANG Selected Reserve	91	91	92	91	92	93
Air Force Reserve	58	58	58	59	59	59
Space operations	0	0	0	0	1	1
<b>Total</b>	<b>149</b>	<b>149</b>	<b>150</b>	<b>150</b>	<b>152</b>	<b>153</b>
<b>Grand total</b>	<b>413</b>	<b>415</b>	<b>401</b>	<b>392</b>	<b>391</b>	<b>358</b>

## The Active-Duty Fleet

(As of September 30, 1993)

	Age in Years									Average	Total number
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24+		
A/OA-10	—	—	—	114	99	—	—	—	—	11.8	213
OA-37	—	—	—	—	—	1	2	1	—	18.9	4
B-1	—	31	64	—	—	—	—	—	—	6.3	95
B-2	5	1	—	—	—	—	—	—	—	2.0	6
B-52	—	—	—	—	—	—	—	—	124	32.2	124
C-5	—	31	19	—	—	—	12	20	—	11.9	82
C-9	—	—	—	—	—	—	3	12	8	22.5	23
C-10 (KC-10)	—	3	32	19	5	—	—	—	—	8.7	59
C-12	—	—	15	30	1	24	2	—	—	12.1	72
C-17	8	—	—	—	—	—	—	—	—	0.9	8
C-18 <sup>a</sup>	—	—	—	7	—	—	—	—	—	11.4	7
C-20	—	—	10	3	—	—	—	—	—	7.1	13
C-21	—	—	52	27	—	—	—	—	—	8.7	79
C-23	—	—	3	—	—	—	—	—	—	8.9	3
C-25	1	1	—	—	—	—	—	—	—	2.9	2
C-27	10	—	—	—	—	—	—	—	—	1.3	10
C-130 <sup>b</sup>	17	8	13	—	—	31	40	39	180	22.9	328
C-131	—	—	—	—	—	—	—	—	1	38.5	1
C-135 <sup>b</sup>	—	—	—	—	—	—	—	—	386	31.8	386
C-137	1	—	2	—	—	—	1	—	4	21.5	8
C-141	—	—	—	—	—	—	—	—	202	27.1	202
E-3	—	—	—	9	11	14	—	—	—	13.9	34
E-4	—	—	—	—	—	—	4	—	—	19.3	4
E-8	2	—	—	—	—	—	—	—	—	2.7	2
E-9	2	—	—	—	—	—	—	—	—	1.0	2
F-4 <sup>b</sup>	—	—	—	—	—	1	—	39	12	23.4	52
F-15	96	124	113	123	202	24	5	—	—	8.7	687
F-16	279	347	117	26	18	—	—	—	—	4.2	787
F-106	1	—	—	—	—	—	—	—	1	18.0	2
F-111	—	—	—	—	—	8	18	100	42	22.4	168
F-117 <sup>c</sup>	58	—	—	—	—	—	—	—	—	2.4	58
G-3	3	1	—	—	—	—	—	—	—	2.2	4
G-4	1	1	—	1	3	4	—	—	—	11.7	10
G-7	—	4	—	5	—	—	—	—	—	8.0	9
G-9	—	—	4	—	—	—	—	—	—	6.6	4
H-1	—	—	—	—	—	—	23	68	—	22.1	91
H-3	—	—	—	—	—	—	—	6	3	24.0	9
H-53	—	8	—	—	—	—	3	25	13	20.4	49
H-60	26	18	—	10	—	—	—	—	—	4.4	54
T-1A	49	—	—	—	—	—	—	—	—	0.8	49
T-33	—	—	—	—	—	—	—	—	1	41.9	1
T-37	—	—	—	—	—	—	—	8	488	30.7	496
T-38	—	—	—	—	—	—	—	74	485	26.5	559
T-39	—	—	—	—	—	—	—	—	8	32.0	8
T-41	—	—	—	—	—	—	—	6	64	25.7	70
T-43	—	—	—	—	—	—	12	—	—	19.6	12
U-26	—	—	—	1	—	—	—	—	—	10.0	1
UV-18	—	—	—	—	—	2	—	—	—	16.0	2
<b>Total</b>	<b>559</b>	<b>578</b>	<b>444</b>	<b>375</b>	<b>339</b>	<b>109</b>	<b>125</b>	<b>398</b>	<b>2,022</b>	<b>17.7</b>	<b>4,949</b>
<b>Percent<sup>d</sup></b>	<b>11</b>	<b>12</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>2</b>	<b>3</b>	<b>8</b>	<b>41</b>		<b>100</b>

<sup>a</sup>Includes EC-18

<sup>b</sup>Includes all types

<sup>c</sup>Includes YF-117

<sup>d</sup>Percentages have been rounded.

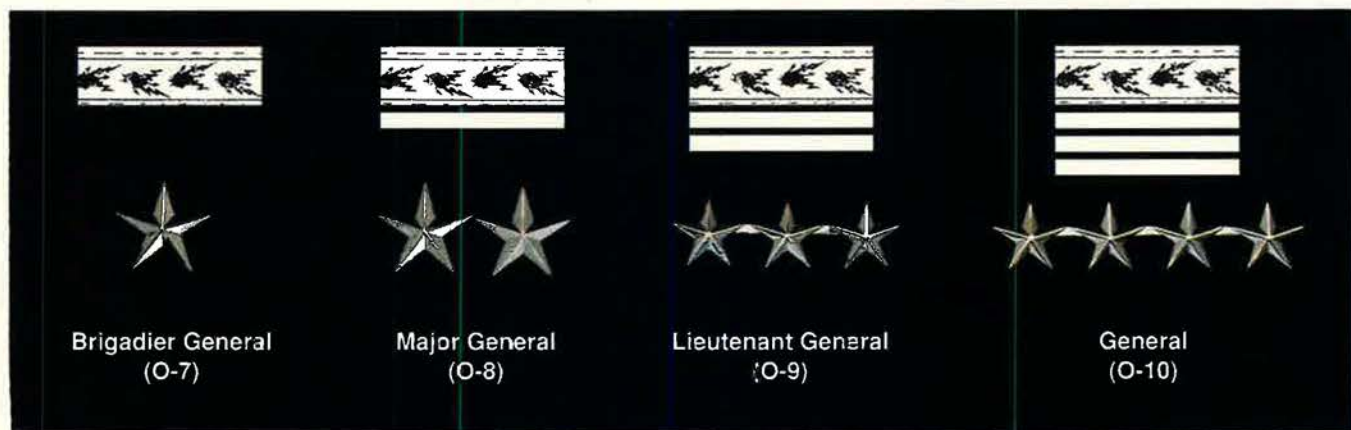
## USAF Aircraft Tail Markings (As of April 1, 1994)

Code	Aircraft	Unit, Location, and Command	Code	Aircraft	Unit, Location, and Command
AK	F-16C/D, OA-10A	354th FW, Eielson AFB, Alaska (PACAF)	MJ	F-16C/D, HH-60G	432d FW, Misawa AB, Japan (PACAF)
AK	F-15C/D/E, C-130H, C-12, E-3B/C	3d Wing, Elmendorf AFB, Alaska (PACAF)	MK	C-130H	440th AW, General Mitchell IAP/ARS, Wis. (AFRES)
AL	F-16C/D	187th FG, Dannelly Field, Ala. (ANG)	MM	UH-1N	341st MW, Malmstrom AFB, Mont. (AFSPC)
AU	C-21A	502d ABW, Maxwell AFB, Ala. (AETC)	MN	C-130E	133d AW, Minneapolis-St. Paul IAP/ARS, Minn. (ANG)
AV	F-16C/D	31st FW, Aviano AB, Italy (USAFE)	MO	KC-135R, F-15C/D/E, F-16C, T-38A	366th Wing, Mountain Home AFB, Idaho (ACC)
BB	T-38A, U-2R	9th RW, Beale AFB, Calif. (ACC)	MS	C-130E	934th AG, Minneapolis-St. Paul IAP/ARS, Minn. (AFRES)
BC	A/OA-10A	110th FG, W. K. Kellogg Airport, Mich. (ANG)	MT	B-52H, T-38A HH-1H	5th BW, Minot AFB, N. D. (ACC) 91st MW, Minot AFB, N. D. (AFSPC)
BD	A/OA-10A, B-52H	917th Wing, Barksdale AFB, La. (AFRES)	MX	C-130H	403d AW, Maxwell AFB, Ala. (AFRES)
BH	RF-4C	117th RW, Birmingham Airport, Ala. (ANG)	MY	F-16C/D	347th FW, Moody AFB, Ga. (ACC)
CB	T-37B, AT-38B, T-38A	14th FTW, Columbus AFB, Miss. (AETC)	NF	C-130H	914th AG, Niagara Falls IAP/ARS, N. Y. (AFRES)
CC	F-111E/F, EF-111A	27th FW, Cannon AFB, N. M. (ACC)	NM	F-16C/D	150th FG, Kirtland AFB, N. M. (ANG)
CI	C-130E	146th AW, Channel Islands ANG, Calif. (ANG)	NO	F-16C/D	926th FG, NAS New Orleans, La. (AFRES)
CO	F-16C/D	140th FW, Buckley ANGB, Colo. (ANG)	NY	F-16C/D	174th FW, Hancock Field, N. Y. (ANG)
CS	C-21A	21st SPW, Peterson AFB, Colo. (AFSPC)	OF	C-135 (all variations except OC-135B), C-21A, T-38A	55th Wing, Offutt AFB, Neb. (ACC)
CT	A-10A	103d FG, Bradley IAP, Conn. (ANG)	OH	F-16C/D	180th FG, Toledo Express Airport, Ohio (ANG)
DB	C-130H	94th AW, Dobbins ARB, Ga. (AFRES)		F-16C/D	178th FG, Springfield-Beckley MAP, Ohio (ANG)
DC	F-16C/D	113th FW, Andrews AFB, Md. (ANG)	OK	F-16C/D EC-135K, C-135E, E-3B/C, TC-18E	138th FG, Tulsa IAP, Okla. (ANG) 552d ACW, Tinker AFB, Okla. (ACC)
DM	A/OA-10A, EC-130H	355th Wing, Davis-Monthan AFB, Ariz. (ACC)	OS	OA-10A, F16C/D, HH-60G, C-12F	51st FW, Osan AB, South Korea (PACAF)
DO	F-16A/B	906th FG, Wright-Patterson AFB, Ohio (AFRES)	OT	F-15A/B/C/D, F-16A/B/C/D	USAFAWC, Eglin AFB, Fla. (ACC)
DY	B-1B, C-130H, T-38A	7th Wing, Dyess AFB, Tex. (ACC)	OZ	B-1B, T-38A	384th BG, McConnell AFB, Kan. (ACC)
ED	Various	412th TW, Edwards AFB, Calif. (AFMC)	PA	OA-10A	111th FG, Willow Grove ARS, Pa. (ANG)
EG	F-15C/D	33d FW, Eglin AFB, Fla. (ACC)	PD	HC-130P, HH-60G	939th RQW, Portland IAP, Ore. (AFRES)
EL	B-1B, T-38A HH-1H	28th BW, Ellsworth AFB, S. D. (ACC) 44th MW, Ellsworth AFB, S. D. (AFSPC)	PF	C-130E/H	302d AW, Peterson AFB, Colo. (AFRES)
EN	T-37B, T-38A, AT-38B	80th FTW, Sheppard AFB, Tex. (AETC)	PI	C-130H	911th AG, Pittsburgh IAP/ARS, Pa. (AFRES)
ET	F-15A/B/C/D/E, F-16A/B/C/D, F-111F, UH-1N	46th TW, Eglin AFB, Fla. (AFMC)	PR	F-16A/B	156th FG, Puerto Rico IAP, Puerto Rico (ANG)
FC	B-52H, T-37B UH-1N	92d BW, Fairchild AFB, Wash. (ACC) 336th CTG, Fairchild AFB, Wash. (AETC)	RA	T-3A T-1A, C-21A, T-37B, T-38A, AT-38B, T-43A	12th FTW, Hondo Airport, Tex. (AETC) 12th FTW, Randolph AFB, Tex.
FE	UH-1N	90th MW, F. E. Warren AFB, Wyo. (AFSPC)	RG	C-130E/H	Warner Robins ALC, Robins AFB, Ga. (AFMC)
FF	C-21A, F-15C/D, UH-1N	1st FW, Langley AFB, Va. (ACC)	RS	F-16C/D	86th Wing, Ramstein AB, Germany (USAFE)
FL	HH-3E, HC-130N/P F-16A/B	1st FW, Patrick AFB, Fla. 125th FG, Jacksonville IAP, Fla. (ANG)	SA	F-16A/B	149th FG, Kelly AFB, Tex. (ANG)
FM	F-16A/B	939th RQW, Patrick AFB, Fla. (AFRES)	SH	F-16A/B	507th FG, Tinker AFB, Okla. (AFRES)
FS	F-16A/B	482d FW, Homestead ARB, Fla. (AFRES)	SI	F-16A/B	183d FG, Capital MAP, Ill. (ANG)
FT	A-10A, C-130E, F-16C/D	188th FG, Fort Smith MAP, Ark. (ANG) 23d Wing, Pope AFB, N. C. (ACC)	SJ	F-15E, KC-10A, T-38A	4th Wing, Seymour Johnson AFB, N. C. (ACC)
FW	F-16C/D	122d FW, Fort Wayne IAP, Ind. (ANG)	SL	F-15A/B	131st FW, Lambert-St. Louis IAP, Mo. (ANG)
GA	F-15A/B	116th FW, Dobbins ARB, Ga. (ANG)	SM	A-10A, EF-111A, F-111E/F, YF-117A	Sacramento ALC, McClellan AFB, Calif. (AFMC)
GF	B-1B, T-38A HH-1H	319th BG, Grand Forks AFB, N. D. (ACC) 321st MW, Grand Forks AFB, N. D. (AFSPC)	SP	A/OA-10A, F-15C/D, F-16C/D	52d FW, Spangdahlem AB, Germany (USAFE)
GR	B-52H, T-37B	416th BW, Griffiss AFB, N. Y. (ACC)	SW	A/OA-10A, F-16C/D	20th FW, Shaw AFB, S. C. (ACC)
HI	F-16C/D	419th FW, Hill AFB, Utah (AFRES)	TC	A/OA-10A	355th Wing, McChord AFB, Wash. (ACC)
HL	F-16C/D	388th FW, Hill AFB, Utah (ACC)	TF	F-16C/D	301st FW, Carswell ARB, Tex. (AFRES)
HO	F-117A, T-38A, AT-38B, HH-60G F-4E	49th FW, Holloman AFB, N. M. (ACC) Luftwaffe RTU, Holloman AFB, N. M.	TH	F-16A/B	181st FG, Hulman Field, Ind. (ANG)
HV	UH-1N	30th SPW, Vandenberg AFB, Calif. (AFSPC)	TX	F-16A/B	924th FG, Bergstrom ARS, Tex. (AFRES)
HW	C-21A, C-27A, C-130E/H, CT-43A	24th Wing, Howard AFB, Panama (ACC)	TY	F-15C/D	325th FW, Tyndall AFB, Fla. (AETC)
IL	F-16A/B	182d FG, Greater Peoria Airport, Ill. (ANG)	VA	F-16C/D	192d FG, Richmond IAP, Va. (ANG)
IN	A-10A	434th Wing, Grissom AFB, Ind. (AFRES)	VN	T-37B, T-38A	71st FTW, Vance AFB, Okla. (AETC)
IS	F-15C/D, HH-60G	35th Wing, NAS Keflavik, Iceland (ACC)	VO	C-130H	928th AG, O'Hare IAP/ARS, Chicago, Ill. (AFRES)
JS	E-8A/B	Code is reserved for use on Joint STARS aircraft.	WA	Various	57th Wing, Nellis AFB, Nev. (ACC)
KC	A-10A	442d FW, Richards-Gebaur AFB, Mo. (AFRES)	WE	E-9A	475th Weapons Evaluation Group, Tyndall AFB, Fla. (ACC)
KI	B-52H, T-37B	410th BW, K. I. Sawyer AFB, Mich. (ACC)	WG	C-130E	913th AG, Willow Grove ARS, Pa. (AFRES)
KS	EC-130E C-21A	552d ACW, Keesler AFB, Miss. (ACC) 81st TW, Keesler AFB, Miss. (AETC)	WI	F-16C/D	128th FW, Trux Field, Wis. (ANG)
KT	C-130E, WC-130H	403d AW, Keesler AFB, Miss. (AFRES)	WM	B-2A, T-38A HH-1H	509th BW, Whiteman AFB, Mo. (ACC) 351st MW, Whiteman AFB, Mo. (AFSPC)
LA	B-52H, T-37A, T-38A	2d BW, Barksdale AFB, La. (ACC)	WP	F-16C/D	8th FW, Kunsan AB, South Korea (PACAF)
LB	T-37B, T-38A, T-1A	64th FTW, Reese AFB, Tex. (AETC)	XL	T-37B, T-1A, T-38A	47th FTW, Laughlin AFB, Tex. (AETC)
LF	F-16A/B/C/D, F-15E	56th FW, Luke AFB, Ariz. (AETC)	YJ	C-21A, C-130E/H, UH-1N	374th AW, Yokota AB, Japan (PACAF)
LK	C-130E	314th AW, Little Rock AFB, Ark. (ACC)	YO	C-130H	910th AG, Youngstown MAP/ARS, Ohio (AFRES)
LN	F-15C/D/E	48th FW, RAF Lakenheath, UK (USAFE)	ZZ	F-15C/D, HH-3E, E-3B/C, KC-135R	18th Wing, Kadena AB, Japan (PACAF)
LR	F-16C/D	944th FG, Luke AFB, Ariz. (AFRES)			
MA	A-10A	104th FG, Barnes MAP, Mass. (ANG)			
MD	A-10A	175th FG, Glenn L. Martin Airport, Md. (ANG)			
MI	F-16A/B	127th FW, Selfridge ANGB, Mich. (ANG)			

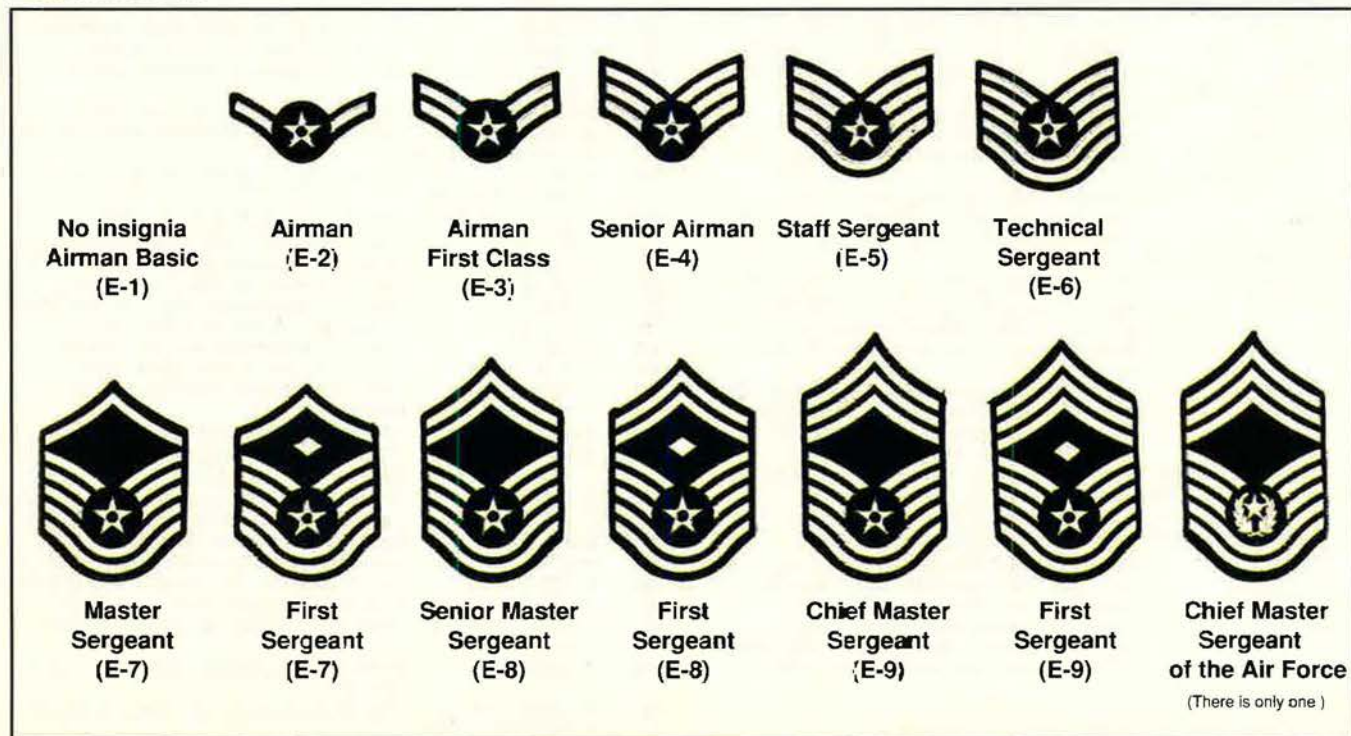
Sources: USAF; Maj. Wally Van Winkle, AFRES; and William R. Peake.

# USAF Grades and Insignia

## Officer



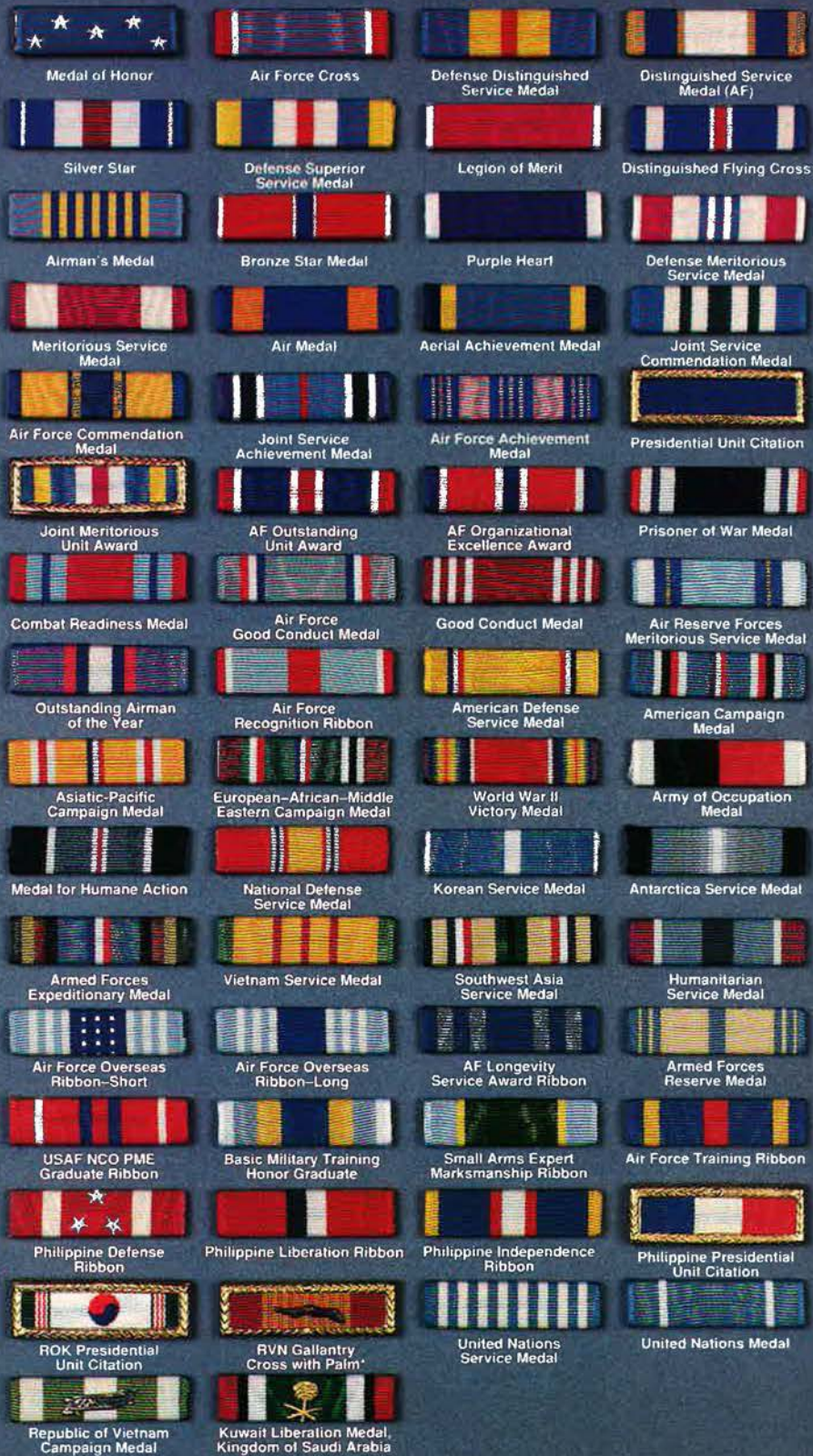
## Enlisted





# Awards and Decorations

This display represents in correct order of precedence, ribbons most likely to be worn by members of today's Air Force. For information regarding ribbons not depicted, refer to AFR 35-10 and AFR 900-48.



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

# USAF Leaders Through the Years

## Secretaries of the Air Force

Stuart Symington	Sept. 18, 1947	Apr. 24, 1950
Thomas K. Finletter	Apr. 24, 1950	Jan. 20, 1953
Harold E. Talbott	Feb. 4, 1953	Aug. 13, 1955
Donald A. Quarles	Aug. 15, 1955	Apr. 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	Apr. 6, 1977
John C. Stetson	Apr. 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	Apr. 7, 1986
Edward C. Aldridge, Jr. (acting)	Apr. 8, 1986	June 8, 1986
Edward C. Aldridge, Jr.	June 9, 1986	Dec. 16, 1988
James F. McGovern (acting)	Dec. 16, 1988	Apr. 29, 1989
John J. Welch, Jr. (acting)	Apr. 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	

## USAF Chiefs of Staff

Gen. Carl A. Spaatz	Sept. 26, 1947	Apr. 29, 1948
Gen. Hoyt S. Vandenberg	Apr. 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 M. Loh (acting)	Sept. 18, 1990	Oct. 29, 1990
Gen. Merrill A. McPeak	Oct. 30, 1990	

## Chief Master Sergeants of the Air Force

CMSAF Paul W. Airey	Apr. 3, 1967	July 31, 1969
CMSAF Donald L. Harlow	Aug. 1, 1969	Sept. 30, 1971
CMSAF Richard D. Kislung	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. Pflugston	Aug. 1, 1990	

## Air Combat Command

Gen. John Michael Loh June 1, 1992

## Air (Aerospace) Defense Command

Lt. Gen. George E. Stratemeyer	Mar. 27, 1946	Nov. 30, 1948
Maj. Gen. Gordon P. Saville	Dec. 1, 1948	Sept. 1, 1949
Lt. Gen. Ennis C. Whitehead	Jan. 8, 1951	Aug. 24, 1951
Gen. Benjamin W. Childlaw	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	Mar. 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	Mar. 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	Mar. 31, 1980

Discontinued July 1, 1950. Reestablished as a major command and organized Jan. 1, 1951. Redesignated Aerospace Defense Command Jan. 15, 1968.

## Air Education and Training Command

Gen. Henry Viccellio, Jr. 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, Jr.	July 1, 1965	Oct. 31, 1965
Maj. Gen. Richard P. Klocko	Nov. 1, 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	July 1, 1979
Maj. Gen. Robert F. Herres	July 1, 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	Mar. 29, 1988
Maj. Gen. James S. Cassidy, Jr.	Mar. 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. Now Air Force Command, Control, Communications, and Computer Agency, an FOA.

## 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

Now Air Intelligence Agency, an FOA.

## Air Force Logistics Command

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	Mar. 1, 1959	Mar. 14, 1959
Gen. Samuel E. Anderson	Mar. 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	Mar. 28, 1968
Gen. Jack G. Merrell	Mar. 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. 27, 1978
Gen. Bryce Poe II	Jan. 28, 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

Formerly Air Materiel Command. Redesignated Air Force Logistics Command Apr. 1, 1961. Inactivated July 1, 1992.

## Air Force Materiel Command

Gen. Ronald W. Yates July 1, 1992

## Air Force Reserve

Maj. Gen. Rollin B. Moore, Jr.	Aug. 1, 1968	Jan. 26, 1972
Brig. Gen. Alfred Verhulst (acting)	Jan. 27, 1972	Mar. 15, 1972
Maj. Gen. Homer I. Lewis	Mar. 16, 1972	Apr. 8, 1975
Maj. Gen. William Lyon	Apr. 16, 1975	Apr. 16, 1979
Maj. Gen. Richard Bodycombe	Apr. 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	

AFRES and ANG primary responsibilities came under Continental Air Command 1948-68. Since Mar. 16, 1972, the Chief of Air Force Reserve has also been Commander, Hq. Air Force Reserve (AFRES). Maj. Gen. Thomas Marchbanks, Jr., served as Chief, Air Force Reserve, from Jan. 18, 1968, to Feb. 1, 1971.

**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	Mar. 29, 1990
Lt. Gen. Thomas S. Moorman, Jr.	Mar. 29, 1990	Mar. 23, 1992
Gen. Donald J. Kutyna	Mar. 23, 1992	July 1, 1992
Gen. Charles A. Horner	July 1, 1992	

**Air Force Special Operations Command**

Maj. Gen. Thomas E. Eggers	May 22, 1990	June 30, 1991
Maj. Gen. Bruce L. Fister	June 30, 1991	

**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	Apr. 14, 1954
Lt. Gen. Thomas S. Power	Apr. 15, 1954	June 30, 1957
Maj. Gen. John W. Sessums, Jr.	July 1, 1957	July 31, 1957
Lt. Gen. Samuel E. Anderson	Aug. 1, 1957	Mar. 9, 1959
Maj. Gen. John W. Sessums, Jr.	Mar. 10, 1959	Apr. 24, 1959
Gen. Bernard A. Schriever	Apr. 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	Mar. 13, 1978
Gen. Alton D. Slay	Mar. 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	Apr. 1, 1990
Gen. Ronald W. Yates	Apr. 1, 1990	July 1, 1992

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

**Air Mobility Command**

Gen. H. T. Johnson	June 1, 1992	Aug. 22, 1992
Gen. Ronald R. Fogleman	Aug. 23, 1992	

**Air National Guard**

Col. William A. R. Robertson	Nov. 28, 1945	Oct. 1948
Maj. Gen. George G. Finch	Oct. 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	Apr. 19, 1974
Maj. Gen. John J. Pesch	Apr. 20, 1974	Jan. 31, 1977
Maj. Gen. John T. Guice	Feb. 1, 1977	Apr. 1, 1981
Maj. Gen. John B. Conaway	Apr. 1, 1981	Nov. 1, 1988
Maj. Gen. Philip G. Killey	Nov. 1, 1988	Jan. 28, 1994
Maj. Gen. Donald W. Shepperd	Jan. 28, 1994	

AFRES and ANG primary responsibilities came under Continental Air Command 1948-68. Since Mar. 16, 1972, the Chief of Air National Guard has also been Commander, Hq. Air National Guard (ANG).

**Air Proving Ground Command**

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

Now Air Force Development Test Center, Eglin AFB, Fla.

**Air Training Command**

Lt. Gen. Barton K. Yount	July 7, 1943	Sept. 26, 1945
Maj. Gen. James P. Hodges	Sept. 27, 1945	Apr. 12, 1946
Lt. Gen. John K. Cannon	Apr. 13, 1946	Oct. 13, 1948
Lt. Gen. Robert W. Harper	Oct. 14, 1948	June 30, 1954
Maj. Gen. Glenn O. Barcus	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	Apr. 1, 1979
Gen. Bennie L. Davis	Apr. 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

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 30, 1993

Merged with Air University to form Air Education and Training Command July 1, 1993.

**Air University**

Maj. Gen. Muir S. Fairchild	Mar. 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
Lt. Gen. Laurence S. Kuter	Apr. 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

Air University was part of Air Training Command between May 1978 and July 1983. Merged with Air Training Command to form Air Education and Training Command 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
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
Maj. Gen. Wendell W. Bowman	July 26, 1961	Aug. 8, 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	Mar. 2, 1974
Maj. Gen. Jack K. Gamble	Mar. 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	Apr. 1, 1981
Lt. Gen. Lynwood E. Clark	Apr. 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

Now 11th Air Force.

**Continental Air Command**

Lt. Gen. Ennis C. Whitehead	Apr. 5, 1949	Jan. 1, 1951
Maj. Gen. Willis H. Hale	Jan. 1, 1951	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

**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

## USAF Leaders Through the Years

Maj. Gen. Howard P. Smith	May 17, 1974	July 31, 1975
Maj. Gen. K. 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	Apr. 16, 1985
Maj. Gen. Paul H. Martin	Apr. 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. Redesignated Air Force Intelligence Command Oct. 1, 1991.

### 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 A. 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	Apr. 30, 1972
Maj. Gen. John L. Locke	May 1, 1972	Feb. 25, 1974
Maj. Gen. M. R. Reilly	Feb. 26, 1974	Aug. 1975
Maj. Gen. William C. Norris	Sept. 1, 1975	June 30, 1976

Established as Bolling Field; organized Dec. 15, 1946. Redesignated Headquarters Command, USAF, Mar. 17, 1958.

### Military Airlift Command

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
Gen. Paul K. Carlton	Sept. 20, 1972	Mar. 31, 1977
Gen. William G. Moore, Jr.	Apr. 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. H. T. Johnson	Sept. 20, 1989	June 1, 1992

Formerly Military Air Transport Service. Redesignated Military Airlift Command Jan. 1, 1966. Inactivated June 1, 1992.

### Pacific Air Forces

Lt. Gen. Ennis C. Whitehead	Dec. 30, 1945	Apr. 25, 1949
Lt. Gen. George E. Stratemeyer	Apr. 26, 1949	May 20, 1951
Lt. Gen. Earle E. Partridge (acting)	May 21, 1951	June 9, 1951
Gen. O. P. Weyland	June 10, 1951	Mar. 25, 1954
Gen. Earle E. Partridge	Mar. 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	

Formerly Far East Air Forces. Redesignated Pacific Air Forces July 1, 1957.

### Strategic Air Command

Gen. George C. Kenney	Mar. 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	Apr. 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. B. 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

Inactivated June 1, 1992.

### Tactical Air Command

Lt. Gen. E. R. Quesada	Mar. 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	Mar. 31, 1954
Gen. O. P. Weyland	Apr. 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 M. Momyer	Aug. 1, 1968	Sept. 30, 1973
Gen. Robert J. Dixon	Oct. 1, 1973	Apr. 30, 1978
Gen. W. L. Creech	May 1, 1978	Nov. 1, 1984
Gen. Jerome F. O'Malley	Nov. 1, 1984	Apr. 20, 1985
Gen. Robert D. Russ	May 22, 1985	Mar. 26, 1991
Gen. John Michael Loh	Mar. 27, 1991	June 1, 1992

Inactivated June 1, 1992.

### US Air Forces in Europe

Brig. Gen. John F. McBain	Aug. 15, 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	Apr. 12, 1989
Gen. Michael J. Dugan	Apr. 12, 1989	June 26, 1990
Gen. Robert C. Oaks	June 26, 1990	

### US Air Forces Southern Command/Caribbean

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	Apr. 7, 1972
Maj. Gen. Arthur G. Salisbury	Apr. 7, 1972	Nov. 1, 1974
Maj. Gen. James M. Breedlove	Oct. 1974	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 9, 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	

## USAF Medal of Honor Recipients

### Names, Alphabetically by Wars, and Rank at Time of Action

### Home Town

### Date and Place of Action

### Present Address or Date of Death

#### World War I

Bleckley, 2d Lt. Erwin R.	Wichita, Kan.	Oct. 6, 1918, Binarville, France	KIA Oct. 6, 1918
Goettler, 2d Lt. Harold E.	Chicago, Ill.	Oct. 6, 1918, Binarville, France	KIA Oct. 6, 1918
Luke, 2d Lt. Frank, Jr.	Phoenix, Ariz.	Sept. 29, 1918, Murvaux, France	KIA Sept. 29, 1918
Rickenbacker, Capt. Edward V.	Columbus, Ohio	Sept. 25, 1918, Billy, France	Died July 23, 1973

#### World War II

Baker, Lt. Col. Addison E.	Chicago, Ill.	Aug. 1, 1943, Ploesti, Romania	KIA Aug. 1, 1943
Bong, Maj. Richard I.	Poplar, Wis.	Oct. 10–Nov. 15, 1944, Southwest Pacific	Killed Aug. 6, 1945, Burbank, Calif.
Carswell, Maj. Horace S., Jr.	Fort Worth, Tex.	Oct. 26, 1944, South China Sea	KIA Oct. 26, 1944
Castle, Brig. Gen. Frederick W.	Manila, P. I.	Dec. 24, 1944, Liège, Belgium	KIA Dec. 24, 1944
Cheli, Maj. Ralph	San Francisco, Calif.	Aug. 18, 1943, Wewak, New Guinea	Died while POW, Mar. 6, 1944
Craw, Col. Demas T.	Traverse City, Mich.	Nov. 8, 1942, Port Lyautey, French Morocco	KIA Nov. 8, 1942
Doolittle, Lt. Col. James H.	Alameda, Calif.	Apr. 18, 1942, Tokyo, Japan	Died Sept. 27, 1993
Erwin, SSgt. Henry E.	Adamsville, Ala.	Apr. 12, 1945, Koriyama, Japan	Leeds, Ala.
Femoyer, 2d Lt. Robert E.	Huntington, W. Va.	Nov. 2, 1944, Merseburg, Germany	KIA Nov. 2, 1944
Gott, 1st Lt. Donald J.	Arnett, Okla.	Nov. 9, 1944, Saarbrücken, Germany	KIA Nov. 9, 1944
Hamilton, Maj. Pierpont M.	Tuxedo Park, N. Y.	Nov. 8, 1942, Port Lyautey, French Morocco	Died Mar. 4, 1982
Howard, Lt. Col. James H.	Canton, China	Jan. 11, 1944, Oschersleben, Germany	Belleair Bluffs, Fla. (Ret. Brig. Gen.)
Hughes, 2d Lt. Lloyd H.	Alexandria, La.	Aug. 1, 1943, Ploesti, Romania	KIA Aug. 1, 1943
Jerstad, Maj. John L.	Racine, Wis.	Aug. 1, 1943, Ploesti, Romania	KIA Aug. 1, 1943
Johnson, Col. Leon W.	Columbia, Mo.	Aug. 1, 1943, Ploesti, Romania	McLean, Va. (Ret. Gen.)
Kane, Col. John R.	McGregor, Tex.	Aug. 1, 1943, Ploesti, Romania	Chester, Pa. (Ret. Col.)
Kearby, Col. Neel E.	Wichita Falls, Tex.	Oct. 11, 1943, Wewak, New Guinea	KIA Mar. 5, 1944, Wewak, New Guinea
Kingsley, 2d Lt. David R.	Portland, Ore.	June 23, 1944, Ploesti, Romania	KIA June 23, 1944
Knight, 1st Lt. Raymond L.	Houston, Tex.	Apr. 25, 1945, Po Valley, Italy	KIA Apr. 25, 1945
Lawley, 1st Lt. William R., Jr.	Leeds, Ala.	Feb. 20, 1944, Leipzig, Germany	Montgomery, Ala. (Ret. Col.)
Lindsey, Capt. Darrell R.	Jefferson, Iowa	Aug. 9, 1944, Pontoise, France	KIA Aug. 9, 1944
Mathies, SSgt. Archibald	Scotland	Feb. 20, 1944, Leipzig, Germany	KIA Feb. 20, 1944
Mathis, 1st Lt. Jack W.	San Angelo, Tex.	Mar. 18, 1943, Vegesack, Germany	KIA Mar. 18, 1943
McGuire, Maj. Thomas B., Jr.	Ridgewood, N. J.	Dec. 25–26, 1944, Luzon, P. I.	KIA Jan. 7, 1945, Negros, P. I.
Metzger, 2d Lt. William E., Jr.	Lima, Ohio	Nov. 9, 1944, Saarbrücken, Germany	KIA Nov. 9, 1944
Michael, 1st Lt. Edward S.	Chicago, Ill.	Apr. 11, 1944, Brunswick, Germany	Fairfield, Calif. (Ret. Lt. Col.)
Morgan, 2d Lt. John C.	Vernon, Tex.	July 28, 1943, Kiel, Germany	Died Jan. 17, 1991
Pease, Capt. Harl, Jr.	Plymouth, N. H.	Aug. 7, 1942, Rabaul, New Britain	KIA Aug. 7, 1942
Pucket, 1st Lt. Donald D.	Longmont, Colo.	July 9, 1944, Ploesti, Romania	KIA July 9, 1944
Sarnoski, 2d Lt. Joseph R.	Simpson, Pa.	June 16, 1943, Buka, Solomon Is.	KIA June 16, 1943
Shomo, Maj. William A.	Jeannette, Pa.	Jan. 11, 1945, Luzon, P. I.	Died June 25, 1990
Smith, Sgt. Maynard H.	Caro, Mich.	May 1, 1943, St. Nazaire, France	Died May 11, 1984
Truemper, 2d Lt. Walter E.	Aurora, Ill.	Feb. 20, 1944, Leipzig, Germany	KIA Feb. 20, 1944
Vance, Lt. Col. Leon R., Jr.	Enid, Okla.	June 5, 1944, Wimereaux, France	Killed July 26, 1944, near Iceland
Vosler, TSgt. Forrest L.	Lyndonville, N. Y.	Dec. 20, 1943, Bremen, Germany	Died Feb. 27, 1992
Walker, Brig. Gen. Kenneth N.	Cerrillos, N. M.	Jan. 5, 1943, Rabaul, New Britain	KIA Jan. 5, 1943
Wilkins, Maj. Raymond H.	Portsmouth, Va.	Nov. 2, 1943, Rabaul, New Britain	KIA Nov. 2, 1943
Zeamer, Maj. Jay, Jr.	Carlisle, Pa.	June 16, 1943, Buka, Solomon Is.	Stoneham, Mass. (Ret. Lt. Col.)

#### Korea

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

#### Vietnam

Bennett, Capt. Steven L.	Palestine, Tex.	June 29, 1972, Quang Tri, S. Vietnam	KIA June 29, 1972
Day, Col. George E.	Sioux City, Iowa	Conspicuous gallantry while POW	Shalimar, Fla. (Ret. Col.)
Dethlefsen, Maj. Merlyn H.	Greenville, Iowa	Mar. 10, 1967, Thai Nguyen, N. Vietnam	Died Dec. 14, 1987
Fisher, Maj. Bernard F.	San Bernardino, Calif.	Mar. 10, 1966, A Chau Valley, S. Vietnam	Kuna, Idaho (Ret. Col.)
Fleming, 1st Lt. James P.	Sedalia, Mo.	Nov. 26, 1968, Duc Co, S. Vietnam	Active-duty Col., NAS Dallas, Tex.
Jackson, Lt. Col. Joe M.	Newnan, Ga.	May 12, 1968, Kham Duc, S. Vietnam	Kent, Wash. (Ret. Col.)
Jones, Col. William A. III	Warsaw, Va.	Sept. 1, 1968, Dong Hoi, N. Vietnam	Killed Nov. 15, 1969, Woodbridge, Va.
Levitow, A1C John L.	South Windsor, Conn.	Feb. 24, 1969, Long Binh, S. Vietnam	South Windsor, Conn.
Sijan, Capt. Lance P.	Milwaukee, Wis.	Conspicuous gallantry while POW	Died while POW, Jan. 1968
Thorsness, Lt. Col. Leo K.	Seattle, Wash.	Apr. 19, 1967, N. Vietnam	Seattle, Wash. (Ret. Col.)
Wilbanks, Capt. Hilliard A.	Cornelia, Ga.	Feb. 24, 1967, Dalat, S. Vietnam	KIA Feb. 24, 1967
Young, Capt. Gerald O.	Anacortes, Wash.	Nov. 9, 1967, Da Nang area, S. Vietnam	Died June 6, 1990

## AIR FORCE Magazine's Guide to Aces

In compiling this list of aces who flew with the US Air Force and its predecessor organizations (the Air Service and the Army Air Forces), AIR FORCE Magazine has relied on USAF's official accounting of aerial victory credits, which is the responsibility of the Air Force Historical Research Agency at Maxwell AFB, Ala.

Air Force historians have kept the official records of aerial victories by USAF pilots and crew members since 1957. A few foreign pilots are also listed. Most aerial victory credits have been earned by fighter pilots who

have destroyed enemy aircraft in the air. The Office of the Air Force Historian had previously published four separate listings—one for each of the major wars (World War I, World War II, Korea, and Vietnam). The four volumes have been corrected, updated, and combined into one comprehensive volume.

The Air Force Historical Research Agency is not authorized, nor has it ever attempted, to verify aerial victories claimed by Americans who flew with the air forces of other nations. Therefore, this list no longer con-

tains World War I victory credits for Americans serving in the Lafayette Escadrille, French Flying Corps, Royal Flying Corps, or Royal Navy. Similarly, it no longer contains World War II victory credits for Americans in the Eagle Squadrons or the Flying Tigers (American Volunteer Group). However, victories were awarded to members of the Army Air Service if they were flying with British or French units when they shot down enemy aircraft. Some World War I pilots (notably Frank Luke) were credited with victories for destroying balloons.

### American Aces of World War I



Capt. Edward V. Rickenbacker

Rickenbacker, Capt. Edward V.	24.33	Wright, 1st Lt. Chester E.	6.33
Luke, 2d Lt. Frank, Jr.	15.83	Jones, 2d Lt. Clinton	6.16
Kindley, 1st Lt. Field E.	11.00	Burdick, 2d Lt. Howard	6.00
Springs, 1st Lt. Elliott W.	10.75	Chambers, 1st Lt. Reed M.	6.00
Landis, 1st Lt. Reed G.	10.00	Creech, 1st Lt. Jesse O.	6.00
Vaughn, 1st Lt. George A.	9.50	Putnam, 1st Lt. David E.	6.00
Swaab, 1st Lt. Jacques M.	8.50	Cook, 1st Lt. Harvey W.	5.66
Donaldson, 2d Lt. John O.	8.00	Meissner, Capt. James A.	5.66
Baer, 1st Lt. Paul P.	7.75	Coolidge, Capt. Hamilton	5.58
Clay, 1st Lt. Henry R., Jr.	7.00	Campbell, 1st Lt. Douglas	5.50
Hamilton, 1st Lt. Lloyd A.	6.83	Knotts, 2d Lt. Howard C.	5.50
White, 2d Lt. Wilbert W.	6.66	Rummell, 1st Lt. Leslie J.	5.16
Cassady, 1st Lt. Thomas G.	6.63	Bissell, 1st Lt. Clayton L.	5.00
Holden, 1st Lt. Lansing C.	6.50	Luff, 1st Lt. Frederick E.	5.00
Hunter, 1st Lt. Frank O'D.	6.50	Ponder, 2d Lt. William T.	5.00
Stenseth, 1st Lt. Martinus	6.47		

### Some Famous US Fighter Firsts



Col. Robin Olds

May 30, 1918	First US-trained AEF ace: Capt. Edward V. Rickenbacker
Dec. 7, 1941	First AAF victories of WW II: Six pilots at Pearl Harbor
Dec. 16, 1941	First AAF ace of WW II: 1st Lt. Boyd D. Wagner
June 27, 1950	First USAF victories in the Korean War
Nov. 8, 1950	First jet-to-jet victory of the Korean War
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)

## Leading Army Air Forces Aces of World War II

(Fourteen and a half or more victories)

Bong, Maj. Richard I.	40	Herbst, Lt. Col. John C.	18
McGuire, Maj. Thomas B., Jr.	38	Zemke, Lt. Col. Hubert	17.75
Gabreski, Lt. Col. Francis S.	28 <sup>a</sup>	England, Maj. John B.	17.50
Johnson, Capt. Robert S.	27	Beeson, Capt. Duane W.	17.33
MacDonald, Col. Charles H.	27	Thornell, 1st Lt. John F., Jr.	17.25
Preddy, Maj. George E.	26.83	Varnell, Capt. James S., Jr.	17
Meyer, Lt. Col. John C.	24 <sup>a</sup>	Johnson, Maj. Gerald W.	16.50
Schilling, Col. David C.	22.50	Godfrey, Capt. John T.	16.33
Johnson, Lt. Col. Gerald R.	22	Anderson, Capt. Clarence E., Jr.	16.25
Kearby, Col. Neel E.	22	Dunham, Lt. Col. William D.	16
Robbins, Maj. Jay T.	22	Harris, Lt. Col. Bill	16
Christensen, Capt. Fred J.	21.50	Welch, Capt. George S.	16
Wetmore, Capt. Ray S.	21.25	Beerbower, Capt. Donald M.	15.50
Voll, Capt. John J.	21	Brown, Maj. Samuel J.	15.50
Mahurin, Maj. Walker M.	20.75 <sup>a</sup>	Peterson, Capt. Richard A.	15.50
Lynch, Lt. Col. Thomas J.	20	Whisner, Capt. William T., Jr.	15.50 <sup>a</sup>
Westbrook, Lt. Col. Robert B.	20	Bradley, Lt. Col. Jack T.	15
Gentile, Capt. Donald S.	19.83	Cragg, Maj. Edward	15
Duncan, Col. Glenn E.	19.50	Foy, Maj. Robert W.	15
Carson, Capt. Leonard K.	18.50	Hofer, 2d Lt. Ralph K.	15
Eagleston, Maj. Glenn T.	18.50 <sup>a</sup>	Homer, Capt. Cyril F.	15
Beckham, Maj. Walter C.	18	Landers, Lt. Col. John D.	14.50
Green, Maj. Herschel H.	18	Powers, Capt. Joe H., Jr.	14.50



Maj. Richard I. Bong

Ranks are as of last victory in World War II.

<sup>a</sup>Aces who added to these scores by victories in the Korean War

## 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, Lt. Col. 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.	24.33	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. Donald S.	19.83	WW II



Col. Francis S. Gabreski

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

	WW II	Other <sup>a</sup>	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 <sup>a</sup>	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., Jr.	6	1	7
Bettinger, Maj. Stephen L.	1	5	6
Visscher, Maj. Herman W.	5	1	6
Liles, Capt. Brooks J.	1	4	5
Mattson, Capt. Conrad E.	1	4	5
Schaeffer, Maj. William F.	2	3	5

<sup>a</sup>Colonel Olds's four additional victories came during the Vietnam War; all others' during the Korean War.



Maj. James Jabara

### USAF Aces of the Korean War

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

<sup>a</sup>In addition to World War II victories



Cpts. 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





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# 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 Michael Loh

### MISSIONS

- Operate** USAF bombers
- Operate** USAF's CONUS-based, combat-coded fighter and attack aircraft
- Organize**, train, equip, and maintain combat-ready forces
- Provide** nuclear-capable forces for US Strategic Command

### COROLLARY MISSIONS

- Monitor** and intercept illegal drug traffic
- Test** new combat equipment

### OTHER RESPONSIBILITIES

- Supply** aircraft to the five geographic unified commands: Atlantic, European, Pacific, Southern, and Central Commands
- Provide** air defense forces to North American Aerospace Defense Command
- Operate** certain air mobility forces in support of US Transportation Command

### EQUIPMENT

- (Primary Aircraft Authorized)
- Bombers (B-1B, B-2, B-52) ..... 166
  - Fighters (F-15A/C, F-16) ..... 348
  - Attack aircraft (A/OA-10, F-15E, F-111, F-117) ..... 258
  - EC/EW aircraft (F-4G, EF-111)... 45
  - Aerial refuelers (KC-10, KC-135)... 25
  - Other aircraft (all types)..... 381

### FORCE STRUCTURE

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



*This Air Combat Command F-117 deployed to South Korea from Holloman AFB, N. M., last year in Team Spirit, which involved several ACC CONUS-based units. ACC organizes, trains, equips, and maintains combat-ready forces for deployment to all theaters.*

Two direct reporting units: USAF Air Warfare Center, USAF Weapons and Tactics Center  
 Thirty-four wings, two bomb groups

### PERSONNEL

Active-duty .....	124,519
Officers .....	17,220
Enlisted .....	107,299
Reserve component .....	103,324
ANG .....	75,637
AFRES .....	27,687
Civilian .....	25,988
<b>Total .....</b>	<b>253,831</b>

### OPERATIONAL ACTIVITY

Flying hours ..... 50,356 per month

### Major overseas deployments

- Bright Star (Central Command)
- Cobra Gold (Pacific Command)
- Crested Cap (European Command)
- Ocean Venture (Atlantic Command)
- Team Spirit (Pacific Command)

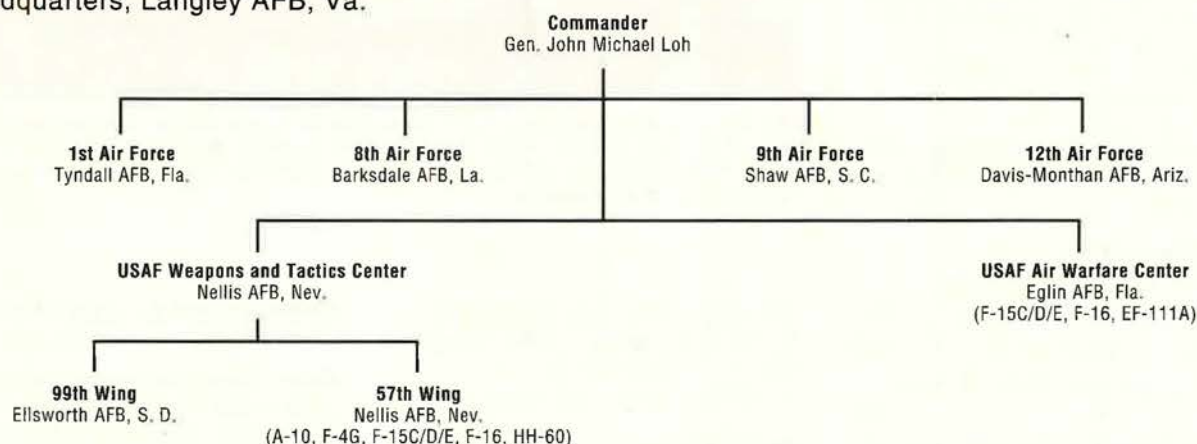
### Major training exercises

- Air Warrior, Nellis AFB, Nev., and Little Rock AFB, Ark.
- Green Flag, Nellis AFB, Nev.
- Maple Flag, CFB Cold Lake, Canada
- Red Flag, Nellis AFB, Nev.

UNIT	BASE	WEAPONS
9th Reconnaissance Wing	Beale AFB, Calif.	U-2, T-38
55th Wing	Offutt AFB, Neb.	C-21A, E-4B, RC-135S/U/V/W/X, EC-135C/K, TC-135S/W, C-135, WC-135, OC-135B, T-38
552d Air Control Wing	Tinker AFB, Okla.	E-3B/C, EC-135K
2d Bomb Wing	Barksdale AFB, La.	B-52H, T-37
5th Bomb Wing	Minot AFB, N. D.	B-52H, T-38
27th Fighter Wing	Cannon AFB, N. M.	F-111F, EF-111A
28th Bomb Wing	Ellsworth AFB, S. D.	B-1B, T-38
7th Wing	Dyess AFB, Tex.	B-1B, C-130H, T-38
319th Bomb Group	Grand Forks AFB, N. D.	B-1B, T-38
410th Bomb Wing	K. I. Sawyer AFB, Mich. (base closes Sept. 30, 1995)	B-52H, T-37
384th Bomb Group	McConnell AFB, Kan.	B-1B, T-38
509th Bomb Wing	Whiteman AFB, Mo.	B-2, T-38
1st Fighter Wing	Langley AFB, Va.	C-21A, F-15C/D, UH-1N, also HH-3, HC-130N/P at Patrick AFB, Fla.
4th Wing	Seymour Johnson AFB, N. C.	F-15E, KC-10A, T-38
23d Wing	Pope AFB, N. C.	A/OA-10A, F-16, C-130E
33d Fighter Wing	Eglin AFB, Fla.	F-15C/D
42d Bomb Wing	Loring AFB, Me. (base closes Sept. 30, 1994)	—
6th Air Base Wing	MacDill AFB, Fla.	—
347th Fighter Wing	Moody AFB, Ga.	F-16
20th Fighter Wing	Shaw AFB, S. C.	A/OA-10, F-16
416th Bomb Wing	Griffiss AFB, N. Y. (base closes Sept. 30, 1995)	B-52H, T-37
49th Fighter Wing	Holloman AFB, N. M.	F-117A, F-4E, HH-60
92d Bomb Wing	Fairchild AFB, Wash. (base transfers to AMC July 1, 1994)	B-52H, T-37
93d Bomb Wing	Castle AFB, Calif. (base closes Sept. 30, 1995)	T-37
24th Wing	Howard AFB, Panama	C-21A, C-27, C-130H, CT-43
355th Wing	Davis-Monthan AFB, Ariz.	A/OA-10A, EC-130
366th Wing	Mountain Home AFB, Idaho	F-15C/D/E, F-16, T-38, KC-135R, B-1B
388th Fighter Wing	Hill AFB, Utah	F-16
28th Bomb Wing	Ellsworth AFB, S. D.	B-1B, T-38
5th Bomb Wing	Minot AFB, N. D.	B-52H, T-38
57th Wing	Nellis AFB, Nev.	A-10, F-4G, F-15C/D/E, F-16, HH-60
99th Wing	Ellsworth AFB, S. D.	—
314th Airlift Wing	Little Rock AFB, Ark.	C-130E/H
65th Air Base Wing	Lajes Field, the Azores (support)	—
79th Test & Evaluation Group	Eglin AFB, Fla.	F-15C/D/E, F-16, EF-111A
35th Wing	NAS Keflavik, Iceland	F-15C/D, HH-60

## Air Combat Command

Headquarters, Langley AFB, Va.



### COMMAND NOTES

Air Combat Command, with headquarters at Langley AFB, Va., acts as the primary provider of combat air forces and is the proponent for fighter, bomber, reconnaissance, combat

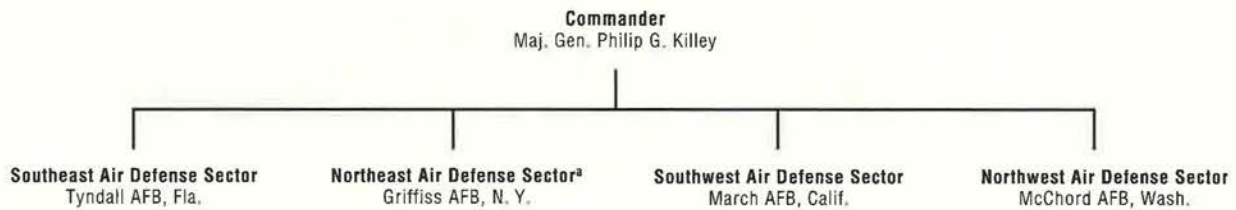
delivery, battle-management, and rescue aircraft; and command, control, communications, and intelligence systems.

As a force provider, ACC organizes, trains, equips, and maintains combat-

ready forces for rapid deployment and employment while ensuring that strategic air defense forces are ready to meet the challenges of peacetime air sovereignty and wartime air defense.

## 1st Air Force (ACC)

Headquarters, Tyndall AFB, Fla.



<sup>a</sup>Transfers to ANG in late 1994

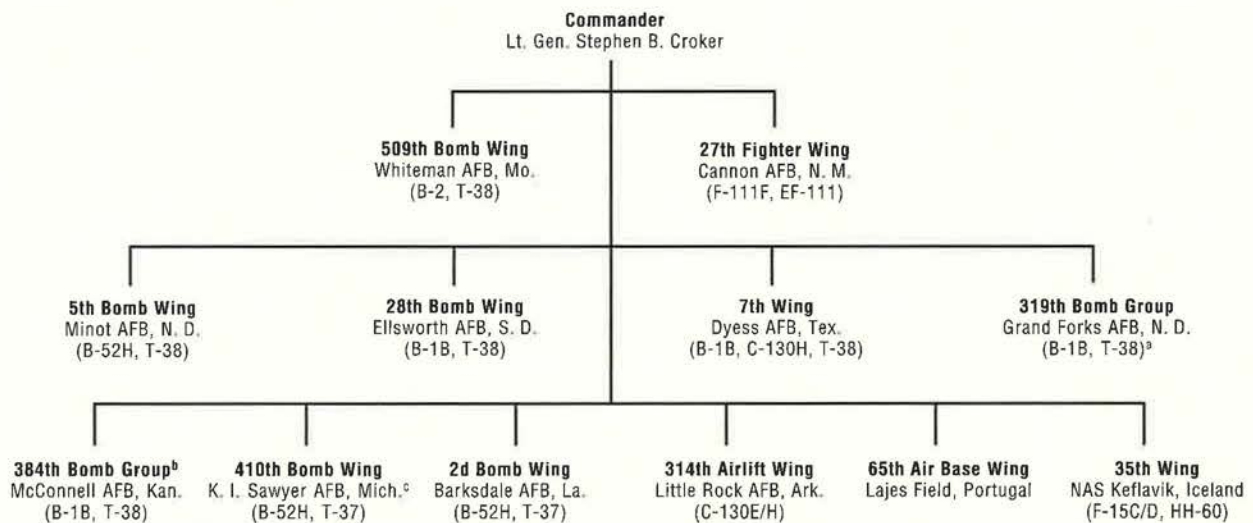


*A KC-135R tanker of ACC's composite 366th Wing arrives in Egypt from Mountain Home AFB, Idaho, in Bright Star '94 late last year. Mixing different types of combat and support aircraft, the 366th is a quick-response "air intervention" wing exemplifying today's expeditionary Air Force.*

USAF photo by A1C Greg Vaughan

## 8th Air Force (ACC)

Headquarters, Barksdale AFB, La.



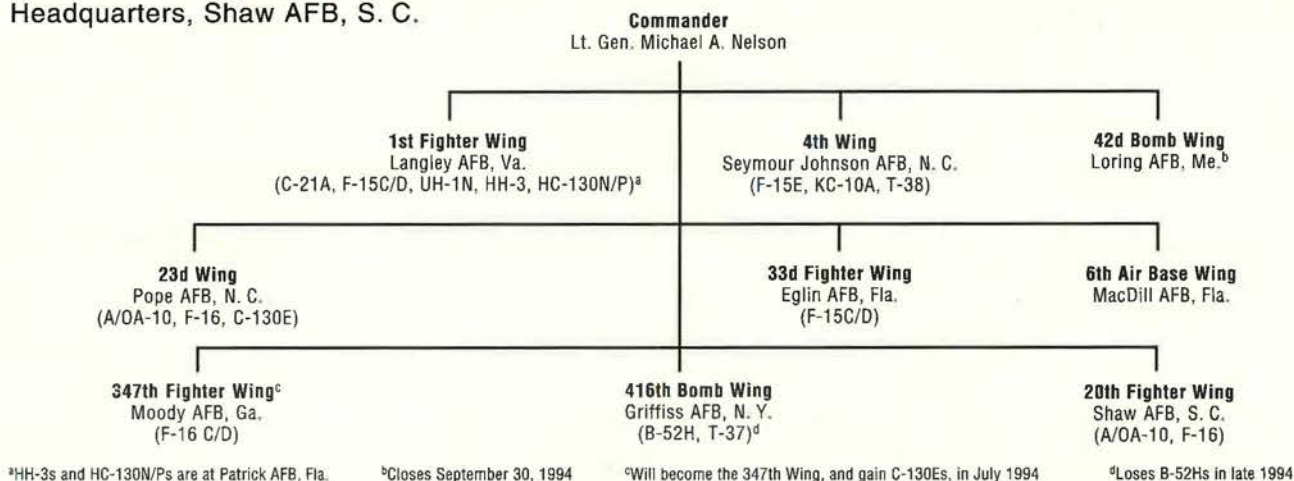
<sup>a</sup>Will lose its last B-1B in mid-1994

<sup>b</sup>Inactivates in late 1994

<sup>c</sup>Closes September 30, 1995

## 9th Air Force (ACC)

Headquarters, Shaw AFB, S. C.



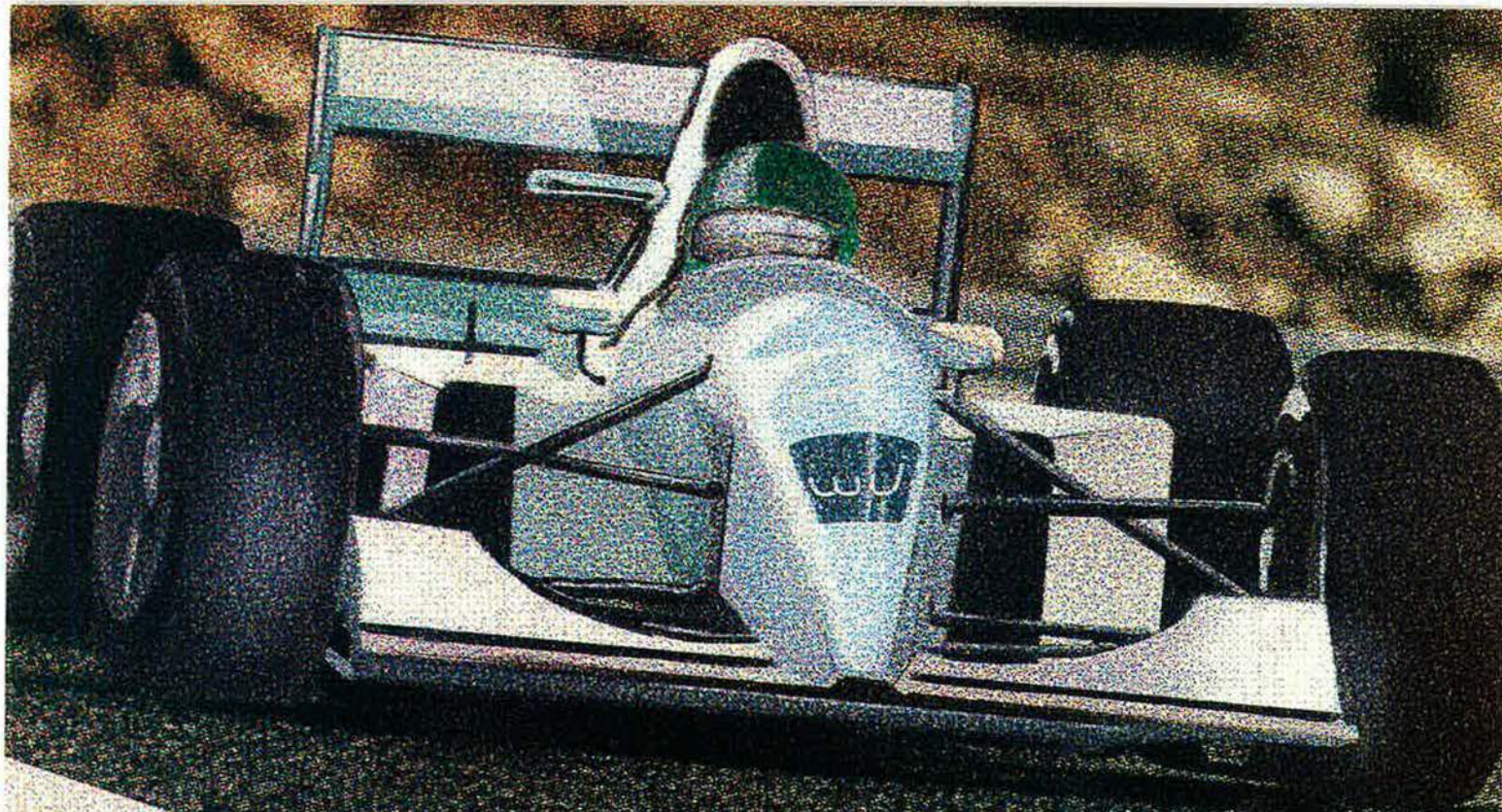
USAF photo by MSgt. Fernando Serna

*A-10s of ACC's composite 23d Wing at Pope AFB, N. C., practice operations in close support of ground troops. Consisting of F-16s, C-130s, and A/OA-10s, the 23d Wing is an "air-land" wing tailored to team with the Army's 82d Airborne Division from neighboring Fort Bragg, N. C.*

## 12th Air Force (ACC)

Headquarters, Davis-Monthan AFB, Ariz.





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# AETC

## Air Education and Training Command

**Headquarters** Randolph AFB, Tex.

**Established** July 1, 1993

**Commander** Gen. Henry Viccellio, Jr.

### MISSIONS

**Recruit**, access, commission, and train USAF enlisted and officer personnel

**Provide** basic military training, initial and advanced technical training, officer training, and flying training

**Provide** military graduate and professional continuing education for officers, enlisted, and civilians

### COROLLARY MISSIONS

**Conduct** joint training in intelligence, law enforcement, navigation, fire fighting, and other areas

**Conduct** training for medical service, readiness, and security assistance

### OTHER RESPONSIBILITIES

**Recall** Individual Ready Reservists and mobility and contingency tasking support to combatant commands

### EQUIPMENT

Trainers (T-1, T-3, T-37, T-38, T-41, T-43, AT-38) ..... 1,109

Fighters (F-15, F-15E, F-16) ..... 239

Transports and tankers (C-5, C-21, C-141, KC-135, HC/MC-130) ..... 68

Helicopters (MH-53J, CH/NCH/TH-53A, UH-1, HH/MH-60G) ..... 28

### FORCE STRUCTURE

Two numbered air forces and an educational arm: **2d**, Hq. at Keesler AFB, Miss.; **19th**, Hq. at Randolph

AFB, Tex.; **Air University**, Maxwell AFB, Ala.

### PERSONNEL

Active-duty ..... 45,610

Officers ..... 10,347

Enlisted ..... 35,263

Reserve component ..... 4,884

ANG ..... 3,662

AFRES ..... 1,222

Civilian ..... 14,464

**Total** ..... **64,958**

Students ..... 398,816

Flying/technical

training ..... 205,479

Air University ..... 193,337

### OPERATIONAL ACTIVITY

Flying Hours ..... 40,261 per month  
(projected)

### Major competitions

Top Flight, Top Tech



USAF photo by MSGT. Fernando Serra

*An Air Education and Training Command T-43 trainer for navigators flies over AETC headquarters at Randolph AFB, Tex. AETC came into being July 1, 1993, as the Air Force's newest major command, integrating the education and training missions of Air University and Air Training Command.*

### UNIT

#### Flying Training Wings (Active)

12th FTW .....	Randolph AFB, Tex. ....	AT-38, C-21, T-1, T-3, T-37, T-38, T-43
14th FTW .....	Columbus AFB, Miss. ....	AT-38, T-37, T-38
47th FTW .....	Laughlin AFB, Tex. ....	T-1, T-37, T-38
58th Fighter Wing .....	Luke AFB, Ariz. ....	F-15E, F-16
64th FTW .....	Reese AFB, Tex. ....	T-1, T-37, T-38
71st FTW .....	Vance AFB, Okla. ....	T-37, T-38
80th FTW .....	Sheppard AFB, Tex. ....	AT-38, T-37, T-38
97th Air Mobility Wing .....	Altus AFB, Okla. ....	C-5, C-141, KC-135
325th Fighter Wing .....	Tyndall AFB, Fla. ....	F-15

### BASE

### WEAPONS



**Other Flying Training Units (Active)**

1st Flying Training Squadron ..... Hondo Airport, Tex. .... T-3  
 58th Special Operations Wing ..... Kirtland AFB, N. M. .... HC-130, MC-130, MH-53J, TH-53A,  
 UH-1, MH-60G  
 557th Flying Training Squadron ..... US Air Force Academy, Colo. .... T-41  
 336th Crew Training Group ..... Fairchild AFB, Wash. .... —  
 398th Operations Group ..... Castle AFB, Calif. .... KC-135

**Other Flying Training Units (Air National Guard)**

114th Fighter Squadron ..... Klamath Falls IAP, Ore. .... F-16  
 162d Fighter Group ..... Tucson IAP, Ariz. .... F-16  
 184th Fighter Group ..... McConnell AFB, Kan. .... F-16 (unit transfers to ACC July 1994, flying B-1s)

**Technical Training Units**

17th Training Wing ..... Goodfellow AFB, Tex.  
 37th Training Wing ..... Lackland AFB, Tex.  
 81st Training Wing ..... Keesler AFB, Miss.  
 82d Training Wing ..... Sheppard AFB, Tex.  
 392d Space & Missile Training Squadron ... Vandenberg AFB, Calif.  
 Lowry Training Center ..... Lowry AFB, Colo. (base closes Sept. 1994)

**Major Educational Units**

Hq. Air University ..... Maxwell AFB, Ala.; units at Maxwell AFB, Gunter Annex, Ala.;  
 Wright-Patterson AFB, Ohio; Lackland AFB, Tex.; Randolph AFB, Tex.;  
 Hanscom AFB, Mass.; Robins AFB, Ga; and Hill AFB, Utah

**Support Units**

419th Operations Training Squadron ..... Randolph AFB, Tex.  
 502d Air Base Wing ..... Maxwell AFB, Ala.

USAF photo by MSgt. Fernando Serna

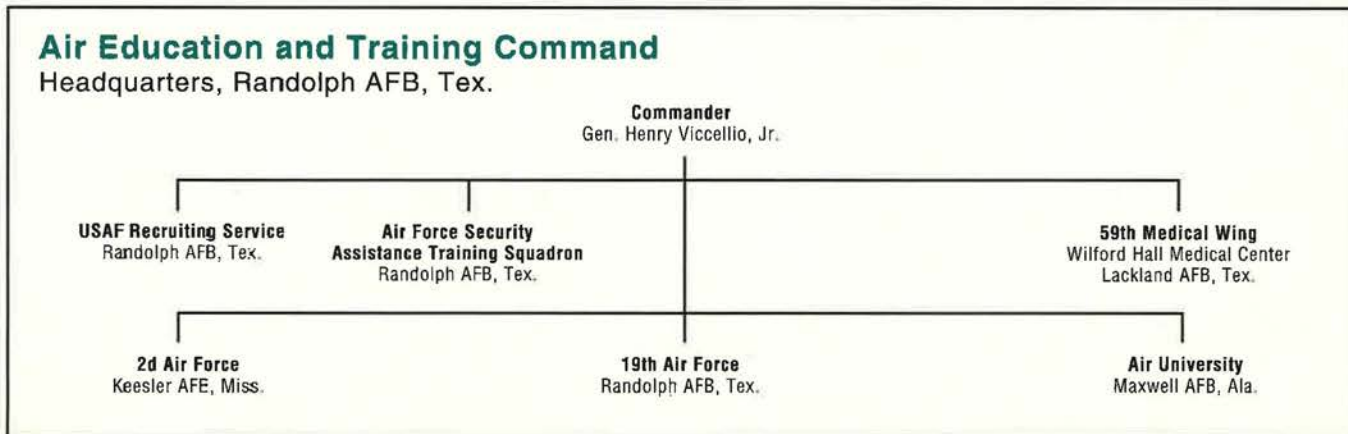


*AETC's 2d Air Force at Keesler AFB, Miss., manages all USAF technical training in a wide variety of specialties, from engine maintenance (here, a technician trainee learns T-38 maintenance) to medical support.*

**COMMAND NOTES**

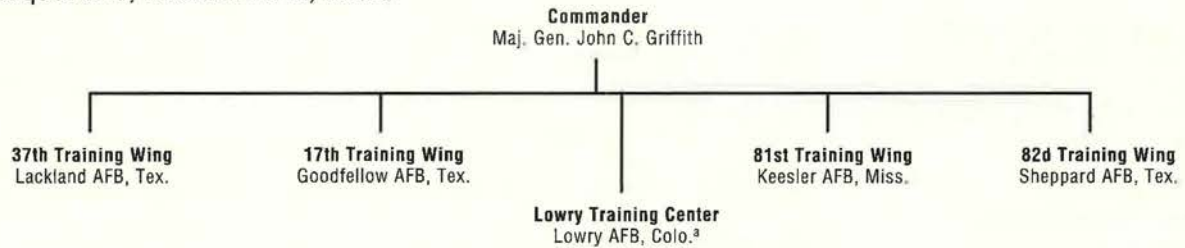
Air Education and Training Command, the Air Force's newest major command, activated July 1, 1993, and integrated the missions of Air Training Command and Air University. Nineteenth Air Force at Randolph AFB, Tex., manages flying training; 2d Air Force at Keesler AFB, Miss., manages technical training; and Air University at Maxwell AFB, Ala., manages military, professional, and continuing education.

AETC introduced the T-3 Firefly into its line of trainer aircraft in early 1994. The T-3 is replacing the T-41 Mescalero as the primary trainer aircraft at the 1st FTS at Hondo Airport, Tex., and the 557th FTS at the USAF Academy, Colo.



## 2d Air Force (AETC)

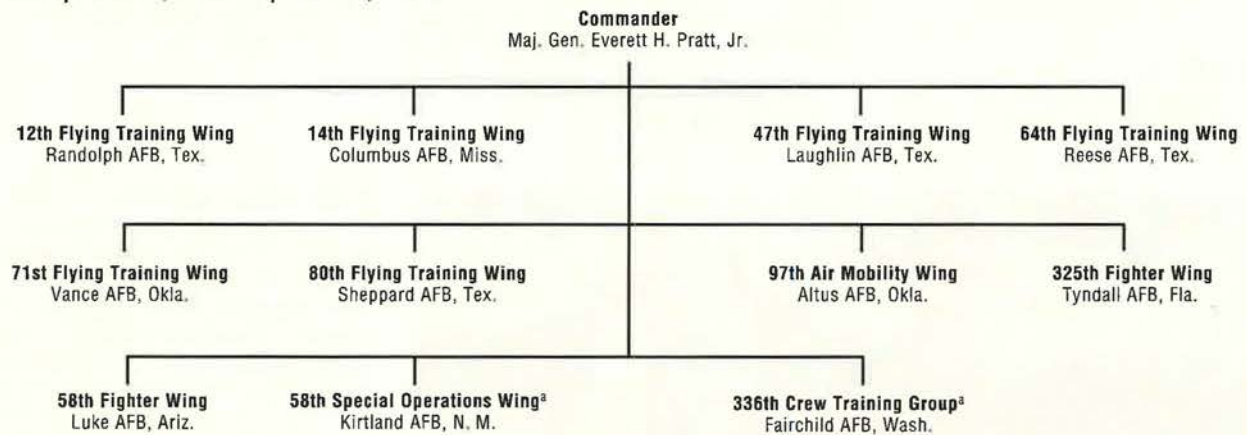
Headquarters, Keesler AFB, Miss.



\*Closes September 1994

## 19th Air Force (AETC)

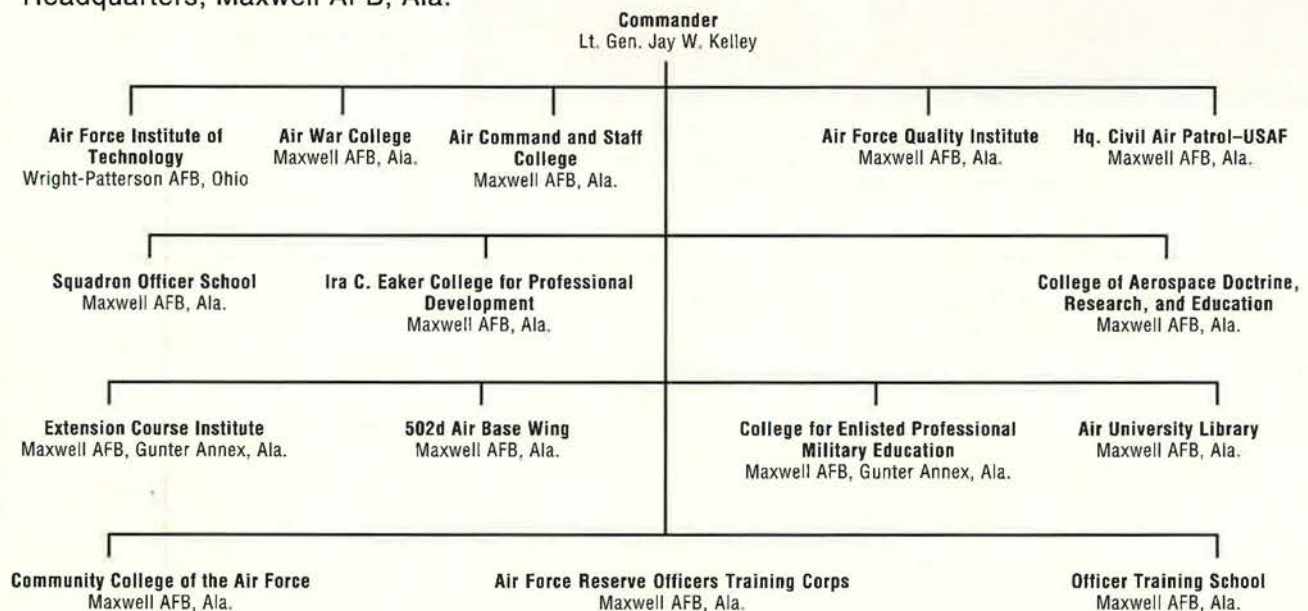
Headquarters, Randolph AFB, Tex.



\*Tenant unit

## Air University (AETC)

Headquarters, Maxwell AFB, Ala.

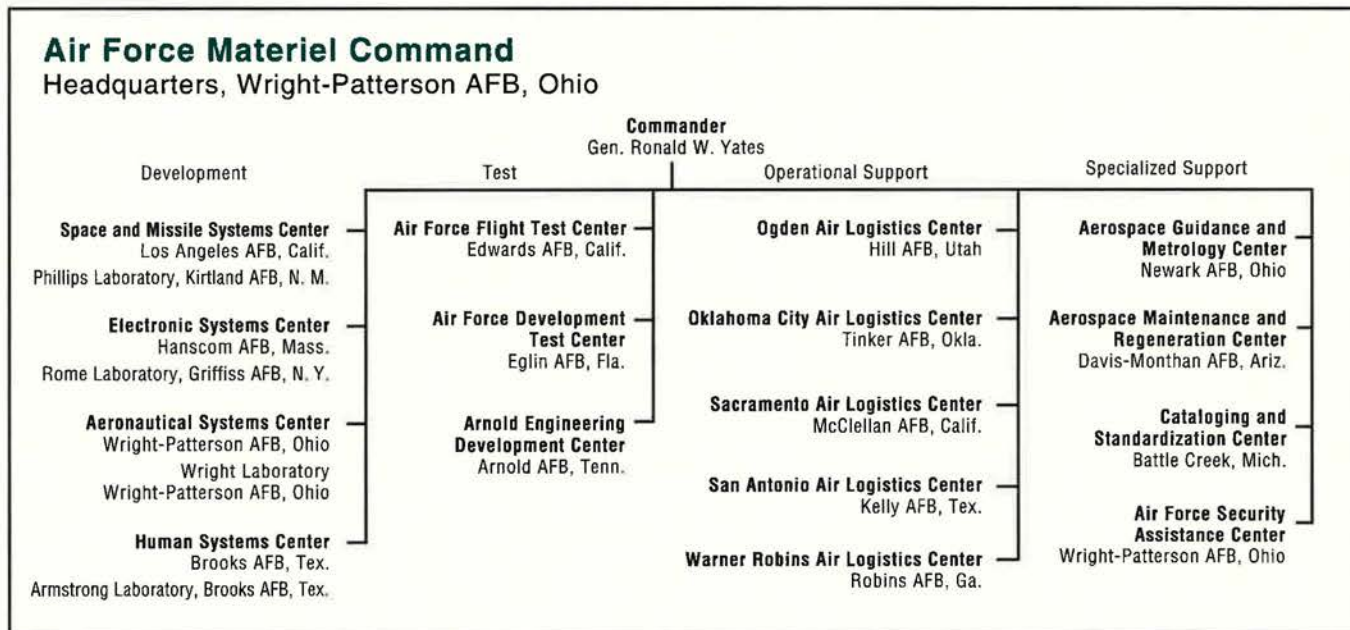


# Air Force Materiel Command

**Headquarters** Wright-Patterson AFB, Ohio

**Established** July 1, 1992

**Commander** Gen. Ronald W. Yates



## MISSIONS

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

**Produce** and acquire advanced systems

**Operate** "superlabs," major product centers, logistics centers, and test centers

**Operate** the USAF School of Aerospace Medicine and USAF Test Pilot School

## FORCE STRUCTURE

Four major product centers

Four superlaboratories

Three test centers

Five air logistics centers

Four specialized centers

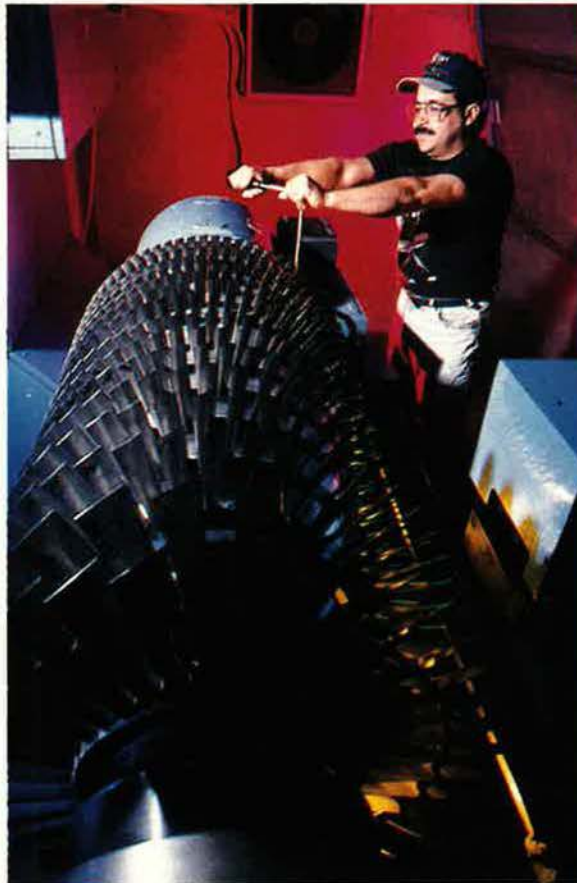
## PERSONNEL

Active-duty .....	37,239
Officers .....	11,453
Enlisted .....	25,786
Reserve component .....	5,925
ANG .....	2,045
AFRES .....	3,880
Civilian .....	81,173
<b>Total .....</b>	<b>124,337</b>

## OPERATIONAL ACTIVITY

Flying hours ..... 3,539 per month

*An engine maintenance specialist operates a high-speed grinder at Kelly AFB, Tex., in overhauling a TF39 engine for the C-5 airlifter fleet. The San Antonio Air Logistics Center at Kelly is one of five Air Force Materiel Command ALCs providing life-cycle repair and maintenance for all Air Force weapon systems.*



## UNIT

Aeronautical Systems Center .....	Wright-Patterson AFB, Ohio
Electronic Systems Center .....	Hanscom AFB, Mass.
Human Systems Center .....	Brooks AFB, Tex.
Space and Missile Systems Center .....	Los Angeles AFB, Calif.
Armstrong Laboratory .....	Brooks AFB, Tex.
Phillips Laboratory .....	Kirtland AFB, N. M.
Rome Laboratory .....	Griffiss AFB, N. Y.
Wright Laboratory .....	Wright-Patterson AFB, Ohio
Arnold Engineering Development Center .....	Arnold AFB, Tenn.
Air Force Development Test Center .....	Eglin AFB, Fla.
Air Force Flight Test Center .....	Edwards AFB, Calif.
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 Guidance and Metrology Center .....	Newark AFB, Ohio
Aerospace Maintenance and Regeneration Center .....	Davis-Monthan AFB, Ariz.
Air Force Security Assistance Center .....	Wright-Patterson AFB, Ohio
Cataloging and Standardization Center .....	Battle Creek, Mich.

## BASE

## COMMAND NOTES

Air Force Materiel Command delivers warfighting capability to the Air Force, providing resources and people to research, acquire, and sustain weapon systems. The Air Force Office of Scientific Research directs the service's basic science and engineering research program. Four superlabs further develop technologies for four product centers that develop and acquire the weapon systems. AFMC evaluates the systems in three test centers. Five Air Logistics Centers provide life-cycle weapon system sustainment, maintenance, and repair. Specialized centers handle other development and sustainment tasks. Aircraft and missiles are retired and recycled at AFMC's Aerospace Maintenance and Regeneration Center.

AFMC operates forty-three types of aircraft. It supports USAF's 10,500 aircraft and approximately 32,000 engines. The command's investment in research, test, and manufacturing capability would cost more than \$33.7 billion to replace.

# AFSPC

## Air Force Space Command

**Headquarters** Peterson AFB, Colo.

**Established** September 1, 1982

**Commander** Gen. Charles A. Horner

### MISSIONS

**Operate** and test USAF ICBM forces for US Strategic Command  
**Operate** groundbased missile warning radars, sensors, and satellites  
**Operate** national space-launch facilities and operational boosters  
**Operate** worldwide space surveillance radars and optical systems  
**Provide** command and control for DoD satellites  
**Provide** ballistic missile warning to NORAD and US Space Command

### COROLLARY MISSIONS

**Develop** and integrate space support for the warfighter  
**Manage** USAF helicopter resources

### OTHER RESPONSIBILITIES

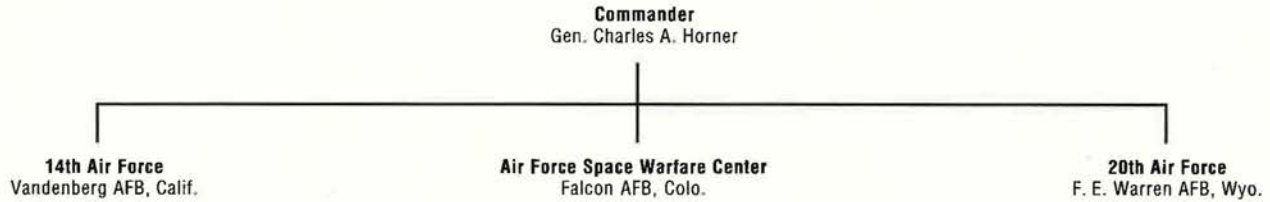
**Provide** communications, computer, and base support to NORAD  
**Supply** range and launch facilities for military, civil, and commercial space launch



*Air Force Space Command launches and operates a wide range of military satellites, including the new Milstar communications satellite depicted here. AFSPC's commander is also commander in chief of US Space Command and NORAD.*

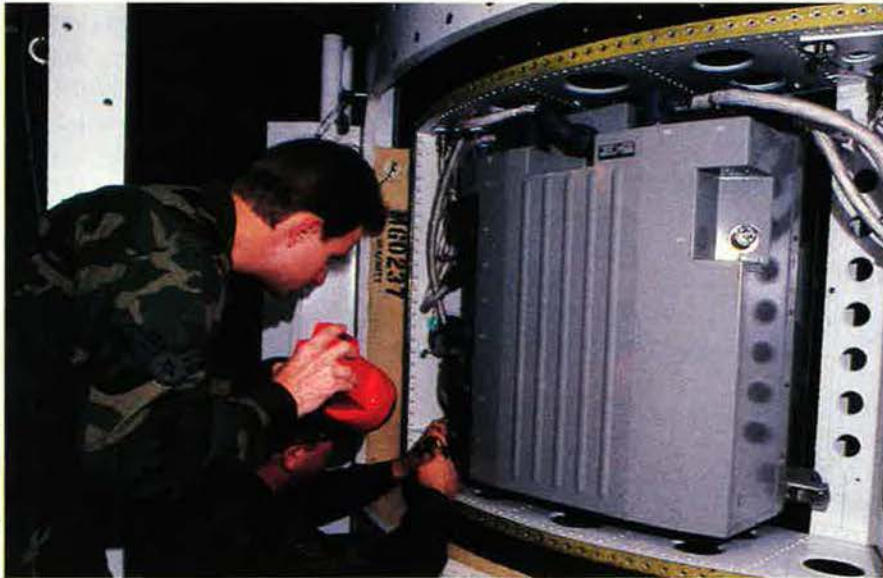
## Air Force Space Command

Headquarters, Peterson AFB, Colo.



*Maintenance personnel examine part of a Peacekeeper ICBM at F. E. Warren AFB, Wyo. Air Force Space Command operates Air Force ICBMs for US Strategic Command, a unified command. AFSPC also operates Air Force missile-warning satellites and groundbased radars and sensor systems.*

Photo by Paul Kennedy



### EQUIPMENT

#### Intercontinental Ballistic Missiles

Peacekeeper.....	50
Minuteman III.....	500

**Satellite systems** (USAF spacecraft in service as of January 1, 1994):

#### Navstar Global Positioning System (GPS):

Block I.....	4
Block II.....	21

#### Defense Satellite Communications System:

DSCS II.....	5
DSCS III.....	6

#### Defense Meteorological Satellite Program (DMSP).....

5  
**Communications satellites** of NATO III and Fleet Satellite Communications System

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

**Ballistic missile warning systems:** Defense Support Program, Ballistic Missile Early Warning System, Pave Paws radars, Perimeter Ac-

quisition Radar Attack Characterization System, Cobra Dane radar, conventional radars

#### Space surveillance systems:

Maui Optical Tracking Identification Facility, Groundbased Electro-Optical Deep Space Surveillance System, phased-array radars, mechanical tracking radars

#### Satellite command-and-control system:

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

### FORCE STRUCTURE

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

One direct reporting unit: Air Force Space Warfare Center

Ten space and missile wings

Three space groups

Six bases and seven stations

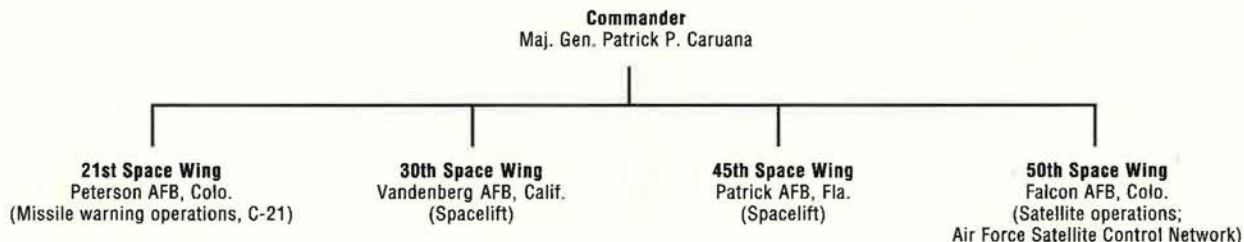
More than fifty units worldwide

### PERSONNEL

Active-duty.....	21,989
Officers.....	4,967
Enlisted.....	17,022
Reserve component.....	0
Civilian.....	4,679
Contractor personnel.....	14,500
<b>Total.....</b>	<b>41,168</b>

## 14th Air Force (AFSPC)

Headquarters, Vandenberg AFB, Calif.



### UNIT

### BASE

### WEAPONS/ACTIVITIES

21st Space Wing	Peterson AFB, Colo.	Space- and groundbased early warning systems
30th Space Wing	Vandenberg AFB, Calif.	Launch, tracking facilities for DoD, NASA, and commercial space launches; testing support of DoD space and missile systems
45th Space Wing	Patrick AFB, Fla.	Launch, tracking facilities for DoD, NASA, foreign government, and commercial space launches; shuttle program and US Navy Trident tests support
50th Space Wing	Falcon AFB, Colo.	Command and control of DoD satellites
73d Space Group	Falcon AFB, Colo.	Space surveillance
750th Space Group	Onizuka AFS, Calif.	Worldwide network of satellite tracking and command stations
44th MW (inactivates July 4, 1994)	Ellsworth AFB, S. D.	HH-1, Minuteman ICBM
90th MW	F. E. Warren AFB, Wyo.	UH-1, Minuteman and Peacekeeper ICBMs
91st MW	Minot AFB, N. D.	HH-1, Minuteman ICBM
321st MW	Grand Forks AFB, N. D.	HH-1, Minuteman ICBM
341st MW	Malmstrom AFB, Mont.	UH-1, Minuteman ICBM
351st MW	Whiteman AFB, Mo.	HH-1, Minuteman ICBM
721st Space Group	Cheyenne Mountain AFS, Colo.	Communications maintenance support

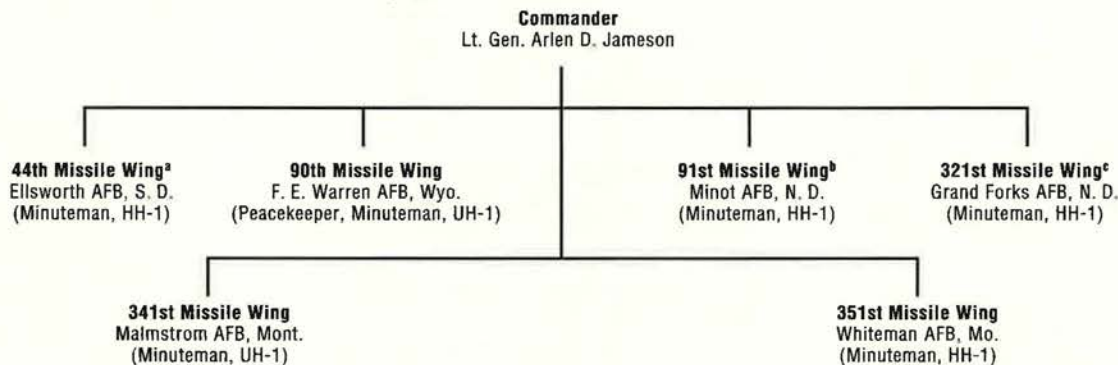
### COMMAND NOTES

The commander of Air Force Space Command is also commander in chief of NORAD and US Space Command.

AFSPC is a component of USSPC for space forces and US Strategic Command for ICBM forces.

## 20th Air Force (AFSPC)

Headquarters, F. E. Warren AFB, Wyo.



<sup>a</sup>Inactivates July 4, 1994

<sup>b</sup>Becomes 91st Missile Group July 1, 1994

<sup>c</sup>Becomes 321st Missile Group July 1, 1994

# AFSOC

## Air Force Special Operations Command

**Headquarters** Hurlburt Field, Fla.

**Established** May 22, 1990

**Commander** Maj. Gen. Bruce L. Fister

### MISSIONS

**Serve** as the air component of US Special Operations Command, a unified command

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

**Provide** unconventional warfare, direct action, special reconnaissance, counterterrorism, and foreign internal defense support to the unified commands

### COROLLARY MISSIONS

**Provide** humanitarian assistance and personnel recovery

**Conduct** psychological and counternarcotics operations

### EQUIPMENT

AC-130A/H Spectre gunships ..... 18  
 MH-53 Pave Low helicopters ..... 37  
 MH-60 Pave Hawk helicopters .... 10  
 NCH-53 ..... 2  
 MC-130E Combat Talon I ..... 14  
 MC-130H Combat Talon II ..... 18  
 C-130A/E/H ..... 11  
 EC-130 Volant Solo ..... 5  
 HC-130 Combat Shadow ..... 23

### FORCE STRUCTURE

One special operations wing  
 Two special operations groups  
 Special Operations School  
 Special Missions Operational Test and Evaluation Center

One special tactics group  
 One Reserve special operations wing  
 One Guard special operations group

### PERSONNEL

Active-duty ..... 8,596  
 Officers ..... 1,322  
 Enlisted ..... 7,274

Reserve component ..... 2,493  
 ANG ..... 1,073  
 AFRES ..... 1,420  
 Civilian ..... 465  
**Total** ..... **11,554**

### OPERATIONAL ACTIVITY

Flying hours: approx. 4,500 per month  
 Many training exercises



*Air Force Special Operations Command AC-130H gunships like this one from the 16th SOS, Hurlburt Field, Fla., deliver enormous firepower. AFSOC is the air component of US Special Operations Command, a unified command.*

### UNIT

16th Special Operations Wing ..... Hurlburt Field/Eglin AFB, Fla. ... MC-130E/H, AC-130H, MH-53J, HC-130N/P, MH-60G  
 352d Special Operations Group ... RAF Alconbury, UK ..... MH-53J, HC-130N/P, MC-130H  
 353d Special Operations Group ... Kadena AB, Japan ..... C-130, MC-130E, MH-53J (Osan AB), HC-130N/P

### BASE

### WEAPONS

### COMMAND NOTES

Air Force Special Operations Command underwent several changes in 1993. The 1st Special Operations Wing, Hurlburt Field, Fla., was redesignated the 16th SOW on October 1, 1993, and the 353d Special Operations Group settled into a permanent base at Kadena AB, Japan. In October 1994, the 352d SOG will

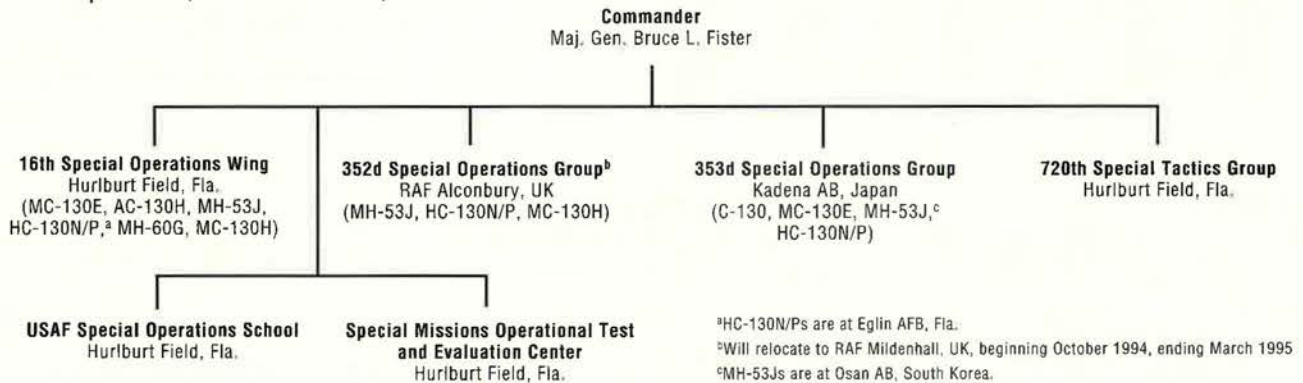
relocate from RAF Alconbury, UK, to RAF Mildenhall. The move should be complete by March 1995.

AFSOC's two reserve units remain constant, with the exception of the 71st SOS at Davis-Monthan AFB, Ariz., becoming the 305th Air Rescue Squadron under Air Combat Command. The Air National Guard's 193d SOG at Harrisburg, Pa., con-

tinues to fly the EC-130E Volant Solo. The Air Force Reserve's 919th SOW at Duke Field, Fla., flies the AC-130A Spectre gunship. The USAF Special Operations School, Special Missions Operational Test and Evaluation Center, and 720th Special Tactics Group, all based at Hurlburt Field, report directly to the AFSOC commander.

## Air Force Special Operations Command

Headquarters, Hurlburt Field, Fla.



# AMC

## Air Mobility Command

**Headquarters** Scott AFB, Ill.

**Established** June 1, 1992

**Commander** Gen. Ronald R. Fogleman

### MISSIONS

**Provide** rapid, global airlift and aerial refueling for US armed forces  
**Serve** as USAF component of US Transportation Command  
**Support** wartime taskings by providing forces to theater commands

### COROLLARY MISSIONS

**Provide** operational support aircraft  
**Provide** Stateside aeromedical evacuation missions  
**Provide** visual documentation support

### EQUIPMENT

Mobility aircraft (C-5, C-17, C-141, KC-10, KC-135) ..... 808  
Aeromedical evacuation (C-9) .... 12  
Other aircraft (C-12, C-20, C-21, VC-25, C-137, UH-1N, T-37, T-38) ..... 94

### FORCE STRUCTURE

Two numbered air forces:  
**15th**, Travis AFB, Calif.;  
**21st**, McGuire AFB, N. J.  
Fourteen wings (airlift, air refueling)

### PERSONNEL

Active-duty ..... 53,825  
Officers ..... 8,464  
Enlisted ..... 45,361

Reserve component ..... 53,685  
ANG ..... 18,503  
AFRES ..... 35,182  
Civilian ..... 11,208  
**Total** ..... **118,718**

### OPERATIONAL ACTIVITY

Flying hours ..... 44,000+ per month

### Major overseas deployments

Provide Comfort (Iraq), Provide Hope II (former USSR), Provide Promise (Bosnia-Herzegovina), Provide Relief (Somalia, Kenya),

Restore Hope (Somalia), Continue Hope (Somalia), Southern Watch II (Southwest Asia)

### Major training exercises

Team Spirit, Cobra Gold, Tandem Thrust (Pacific Command); Battle Griffin, Dynamic Guard, Central Enterprise (European Command); Bright Star (Central Command); Fuertas Defense (Southern Command); Ocean Venture (Atlantic Command)

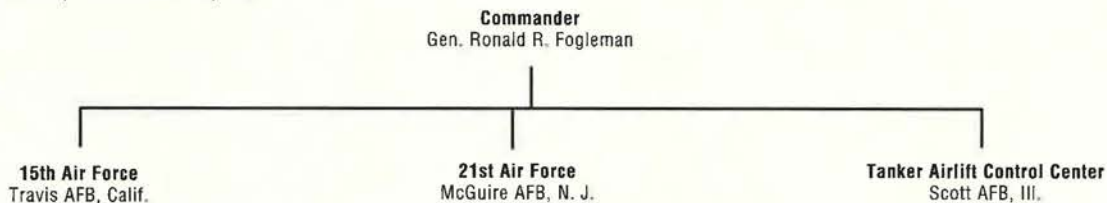
### UNIT

UNIT	BASE	WEAPONS
19th Air Refueling Wing	Robins AFB, Ga.	KC-135
22d Air Refueling Wing	McConnell AFB, Kan.	KC-135
43d Air Refueling Wing	Malmstrom AFB, Mont.	KC-135
305th Air Refueling Wing	Grissom AFB, Ind.	KC-135
319th Air Refueling Wing	Grand Forks AFB, N. D.	KC-135
380th Air Refueling Wing	Plattsburgh AFB, N. Y.	KC-135
722d Air Refueling Wing	March AFB, Calif.	KC-10
60th Airlift Wing	Travis AFB, Calif.	C-5, C-141
62d Airlift Wing	McChord AFB, Wash.	C-141
89th Airlift Wing	Andrews AFB, Md.	C-9, C-12, C-20, C-21, VC-25, C-135, C-137, UH-1
375th Airlift Wing	Scott AFB, Ill.	C-9, C-12, C-21
436th Airlift Wing	Dover AFB, Del.	C-5
437th Airlift Wing	Charleston AFB, S. C.	C-17, C-141
438th Airlift Wing	McGuire AFB, N. J.	C-141



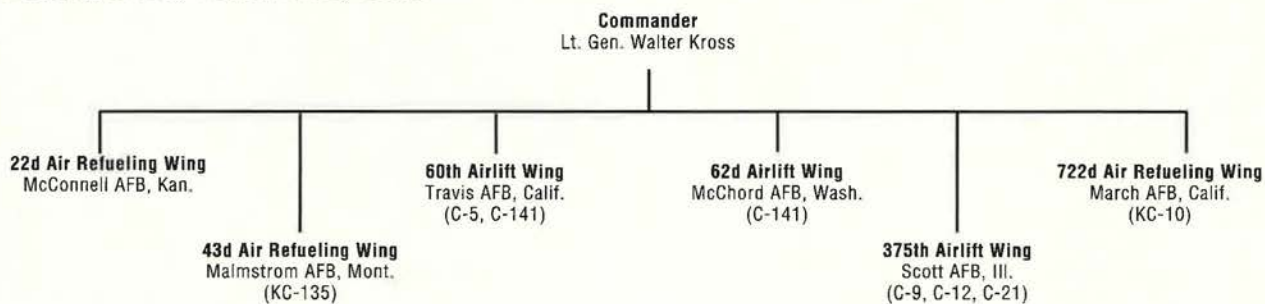
## Air Mobility Command

Headquarters, Scott AFB, Ill.



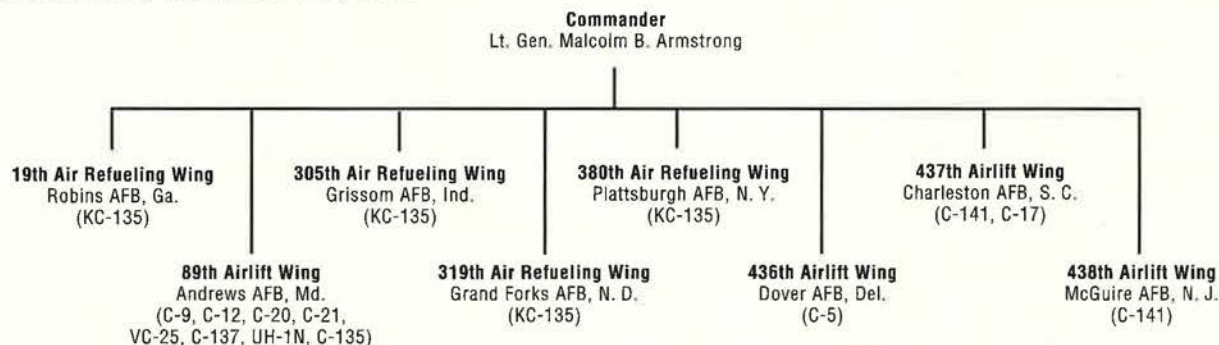
## 15th Air Force (AMC)

Headquarters, March AFB, Calif.



## 21st Air Force (AMC)

Headquarters, McGuire AFB, N. J.



### COMMAND NOTES

As Air Mobility Command prepares to enter its third year of providing the nation with "Global Reach," the command is focusing on three key areas: people, infrastructure, and equipment. AMC aircraft and people worldwide perform airlift, air refueling, and aeromedical evacuation missions. AMC applies nonlethal combat airpower across the spectrum of conflict and plays a key role in humanitarian relief, peacekeeping operations, and a

variety of other missions that support national interests.

As US forces return home and defense budgets shrink, America's security will rely on US-based forces and their ability to deploy rapidly. The command's Tanker Airlift Control Center schedules and controls all tanker and airlift operations worldwide for both DoD and USAF.

AMC's commander also serves as commander in chief of US Transportation Command.

A close-up, high-angle shot of a man's face wearing a dark military helmet. The man has light-colored eyes and a serious expression. The helmet's visor is partially visible on the left. The background is a soft, out-of-focus gradient of orange and blue. The word "Those" is printed in white, bold, sans-serif font on the right side of the image.

**Those**

**who give their best for America  
deserve to have only the best.**



**PRATT & WHITNEY  
FOR JPATS**



# PACAF

## Pacific Air Forces

**Headquarters** Hickam AFB, Hawaii

**Established** July 1, 1957

**Commander** Gen. Robert L. Rutherford

### MISSIONS

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

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

### EQUIPMENT

Fighters (F-15C/D/E,  
F-16C/D) ..... 252  
OA-10 forward air controllers ..... 18  
E-3 Airborne Warning and  
Control System aircraft ..... 4  
KC-135 aerial refueling aircraft .. 15  
Transport aircraft (C-9, C-12,  
C-21, C-130) ..... 41  
Helicopters (UH-1, HH-60) ..... 11

### FORCE STRUCTURE

Four numbered air forces:

**5th**, Yokota AB, Japan

**7th**, Osan, South Korea

**11th**, Elmendorf AFB, Alaska

**13th**, Andersen AFB, Guam

Ten wings (two composite, four fighter, one airlift, two air base, one control)

### PERSONNEL

Active-duty ..... 34,451  
Officers ..... 4,110  
Enlisted ..... 30,341  
Reserve component ..... 4,520  
ANG ..... 4,300  
AFRES ..... 220  
Civilian ..... 8,139  
**Total** ..... **47,110**

### OPERATIONAL ACTIVITY

Flying hours ..... 116,000 per month

#### Major overseas deployments

Air Warrior, Kangaroo, Cobra Gold, Cope Sling, Cope Tiger, Cope West, Green Flag

#### Major training exercises

Cope North, Cope Thunder, Keen Edge, ROK CASEX, Tandem Thrust, Team Spirit

### UNIT

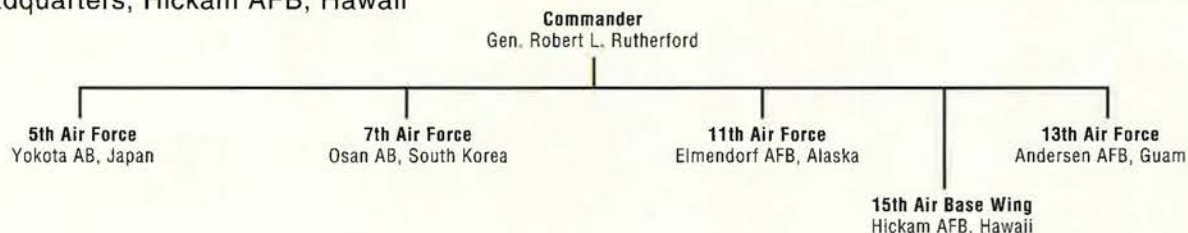
### BASE

### WEAPONS

374th Airlift Wing	Yokota AB, Japan	UH-1N, C-130, C-21, C-9
18th Wing	Kadena AB, Japan	F-15C/D, E-3, KC-135, HH-60
432d Fighter Wing	Misawa AB, Japan	F-16C/D
8th Fighter Wing	Kunsan AB, South Korea	F-16C/D
51st Fighter Wing	Osan AB, South Korea	F-16C/D, OA-10, C-12
3d Wing	Elmendorf AFB, Alaska	F-15C/D, C-130, E-3, F-15E, C-12
11th Air Control Wing	Elmendorf AFB, Alaska	—
354th Fighter Wing	Eielson AFB, Alaska	F-16C/D, OA-10
633d Air Base Wing	Andersen AFB, Guam	—
15th Air Base Wing	Hickam AFB, Hawaii	C-135

## Pacific Air Forces

Headquarters, Hickam AFB, Hawaii



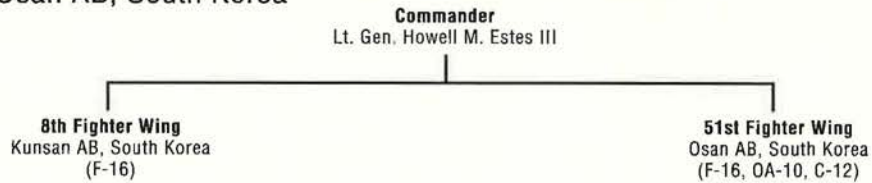
## 5th Air Force (PACAF)

Headquarters, Yokota AB, Japan



## 7th Air Force (PACAF)

Headquarters, Osan AB, South Korea

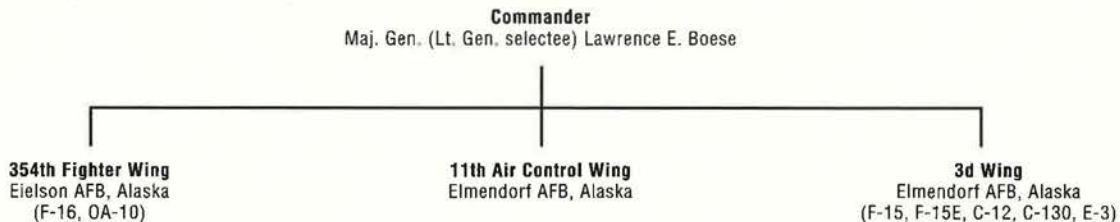


*An F-15C of Pacific Air Forces' composite 18th Wing, Kadena AB, Japan, emerges from a hardened shelter at an air base in South Korea during last year's Team Spirit exercise. PACAF units team with those of the other services and of regional allies in nearly all training exercises.*



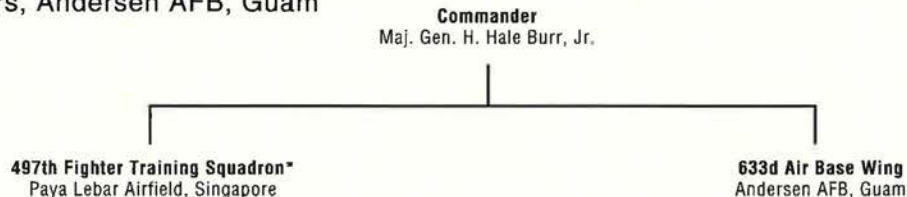
## 11th Air Force (PACAF)

Headquarters, Elmendorf AFB, Alaska



## 13th Air Force (PACAF)

Headquarters, Andersen AFB, Guam



\*Tenant unit; base owned by Singapore government

### COMMAND NOTES

In 1992, Pacific Air Forces acquired former Strategic Air Command KC-135 tankers, Military Airlift Command

C-130 airlifters, and Tactical Air Command AWACS aircraft to form "objective" wings. PACAF conducts more than ninety percent of its training ex-

ercises jointly with Navy, Marine, and Army units. Regional allies participate in more than seventy percent of PACAF exercises.

# USAFE

## US Air Forces in Europe

**Headquarters** Ramstein AB, Germany

**Established** August 15, 1947

**Commander in Chief** Gen. Robert C. Oaks

### MISSIONS

**Plan**, conduct, control, coordinate, and support air and space operations to achieve US national and NATO objectives based on taskings assigned by the commander in chief, US European Command

### COROLLARY MISSIONS

**Support** US military plans and operations in parts of Europe, the Mediterranean, the Middle East, and Africa

### EQUIPMENT (Active)

Fighters (F-15C/D, F-16C/D) .... 108  
 Attack aircraft (A-10, F-15E) ..... 60  
 Observation aircraft (OA-10) ..... 6  
 Other aircraft (tankers, transports, reconnaissance) ..... 46  
 Conventional weapons (general-purpose bombs, cluster bombs, guided bombs, rockets, air-to-surface missiles)

### FORCE STRUCTURE

Three numbered air forces: **3d**, RAF Mildenhall, UK; **16th**, Aviano AB, Italy; **17th**, Sembach AB, Germany  
 Twelve wings (three air base, one air refueling, one airlift, four fighter, one intelligence, one support, and one "other")  
 Five groups (four air base, one fighter)  
 One squadron  
 One flight

### PERSONNEL

Active-duty ..... 32,425  
 Officers ..... 3,675  
 Enlisted ..... 28,750  
 Reserve component ..... 365  
 ANG ..... 0  
 AFRES ..... 365  
 Civilian ..... 6,399  
**Total** ..... **39,189**

### OPERATIONAL ACTIVITY

Flying hours ..... 12,217 per month

### Major training exercises

African Eagle, Arete Express, Baltops, Brilliant Invader, Central Enterprise, Cold Fire, Crested Cap, Diver Mist, Dynamic Guard, Dynamic Impact, Elder Joust, Ellipse Bravo, Excalibur, Exercise Teamwork, Juniper Stallion, Salty Hammer, Sola, Volant Partner, Wintex/Cimex

### Major contingency operations support

Restore Hope (Somalia), Provide Promise (Bosnia-Herzegovina), Provide Hope IV (former USSR), Provide Comfort II (northern Iraq), Deny Flight (Bosnia)

### UNIT

### BASE

### WEAPONS

100th Air Refueling Wing .....	RAF Mildenhall, UK .....	KC-135R
10th Air Base Wing .....	RAF Alconbury, UK .....	MC-130, HC-130, MH-53
620th Air Base Wing .....	RAF Upper Heyford, UK .....	—
48th Fighter Wing .....	RAF Lakenheath, UK .....	F-15E, F-15C/D
774th Air Base Group .....	RAF Chicksands, UK (communications) .....	—
31st Fighter Wing .....	Aviano AB, Italy .....	F-16C/D
600th Air Base Group .....	Torrejon AB, Spain .....	—
7276th Air Base Group .....	Iraklion AB, Greece (communications; base closes June 1, 1994) .....	—
775th Air Base Group .....	San Vito dei Normanni AS, Italy (communications) .....	—
39th Wing .....	Incirlik AB, Turkey (rotational) .....	—
741st Air Base Squadron .....	Izmir AS, Turkey (NATO logistical support) .....	—
601st Air Base Wing .....	Sembach AB, Germany (C <sup>3</sup> I) .....	—
32d Fighter Group .....	Soesterberg AB, the Netherlands .....	—
52d Fighter Wing .....	Spangdahlem AB, Germany .....	F-15C/D, A-10, OA-10, F-16C/D
435th Airlift Wing .....	Rhein-Main AB, Germany .....	C-130E
36th Fighter Wing .....	Bitburg AB, Germany .....	F-15C/D
86th Wing .....	Ramstein AB, Germany .....	F-16C/D, C-9, C-20, C-21, T-43
7455th Tactical Intelligence Wing .....	Ramstein AB, Germany .....	—
724th Air Base Flight .....	Stavanger, Norway .....	—

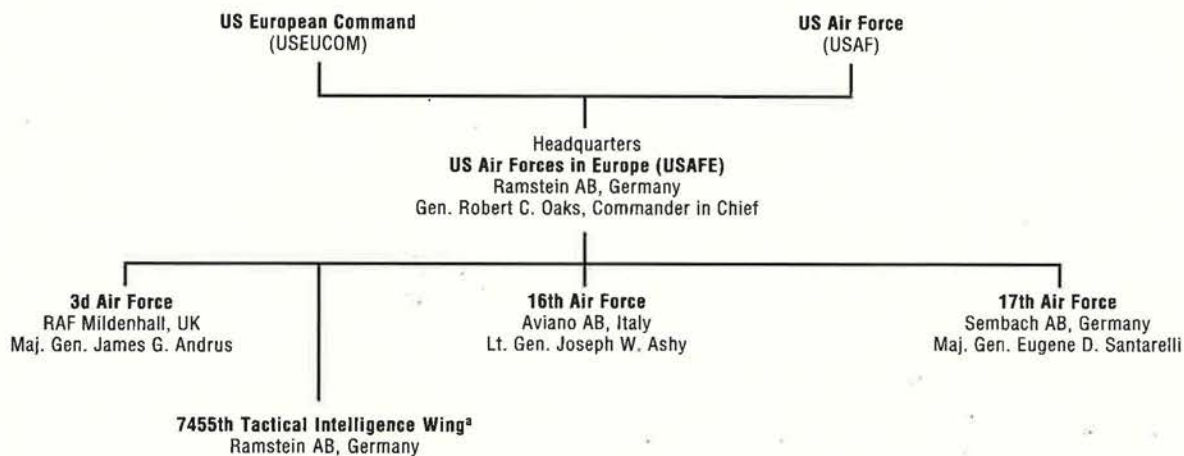
### COMMAND NOTES

US Air Forces in Europe shares common systems, procedures, and training with NATO forces. Headquarters USAFE is collocated with Headquarters Allied Air Forces Central

Europe (AAFCE), which operationally controls Immediate Reaction Forces, Rapid Reaction Forces, and Main Defense Forces of NATO nation air forces during wartime.

## US Air Forces in Europe

Headquarters, Ramstein AB, Germany



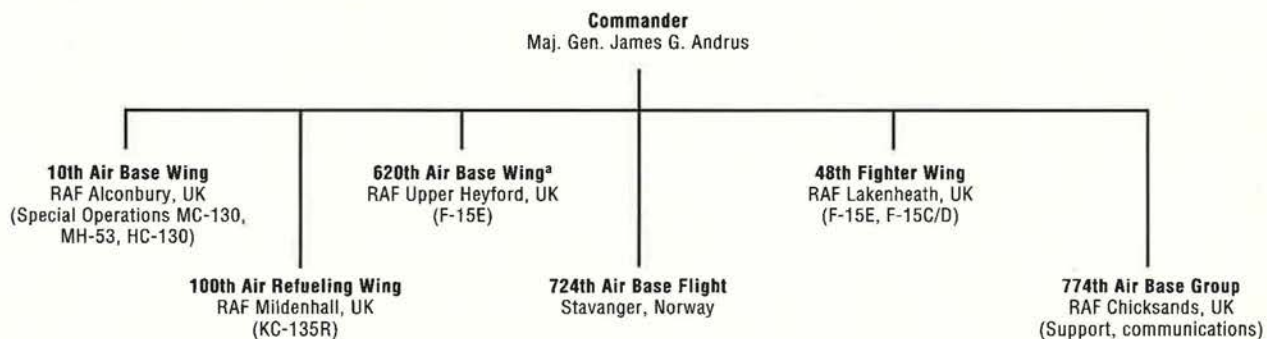
<sup>a</sup>Deactivates September 30, 1994

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



## 3d Air Force (USAFE)

Headquarters, RAF Mildenhall, UK



<sup>a</sup>Inactivates in mid-1994

**16th Air Force (USAFE)**  
Headquarters, Aviano AB, Italy



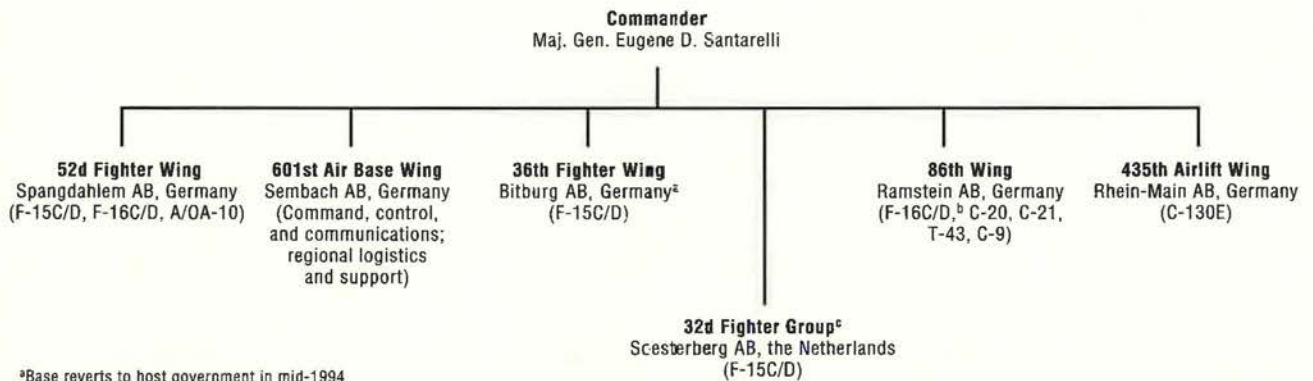
<sup>a</sup>Deactivates in mid-1994  
<sup>b</sup>Inactivates in June 1994

*A flight crew of the 37th Airlift Squadron, Rhein-Main AB, Germany, US Air Forces in Europe, reviews procedures prior to an airdrop mission over Bosnia-Herzegovina. USAFE consists of three numbered air forces, one each in England, Germany, and Italy. USAFE is collocated with Allied Air Forces Central Europe.*



USAF photo by TSgt. Mary Lynchard

**17th Air Force (USAFE)**  
Headquarters, Sembach AB, Germany



<sup>a</sup>Base reverts to host government in mid-1994  
<sup>b</sup>Transfers to Aviano AB, Italy in mid-1994  
<sup>c</sup>Inactivates in mid-1994



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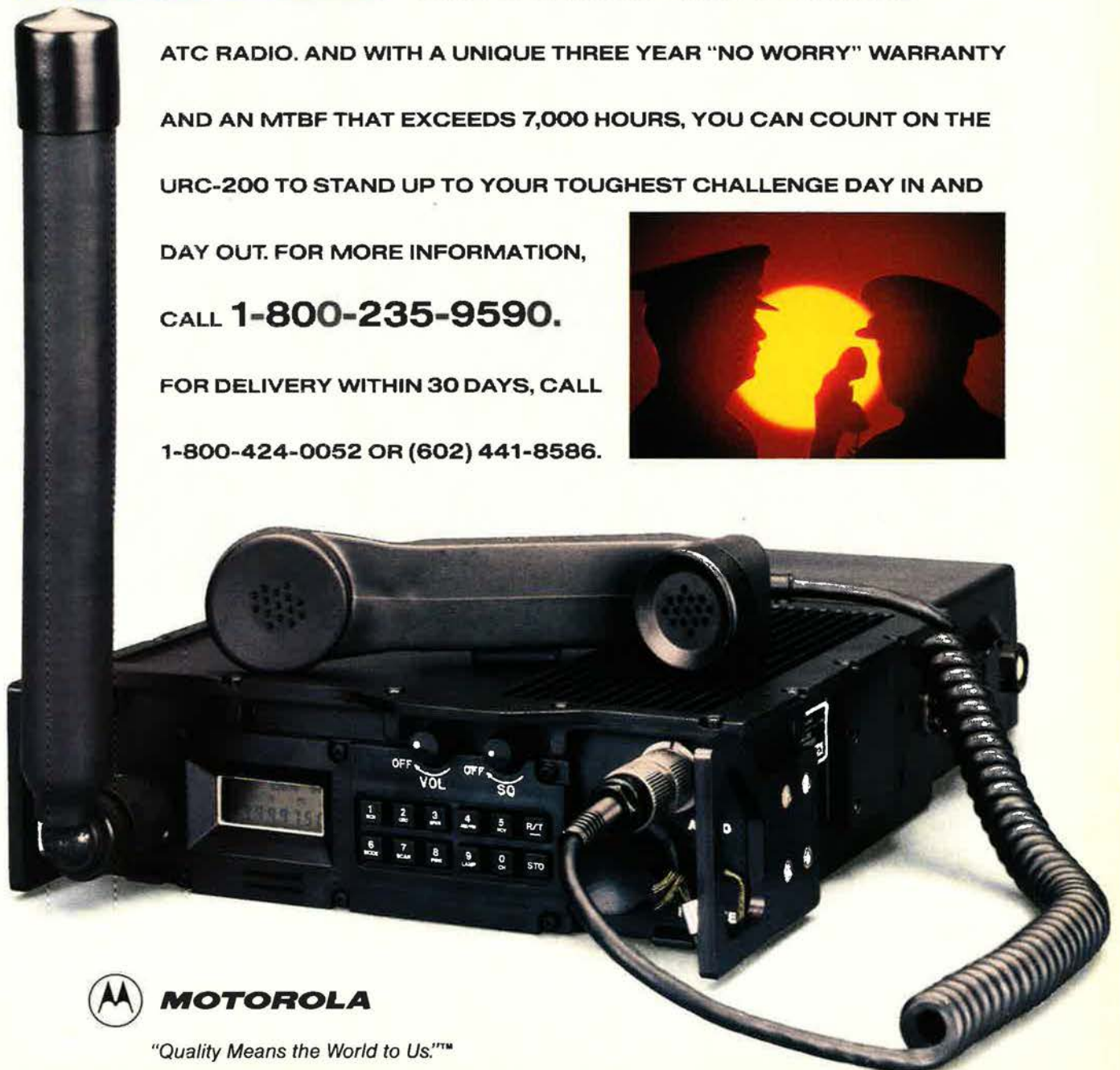
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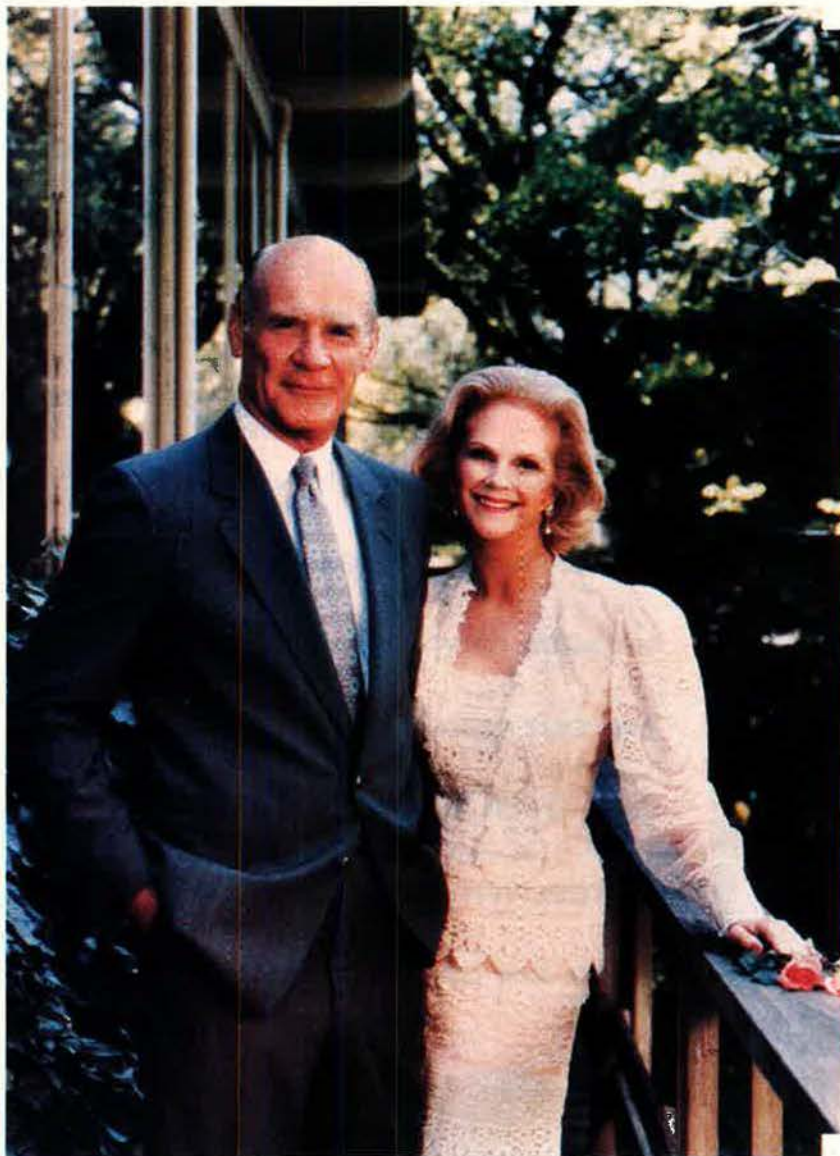
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# Field Operating Agencies



A field operating agency (FOA) is a subdivision of the Air Force that carries out field activities under the operational control of an Hq. USAF functional manager. 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 Audit Agency

**Headquarters** ..... Washington, D. C.  
**Established** ..... July 1, 1948  
**Director** ..... Jackie R. Crawford

### MISSION, PURPOSE, OPERATIONS

**Provide** internal audit evaluations for all levels of Air Force management  
**Produce** audit reports that evaluate the efficiency, effectiveness, and economy of Air Force programs and activities

### STRUCTURE

Acquisition and Logistics Audit Directorate, Wright-Patterson AFB, Ohio  
 Financial and Support Audit Directorate, March AFB, Calif.  
 Field Activities Directorate, Washington, D. C.  
 Four regional offices  
 Fifty-four field offices

### PERSONNEL

Active-duty ..... 24  
     Officers ..... 15  
     Enlisted ..... 9  
 Reserve component ..... 0  
 Civilians ..... 748  
**Total** ..... 772

### NOTE

The director of AFAA is the Auditor General of the Air Force.

## Air Force Base Conversion Agency

**Headquarters** ..... Arlington, Va.  
**Established** ..... November 15, 1991  
**Director** ..... Alan K. Olsen

### MISSION, PURPOSE, OPERATIONS

**Provide** integrated execution management for Air Force bases in the US as they are closed under the 1988 and 1990 Base Closure and Realignment Acts

### STRUCTURE

Office of the Director  
 Base operating locations

### PERSONNEL

Active-duty ..... 3  
     Officers ..... 3  
     Enlisted ..... 0  
 Reserve component ..... 1  
     ANG ..... 0  
     AFRES ..... 1  
 Civilians ..... 445  
**Total** ..... 449

### NOTE

AFBCA was formerly the Air Force Base Disposal Agency.

## Air Force Center for Environmental Excellence

**Headquarters** ..... Brooks AFB, Tex.  
**Established** ..... July 23, 1991  
**Commander** ..... Col. Thomas W. Gorges

### MISSION, PURPOSE, OPERATIONS

**Provide** Air Force commanders worldwide with services in environmental remediation, compliance, planning, and pollution prevention as well as construction management and facilities design

### STRUCTURE

Air Force Design Group  
 Construction Management Directorate  
 Environmental Conservation and Planning Directorate  
 Environmental Services Directorate  
 Pollution Prevention Directorate  
 Three regional compliance offices

### PERSONNEL

Active-duty ..... 44  
     Officers ..... 43  
     Enlisted ..... 1  
 Reserve component ..... 54  
     ANG ..... 0  
     AFRES ..... 54  
 Civilians ..... 334  
**Total** ..... 432

## Air Force Civil Engineer Support Agency

**Headquarters** ..... Tyndall AFB, Fla.  
**Established** ..... August 1, 1991  
**Commander** ..... Col. Donald J. Thomas, Sr.

### MISSION, PURPOSE, OPERATIONS

**Provide** technical and professional engineering support to the Air Force

**Provide** an integrated team approach to improve emergency response and readiness capability

**Maintain** currency in technological developments

**Identify** and promote appropriate new applications for use

**Implement** programs to provide a safe environment in which to live and work

### STRUCTURE

Communications-Computer Systems Directorate  
 Construction Cost Management Directorate

Fire-Protection Directorate  
 Maintenance Directorate  
 Readiness Directorate  
 Systems Engineering Directorate  
 Special staff

**PERSONNEL**

Active-duty .....	115
Officers .....	32
Enlisted .....	83
Reserve component .....	2
ANG .....	1
AFRES .....	1
Civilians .....	93
<b>Total .....</b>	<b>210</b>

**Air Force Civilian Personnel Management Center**

Headquarters ..... Randolph AFB, Tex.  
 Established ..... January 1, 1986  
 Director ..... Roy C. Gay

**MISSION, PURPOSE, OPERATIONS**

Manage, operate, and support Air Force civilian personnel programs and systems

**STRUCTURE**

Career Management Division  
 Integrated Systems Management Division  
 Operations Support Division

**PERSONNEL**

Active-duty .....	1
Officers .....	1
Enlisted .....	0
Reserve component .....	0
Civilians .....	170
<b>Total .....</b>	<b>171</b>

**Air Force Combat Operations Staff**

Headquarters ..... Washington, D. C.  
 Established ..... July 26, 1977  
 Commander ..... Col. Alfred P. McCracken

**MISSION, PURPOSE, OPERATIONS**

Support the Air Force Chief of Staff and deputy chief of staff for Plans and Operations

Maintain a twenty-four-hour watch on all current operations  
 Handle emergency actions through the Air Force Operations Support Center

Provide facilities, policy, procedures, and staffing for the Hq. USAF Crisis Action Team during crises, contingencies, and exercises

Coordinate actions between USAF major commands, other field operating agencies, and direct reporting units in response to taskings from the Joint Chiefs of Staff National Military Command Center (NMCC)

Provide operational oversight of USAF counterdrug operations  
 Assist in providing military support to civilian authorities

Prepare and provide weather data to the President, Secretary of Defense, Joint Chiefs of Staff, NMCC, Army Operations Center, and other federal agencies

Maintain the USAF portion of the Worldwide Military Command and Control System Intercomputer Network, the Air Force's resources and training system database and worldwide exercise scheduling database, and the Joint Uniform Lessons Learned database

**FORCE STRUCTURE**

AFCOS is supported by ten Air Staff functional areas, represented by directors of Operations, Plans, Logistics, Manpower and Personnel, Intelligence, Civil Engineering, Security Police, and Information-Systems Management, and the chiefs of the Medical Readiness Division and the Chaplain Response Forces.

**PERSONNEL**

Active-duty .....	215
Officers .....	143
Enlisted .....	72
Reserve component .....	0
Civilians .....	10
<b>Total .....</b>	<b>225</b>

**NOTE**

AFRES and ANG are also integrated into AFCOS.

**Air Force Command, Control, Communications, and Computer Agency**

Headquarters ..... Scott AFB, Ill.  
 Established ..... May 28, 1993  
 Commander ..... Col. Harry D. Raduege, Jr.

**MISSION, PURPOSE, OPERATIONS**

Develop and validate C<sup>4</sup> architectures, technical standards, requirements, policies, procedures, and solutions, thus ensuring integration and interoperability among Air Force C<sup>4</sup> systems

**STRUCTURE**

Five headquarters functional areas  
 1872d Training Development Squadron, Keesler AFB, Miss.  
 C<sup>4</sup> Technology Validation Office, Barksdale AFB, La.

**PERSONNEL**

Active-duty .....	410
Officers .....	166
Enlisted .....	244
Reserve component .....	2
ANG .....	0
AFRES .....	2
Civilians .....	361
<b>Total .....</b>	<b>773</b>

**NOTE**

Air Force Communications Command became the Air Force C<sup>4</sup> Agency on May 28, 1993.

**Air Force Cost Analysis Agency**

Headquarters ..... Arlington, Va.  
 Established ..... August 1, 1992  
 Commander ..... Col. Gordon D. Kage II

**MISSION, PURPOSE, OPERATIONS**

Conduct Component Cost Analyses (CCAs) for major weapon system acquisition programs and automated information systems as required by public law and DoD directives

Develop independent estimates for the Secretary of Defense, the Secretary of the Air Force, the Air Force Acquisition Executive, Program Executive Officers, and other senior executives

Perform cost research on emerging technologies, operating costs, and subsystems to support CCAs

**STRUCTURE**

Aircraft Programs Division  
 Boosters, Missiles, and Munitions Programs Division  
 C<sup>3</sup>I Programs Division

Program Control Division  
Space Programs Division

#### PERSONNEL

Active-duty ..... 30  
  Officers ..... 30  
  Enlisted ..... 0  
Reserve component ..... 0  
Civilians ..... 23  
Total ..... 53

### Air Force Doctrine Center

Headquarters ..... Langley AFB, Va.  
Established ..... July 21, 1993  
Commander ..... Col. Robert D. Coffman

#### MISSION, PURPOSE, OPERATIONS

**Develop and publish** basic and operational level doctrine for the Air Force  
**Provide** Air Force input into joint and multinational doctrine development

#### PERSONNEL

Active-duty ..... 16  
  Officers ..... 16  
  Enlisted ..... 0  
Reserve component ..... 0  
Civilians ..... 4  
Total ..... 20

### Air Force Flight Standards Agency

Headquarters ..... Andrews AFB, Md.  
Established ..... October 1, 1991  
Commander ..... Col. Dennis W. Traynor III

#### MISSION, PURPOSE, OPERATIONS

**Set** standards for global integrated flight operations in war and peacetime to advance safe and effective Air Force flight operations  
**Perform** worldwide flight inspection of airfields, navigation systems, and instrument approaches during combat, contingencies, and Joint Staff exercises  
**Represent** the Secretary of the Air Force and Hq. USAF in Federal Aviation Administration (FAA) airspace management and air traffic control issues  
**Provide** flight standards and aeronautical services to develop USAF instrument requirements and training  
**Certify** procedures and directives for current and emerging cockpit display technologies and new navigation systems  
**Provide** the Air Force with air traffic control and airfield procedures, functional management, operational evaluation of air traffic control systems, and airspace management procedures  
**Lead** Air Traffic Control and Landing Systems (ATCALs) planning and programming, sustainment, and coordination with FAA and military services  
**Maintain** the USAF ATCALs database  
**Manage** the combined FAA and DoD US Notice to Airmen system

#### STRUCTURE

USAF Representative to FAA, Hq. FAA, Washington, D. C.  
DoD Notice to Airmen Division, Hq. FAA, Washington, D. C.  
Flight Inspection Center, Oklahoma City, Okla.  
Instrument Flight Center, Randolph AFB, Tex.

#### PERSONNEL

Active-duty ..... 141  
  Officers ..... 76  
  Enlisted ..... 65

Reserve component ..... 3  
  ANG ..... 0  
  AFRES ..... 3  
Civilians ..... 29  
Total ..... 173

#### EQUIPMENT

One NT-39 navigation system test-bed  
One T-39 (to be replaced by C-21s)

### Air Force Frequency Management Agency

Headquarters ..... Arlington, Va.  
Established ..... October 1, 1991  
Commander ..... Lt. Col. (Col. selectee) Kimberly J. Dalrymple

#### MISSION, PURPOSE, OPERATIONS

**Develop** USAF policy and procedures for radio frequency spectrum management in support of air and space combat operations  
**Represent** USAF requirements and capabilities to regulatory agencies at national and international levels  
**Direct** frequency assignments in support of global air and space operations and contingencies  
**Train** frequency managers of all services

#### STRUCTURE

Plans Division  
Systems Engineering Division  
Technical Services Division  
Interservice Radio Frequency Management School, Keesler AFB, Miss.

#### PERSONNEL

Active-duty ..... 24  
  Officers ..... 12  
  Enlisted ..... 12  
Reserve component ..... 0  
Civilians ..... 20  
Total ..... 44

### Air Force Historical Research Agency

Headquarters ..... Maxwell AFB, Ala.  
Established ..... September 12, 1949  
Commander ..... Col. Richard S. Rauschkolb

#### MISSION, PURPOSE, OPERATIONS

**Serve** as the repository for more than sixty-five million pages of Air Force historical documents, ranging from the Civil War to the Persian Gulf War  
**Maintain** the largest specialized collection of documents on US military aviation in the world  
**Provide** manpower and historical support to preserve documents during contingency operations  
**Preserve** Air Force history and provide data and analyses to support the Air Staff and major commands  
**Operate** research facilities for professional military education students, faculty, visiting scholars, and the general public

#### STRUCTURE

Information Systems Division  
Research Division

#### PERSONNEL

Active-duty ..... 11  
  Officers ..... 4  
  Enlisted ..... 7

Reserve component .....	19
ANG .....	0
AFRES .....	19
Civilians .....	44
<b>Total .....</b>	<b>74</b>

## Air Force Inspection Agency

**Headquarters** ..... Kirtland AFB, N. M.  
**Established** ..... August 1, 1991  
**Commander** ..... Col. Robert M. Murdock

### MISSION, PURPOSE, OPERATIONS

**Provide** Air Force leadership with objective and independent assessments of Air Force readiness, discipline, and management efficiency and effectiveness

**Conduct** special reviews and inquiries as directed by the Air Force Secretary, Chief of Staff, and Inspector General

### STRUCTURE

Acquisition Inspection Directorate  
 Field Inspection Directorate  
 Management Inspection Directorate  
 Medical Inspection Directorate

### PERSONNEL

Active-duty .....	145
Officers .....	111
Enlisted .....	34
Reserve component .....	2
ANG .....	2
AFRES .....	0
Civilians .....	21
<b>Total .....</b>	<b>168</b>

## Air Force Legal Services Agency

**Headquarters** ..... Bolling AFB, D. C.  
**Established** ..... September 1, 1991  
**Commander** ..... Col. (Brig. Gen. selectee) Bryan G. Hawley

### MISSION, PURPOSE, OPERATIONS

**Provide** civil and military legal services to the Air Force and Air Force personnel

**Handle** Air Force patent and copyright matters

**Provide** judges and counsel for courts-martial and review trial results

**Provide** computer support and database management for the Office of The Judge Advocate General

### STRUCTURE

Air Force Court of Military Review  
 Civil Law and Litigation Directorate  
  Contract Litigation Division  
  Environmental Law and Litigation Division  
  General Claims Division  
  General Litigation Division  
  Legal Assistance Division  
  Patent Law Division  
  Tort Claims and Litigation Services Division  
 Judiciary Directorate  
  Appellate Defense Division  
  Clemency, Corrections, and Officer Review Division  
  Government Trial and Appellate Counsel Division  
  Military Justice Division  
  Trial Defense Division  
  Trial Judiciary Division  
 Legal Information Services Directorate

## PERSONNEL

Active-duty .....	428
Officers .....	296
Enlisted .....	132
Reserve component .....	64
ANG .....	0
AFRES .....	64
Civilians .....	166
<b>Total .....</b>	<b>658</b>

## Air Force Logistics Management Agency

**Headquarters** ..... Maxwell AFB, Gunter Annex, Ala.  
**Established** ..... September 30, 1975  
**Commander** ..... Col. Russell G. Stafford

### MISSION, PURPOSE, OPERATIONS

**Develop**, analyze, test, evaluate, and recommend new or improved concepts, methods, systems, policies, and procedures to enhance logistics efficiency and effectiveness

### STRUCTURE

Functional directorates  
  Base Supply  
  Contracting  
  Logistics Plans  
  Maintenance and Munitions  
  Transportation  
 Support directorates  
  Logistics Analysis  
  Plans and Programs

### PERSONNEL

Active-duty .....	70
Officers .....	54
Enlisted .....	16
Reserve component .....	0
Civilians .....	25
<b>Total .....</b>	<b>95</b>

### NOTE

AFLMA publishes the *Air Force Journal of Logistics*.

## Air Force Management Engineering Agency

**Headquarters** ..... Randolph AFB, Tex.  
**Established** ..... November 1, 1975  
**Commander** ..... Col. Charles F. Dibrell, Jr.

### MISSION, PURPOSE, OPERATIONS

**Work** with Air Staff and major commands to achieve significant improvement through process reengineering

**Determine** manpower requirements and manage manpower resources

**Provide** commanders and functional managers with technical expertise and process improvement techniques

**Oversee** the implementation of technical and procedural guidance for Air Force Management Engineering and Productivity Programs

**Serve** as the executive agent for the Navy, Army, and Air Force for the development of DoD medical manpower determinants through the Joint Health-Care Management Engineering Team  
**Direct** the Air Force Wartime Manpower and Personnel Readiness Team

### STRUCTURE

Air Force Civil Engineering Management Engineering Team (MET), Tyndall AFB, Fla.

Air Force Communications-Computer MET, Scott AFB, Ill.  
 Air Force Logistics MET, Dover AFB, Del.  
 Air Force Medical MET, Maxwell AFB, Ala.  
 Air Force Mission Support MET, Randolph AFB, Tex.  
 Air Force Security Police MET, Kirtland AFB, N. M.  
 Air Force Special Staff MET, Peterson AFB, Colo.  
 Joint Health-Care MET, Randolph AFB, Tex.

**PERSONNEL**

Active-duty ..... 141  
 Officers ..... 48  
 Enlisted ..... 93  
 Reserve component ..... 0  
 Civilians ..... 110  
**Total** ..... 251

**Air Force Medical Operations Agency**

**Headquarters** ..... Bolling AFB, D. C.  
**Established** ..... July 1, 1992  
**Commander** ..... Brig. Gen. Peter F. Hoffman

**MISSION, PURPOSE, OPERATIONS**

**Formulate** plans, practices, and procedures and direct programs for the Air Force Medical Service in aerospace medicine, family advocacy, clinical investigations, clinical quality management, radiation protection, and health promotion

**STRUCTURE**

Aerospace Medicine Division  
 Clinical Investigations and Life Sciences Division  
 Clinical Quality Management Division  
 Family Advocacy Division, Brooks AFB, Tex.  
 Health Promotion Division  
 USAF Radioisotope Committee Secretariat, Brooks AFB, Tex.

**PERSONNEL**

Active-duty ..... 46  
 Officers ..... 40  
 Enlisted ..... 6  
 Reserve component ..... 3  
 ANG ..... 0  
 AFRES ..... 3  
 Civilians ..... 33  
**Total** ..... 82

**Air Force Medical Support Agency**

**Headquarters** ..... Brooks AFB, Tex.  
**Established** ..... July 1, 1992  
**Commander** ..... Col. Richard W. Rushmore

**MISSION, PURPOSE, OPERATIONS**

**Assist** the Air Force Surgeon General in developing programs, policies, and practices relating to Air Force health care in peace and war

**STRUCTURE**

Directorate of Medical Support  
 Health Facilities Division  
 Medical Information Systems Division  
 Medical Logistics Division  
 Patient Administration Division

**PERSONNEL**

Active-duty ..... 44  
 Officers ..... 36  
 Enlisted ..... 8  
 Reserve component ..... 0

Civilians ..... 61  
**Total** ..... 105

**Air Force Military Personnel Center**

**Headquarters** ..... Randolph AFB, Tex.  
**Established** ..... July 25, 1963  
**Commander** ..... Maj. Gen. William B. Davitte

**MISSION, PURPOSE, OPERATIONS**

**Execute** USAF personnel programs and policies  
**Ensure** that the right number of people in the right grades and skills are available to perform the missions of unit commanders worldwide  
**Release** officers and enlisted members voluntarily to reach congressionally mandated military personnel end strengths

**STRUCTURE**

Assignments Directorate  
 Casualty Matters Directorate  
 Medical Service Officer Management Directorate  
 Personnel Data Systems Directorate  
 Personnel Operations Directorate  
 Personnel Program Management Directorate

**PERSONNEL**

Active-duty ..... 1,046  
 Officers ..... 332  
 Enlisted ..... 714  
 Reserve component ..... 7  
 ANG ..... 0  
 AFRES ..... 7  
 Civilians ..... 485  
**Total** ..... 1,538

**NOTE**

In 1993, AFMPC converted active-duty, ANG, and AFRES personnel records to the new Air Force Specialty Code. This was the first code restructuring in more than forty years.

**Air Force News Agency**

**Headquarters** ..... Kelly AFB, Tex.  
**Established** ..... June 1, 1978  
**Commander** ..... Col. Ted G. Tilma

**MISSION, PURPOSE, OPERATIONS**

**Gather**, package, and disseminate electronic and printed news and information

**STRUCTURE**

Air Force Broadcasting Service  
 Air Force Internal Information Directorate  
 Army and Air Force Hometown News Service

**PERSONNEL**

Active-duty ..... 380  
 Officers ..... 30  
 Enlisted ..... 350  
 Reserve component ..... 0  
 Civilians ..... 150  
**Total** ..... 530

**NOTES**

Air Force Internal Information Directorate news products include *Airman* Magazine, the *Air Force Policy Letter*, Air Force Television News, and Air Force Radio News. The Air Force Broadcasting Service operates all USAF-managed Armed Forces Radio and Television Service outlets.

## Air Force Office of Special Investigations

**Headquarters** ..... Bolling AFB, D. C.  
**Established** ..... August 1, 1948  
**Commander** ..... Brig. Gen. Robert A. Hoffman

### MISSION, PURPOSE, OPERATIONS

**Provide** criminal investigative and counterintelligence information and services to commanders  
**Identify** and prevent criminal activity, including homicide, drug abuse, espionage, terrorism, sabotage, economic (major defense contractor fraud and local fraud), environmental, and other crimes that threaten Air Force and DoD resources  
**Provide** force protection to deployed wings and units

### STRUCTURE

USAF Special Investigations Academy  
Seven regional offices  
Seven overseas squadrons  
160 detachments and operating locations

### PERSONNEL

Active-duty .....	1,637
Officers .....	484
Enlisted .....	1,153
Reserve component .....	420
ANG .....	0
AFRES .....	420
Civilians .....	403
Foreign nationals .....	37
<b>Total</b> .....	<b>2,497</b>

## Air Force Personnel Operations Agency

**Headquarters** ..... Washington, D. C.  
**Established** ..... August 15, 1993  
**Commander** ..... Steve N. Smith

### MISSION, PURPOSE, OPERATIONS

**Execute** personnel programs and portions of programs located in the Washington, D. C., area in proximity to the policy- and decision-making personnel organizations  
**Develop** and operate officer and enlisted models and databases for management information  
**Handle** small computer acquisition, technical support, and network management for the deputy chief of staff for Personnel and for local users of the Personnel Data System  
**Process** congressional inquiries and third-party civilian complaints and actions  
**Execute** the Air Force Employee Development Program and training budgets  
**Manage** the Air Force Relocation, Employee, and Labor Relations Programs  
**Conduct** Air Force Quality Assessments and the quality awards program

### STRUCTURE

Analysis Division  
Performance Management Division  
Systems Support Division  
Work Force Appeals and Relations Division

### PERSONNEL

Active-duty .....	38
Officers .....	26
Enlisted .....	12
Reserve component .....	0
Civilians .....	33
<b>Total</b> .....	<b>71</b>

## Air Force Program Executive Office

**Headquarters** ..... Washington, D. C.  
**Established** ..... November 1990  
**Service Acquisition Executive** ..... Vacant

### MISSION, PURPOSE, OPERATIONS

**Manage** and account for the execution of major and selected Air Force acquisition programs

### STRUCTURE

#### Service Acquisition Executive

#### Program Executive Officers:

Brig. Gen. William F. Moore, Bombers, Missiles, and Trainers  
Harry E. Shulte, Conventional Strike Systems  
Brig. Gen. James S. Childress, Tactical and Airlift Systems  
John M. Gilligan, Combat Support Systems  
Maj. Gen. Garry A. Schnelzer, Space Systems  
Col. (Brig. Gen. selectee) Berwyn A. Reiter, Command, Control, and Communications Systems

**PERSONNEL** ..... 49

## Air Force Real Estate Agency

**Headquarters** ..... Bolling AFB, D. C.  
**Established** ..... August 1, 1991  
**Director** ..... Anthony R. Jonkers

### MISSION, PURPOSE, OPERATIONS

**Acquire**, manage, and dispose of real property worldwide for the Air Force  
**Maintain** a complete land and facilities inventory  
**Plan** and execute the Real Property Management program  
**Provide** instructions to assist USAF in complying with public laws and federal and DoD guidance

### PERSONNEL

Active-duty .....	0
Reserve component .....	0
Civilians .....	13
<b>Total</b> .....	<b>13</b>

## Air Force Reserve

**Headquarters** ..... Robins AFB, Ga.  
**Established** ..... April 14, 1948  
**Commander** ..... Maj. Gen. John J. Closner III

### MISSION, PURPOSE, OPERATIONS

**Support** the active-duty force  
**Serve** in missions including fighter, bomber, airlift, aerial refueling, rescue, special operations, aeromedical evacuation, aerial fire-fighting, weather reconnaissance, and space operations  
**Provide** support and disaster relief in the US  
**Support** national counterdrug efforts

### FORCE STRUCTURE

4th Air Force, McClellan AFB, Calif.  
10th Air Force, Bergstrom ARS, Tex.  
22d Air Force, Dobbins ARB, Ga.  
Twenty-two wings  
165 groups  
392 squadrons  
117 flights



## Air Force Reserve Flying Wings and Assigned Units

Wing Hq.	Group	Squadron	Aircraft	Location	Gaining Command
<b>4th Air Force • Hq. McClellan AFB, Calif. • Brig. Gen. Wallace W. Whaley, Commander</b>					
919th SOW		711th SOS	AC-130A, C-130E	Duke Field, Fla.	AFSOC
302d AW		731st AS	C-130E	Peterson AFB, Colo.	ACC
	934th AG	96th AS	C-130E	Minneapolis-St. Paul IAP, Minn.*	ACC
349th AW (Associate)		301st AS (Associate)	C-5A/B	Travis AFB, Calif.	AMC
		312th AS (Associate)	C-5A/B	Travis AFB, Calif.	AMC
		708th AS (Associate)	C-141B	Travis AFB, Calif.	AMC
		710th AS (Associate)	C-141B	Travis AFB, Calif.	AMC
433d AW		68th AS	C-5A	Kelly AFB, Tex.	AMC
440th AW		95th AS	C-130H	General Mitchell IAP/ARS, Wis.*	ACC
	928th AG	64th AS	C-130H	O'Hare IAP/ARS, Ill.*	ACC
	910th AG	757th AS	C-130H	Youngstown MAP/ARS, Ohio*	ACC
446th AW (Associate)		97th AS (Associate)	C-141B	McChord AFB, Wash.	AMC
		313th AS (Associate)	C-141B	McChord AFB, Wash.	AMC
		728th AS (Associate)	C-141B	McChord AFB, Wash.	AMC
	932d AAG (Associate)	73d AAS (Associate)	C-9A	Scott AFB, Ill.	AMC
452d AMW		336th ARS	KC-135E	March AFB, Calif.	AMC
		79th ARS	KC-10A	March AFB, Calif.	AMC
		729th AS	C-141B	March AFB, Calif.	AMC
		730th AS	C-141B	March AFB, Calif.	AMC
	507th ARG	465th ARS	KC-135	Tinker AFB, Okla.	ACC
	940th ARG	314th ARS	KC-135E	McClellan AFB, Calif.	AMC
<b>10th Air Force • Hq. Bergstrom ARS, Tex. • Maj. Gen. David R. Smith, Commander</b>					
301st FW		457th FS	F-16C/D	Carswell ARB, Tex.*	ACC
	924th FG	704th FS	F-16A/B	Bergstrom ARS, Tex.*	ACC
	926th FG	706th FS	F-16C/D	NAS New Orleans, La.	ACC
419th FW		466th FS	F-16A/B	Hill AFB, Utah	ACC
	944th FG	302d FS	F-16C/D	Luke AFB, Ariz.	ACC
442d FW		303d FS	A/OA-10A	Whiteman AFB, Mo.	ACC
917th Wing		47th FS	A/OA-10A	Barksdale AFB, La.	ACC
	98th ARG	93d BMS	B-52H	Barksdale AFB, La.	ACC
		78th ARS	KC-10A	Barksdale AFB, La.	AMC
482d FW		93d FS	F-16A/B	Homestead ARB, Fla.*	ACC
	906th FG	89th FS	F-16A/B	Wright-Patterson AFB, Ohio	ACC
939th RQW		304th RQS	HC-130P, HH-60G	Portland IAP, Ore.	ACC
		301st RQS	HC-130N, HH-60G	Patrick AFB, Fla.	ACC
		305th RQS	HH-60G	Davis-Monthan AFB, Ariz.	ACC
<b>22d Air Force • Hq. Dobbins ARB, Ga. • Maj. Gen. Robert A. McIntosh, Commander</b>					
94th AW		700th AS	C-130H	Dobbins ARB, Ga.*	AMC
	911th AG	758th AS	C-130H	Pittsburgh IAP/ARS, Pa.*	AMC
	914th AG	328th AS	C-130H	Niagara Falls IAP/ARS, N. Y.*	AMC
315th AW (Associate)		300th AS (Associate)	C-141B	Charleston AFB, S. C.	AMC
		701st AS (Associate)	C-141B	Charleston AFB, S. C.	AMC
		707th AS (Associate)	C-141B	Charleston AFB, S. C.	AMC
		317th AS (Associate)	C-17A	Charleston AFB, S. C.	AMC
403d AW		815th AS	C-130E	Keesler AFB, Miss.	ACC
		53d WRS	WC-130E/H	Keesler AFB, Miss.	ACC
	908th AG	357th AS	C-130H	Maxwell AFB, Ala.	ACC
	913th AG	327th AS	C-130E	Willow Grove ARS, Pa.*	ACC
434th Wing		72d ARS	KC-135R	Grissom AFB, Ind.	AMC
		74th ARS	KC-135R	Grissom AFB, Ind.	AMC
		45th FS	A/OA-10A	Grissom AFB, Ind.	ACC
	916th ARG	77th ARS	KC-10A	Seymour Johnson AFB, N. C.	ACC
	927th ARG	63d ARS	KC-135E	Selfridge ANGB, Mich.	AMC
439th AW		337th AS	C-5A	Westover ARB, Mass.*	AMC
459th AW		756th AS	C-141B	Andrews AFB, Md.	AMC
	907th AG	356th AS	C-141B	Wright-Patterson AFB, Ohio	AMC
512th AW (Associate)		326th AS (Associate)	C-5A/B	Dover AFB, Del.	AMC
		709th AS (Associate)	C-5A/B	Dover AFB, Del.	AMC
514th AW (Associate)		335th AS (Associate)	C-141B	McGuire AFB, N. J.	AMC
		702d AS (Associate)	C-141B	McGuire AFB, N. J.	AMC
		732d AS (Associate)	C-141B	McGuire AFB, N. J.	AMC
	98th ARG	78th ARS (Associate)	KC-10A	Barksdale AFB, La.	AMC

*	AFRES Base	<b>ARS</b>	Air Refueling Squadron or	<b>FW</b>	Fighter Wing
<b>AAG</b>	Aeromedical Airlift Group		Air Reserve Station	<b>IAP</b>	International Airport
<b>AAS</b>	Aeromedical Airlift Squadron	<b>ARW</b>	Air Refueling Wing	<b>NAS</b>	Naval Air Station
<b>AG</b>	Airlift Group	<b>AS</b>	Airlift Squadron	<b>RQS</b>	Rescue Squadron
<b>AMW</b>	Air Mobility Wing	<b>AW</b>	Airlift Wing	<b>RQW</b>	Rescue Wing
<b>ANGB</b>	Air National Guard Base	<b>BMS</b>	Bomb Squadron	<b>SOS</b>	Special Operations Squadron
<b>ARB</b>	Air Reserve Base	<b>FG</b>	Fighter Group	<b>SOW</b>	Special Operations Wing
<b>ARG</b>	Air Refueling Group	<b>FS</b>	Fighter Squadron	<b>WRS</b>	Weather Reconnaissance Squadron

## PERSONNEL

Officers .....	15,559
Enlisted .....	62,444
Civilians (non-ART) .....	4,648
<b>Total .....</b>	<b>82,651</b>

## EQUIPMENT

B-52H bombers .....	2
F-16 fighters .....	191
A/OA-10 attack aircraft .....	72
C-5A airlifters .....	32
C-141B airlifters .....	34
C-130E/H airlifters .....	102
KC-135E/R tankers .....	51
HC-130N/P rescue aircraft .....	10
HH-60G rescue helicopters .....	25
AC-130A gunships .....	10
WC-130H weather planes .....	10
<b>Total primary aircraft authorized .....</b>	<b>539</b>

## OPERATIONAL ACTIVITY

Coronet Oak, Central and South America; Deny Flight, Bosnia-Herzegovina; Provide Comfort, Iraq; Provide Hope II, Russia; Provide Promise, Bosnia; Provide Relief, Kenya and Somalia; Restore Hope, Somalia  
Relief effort for victims of the 1993 Mississippi River flooding; support in 1993 hurricane/storm relief

## NOTES

The AFRES commander also serves as chief, Air Force Reserve, Washington, D. C. AFRES serves under federal government jurisdiction. Officer and enlisted personnel figures are Selected Reserve, including Air Reserve technicians—Civil Service employees in dual status. Approximately 12,000 of these Air Force Reservists are assigned to active-duty units under the Individual Mobilization Augmentee program. Reserve crews also fly active-duty KC-10, C-5, C-141, C-17 and C-9 aircraft daily under the associate program.

## Air Force Review Boards Agency

**Headquarters** ..... Washington, D. C.  
**Established** ..... June 1, 1980  
**Deputy** ..... Joe G. Lineberger

## MISSION, PURPOSE, OPERATIONS

**Manage** various 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

## STRUCTURE

Air Force Board for Correction of Military Records  
Air Force Civilian Appellate Review Agency  
Air Force Personnel Council  
Air Force Personnel Board  
Board of Review  
Clemency and Parole Board  
Decorations Board  
Discharge Review Board  
DoD Civilian/Military Service Review Board  
Physical Disability Appeal Board

## PERSONNEL

Active-duty .....	16
Officers .....	10
Enlisted .....	6
Reserve component .....	3
ANG .....	1
AFRES .....	2
Civilians .....	39
<b>Total .....</b>	<b>58</b>

## Air Force Safety Agency

**Headquarters** ..... Kirtland AFB, N. M.  
**Established** ..... August 1, 1991  
**Commander** ..... Col. John R. Clapper

## MISSION, PURPOSE, OPERATIONS

**Execute** Air Force safety and nuclear surety policies, plans, and programs  
**Oversee** all USAF mishap-prevention programs, including nuclear weapons surety, ballistic missiles, remotely piloted vehicles, and satellites  
**Conduct** USAF aircraft mishap investigation, chief of safety, and flight safety officer courses  
**Contract** ground safety training for USAF personnel  
**Investigate** and report on- and off-duty mishaps  
**Oversee** major command mishap investigations and evaluate corrective actions for applicability and implementation USAF-wide

## STRUCTURE

Mission directorates  
Flight Safety  
Ground Safety  
Nuclear Surety  
Weapons and Space Safety  
Support directorates  
Data Operations and Analysis  
Life Sciences  
Safety Education  
System Safety and Engineering

## PERSONNEL

Active-duty .....	79
Officers .....	60
Enlisted .....	19
Reserve component .....	2
ANG .....	0
AFRES .....	2
Civilians .....	68
<b>Total .....</b>	<b>149</b>

## NOTE

AFSA publishes *Flying Safety Magazine*, *Road and Rec Magazine*, and *USAF Nuclear Surety Journal*.

## Air Force Security Police Agency

**Headquarters** ..... Kirtland AFB, N. M.  
**Established** ..... February 1991  
**Commander** ..... Col. John E. Killeen

## MISSION, PURPOSE, OPERATIONS

**Provide** expertise for the security of nuclear weapons and weapon systems, information security, law enforcement, air base defense, and antiterrorism  
**Develop** and implement combat arms marksmanship and training programs  
**Assist** commanders with the Security Police equipment inventory and evaluate new products

## STRUCTURE

Corrections Directorate  
Information Security Directorate  
Law Enforcement and Training Directorate  
Physical Security Directorate  
Resources and Equipment Directorate

## PERSONNEL

Active-duty .....	120
Officers .....	26
Enlisted .....	94

Reserve component .....	11
ANG .....	0
AFRES .....	11
Civilians .....	22
<b>Total</b> .....	<b>153</b>

### FACILITIES

Det. 1, US Disciplinary Barracks, Fort Leavenworth, Kan.  
 Det. 2, Naval Consolidated Brig, NAS Miramar, Calif.  
 Det. 3, Naval Consolidated Brig, Charleston Naval Weapons Station, S. C.

## Air Force Services Agency

**Headquarters** ..... Randolph AFB, Tex.  
**Established** ..... February 5, 1991  
**Commander** ..... Col. Stephen R. Wingfield

### MISSION, PURPOSE, OPERATIONS

**Assist** Chief of Staff with policy development, resource advocacy, and program oversight for all Air Force morale, welfare, recreation, and services activities

**Develop** procedures, provide technical guidance, field new initiatives, and manage selected central programs that promote services, policies, and programs

**Prepare** and coordinate responses to congressional and other high-level inquiries

**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 .....	41
Officers .....	25
Enlisted .....	16
Reserve component .....	0
Civilians .....	305
<b>Total</b> .....	<b>346</b>

### NOTE

AFSA was formerly the Air Force Morale, Welfare, Recreation, and Services Agency.

## Air Force Studies and Analyses Agency

**Headquarters** ..... Washington, D. C.  
**Established** ..... February 1991  
**Commander** ..... Col. Thomas L. Allen

### MISSION, PURPOSE, OPERATIONS

**Provide** analyses and simulation and modeling tools to support the assessment of force-structure options and acquisition decisions for the Secretariat and Air Staff

**Aid** Air Force decision-makers in addressing force-sizing and force-shaping issues, weapon systems employment, resource allocation, and arms reductions proposals

**Assist** the Secretariat and the Air Staff on responses to congressional inquiries and requests for testimony

**Serve** as the configuration manager for a variety of simulation models used within the Air Force by other DoD agencies and by civilian contractors

### STRUCTURE

Force Application Division  
 Force Enhancement Division  
 Resource Management Division

### PERSONNEL

Active-duty .....	70
Officers .....	58
Enlisted .....	12
Reserve component .....	3
ANG .....	0
AFRES .....	3
Civilians .....	26
<b>Total</b> .....	<b>99</b>

## Air Force Technical Applications Center

**Headquarters** ..... Patrick AFB, Fla.  
**Established** ..... May 1, 1960  
**Commander** ..... Brig. Gen. James A. Jaeger

### MISSION, PURPOSE, OPERATIONS

**Monitor** compliance with several nuclear treaties

**Operate** and maintain the US Atomic Energy Detection System, a worldwide system of sensors able to detect explosions underground, underwater, in the atmosphere, and in space

### STRUCTURE

Technical Operations Division, McClellan AFB, Calif.  
 McClellan Central Laboratory  
 One detachment

### PERSONNEL

Active-duty .....	1,048
Officers .....	216
Enlisted .....	832
Reserve component .....	0
Civilians .....	110
<b>Total</b> .....	<b>1,158</b>

### EQUIPMENT

Eighteen seismic arrays consisting of more than fifty KS36000 three-component seismometers and 200 23900 single-component seismometers, with associated central terminals and workstations

Seven hydroacoustic recording systems

More than thirty sensors on Global Positioning System satellites, with associated ground satellite instrumentation and data processing equipment

An extensive air/particle sampling network for collection of nuclear test debris

Atmospheric sampling pods for B-52 and U-2 aircraft

Military and civilian laboratories that perform low-level radioactive sample analysis

## Air Intelligence Agency

**Headquarters** ..... Kelly AFB, Tex.  
**Established** ..... October 1, 1993  
**Commander** ..... Maj. Gen. Kenneth A. Minihan

### MISSION, PURPOSE, OPERATIONS

**Provide** direct intelligence, security, electronic combat, foreign technology, and treaty-monitoring support to national decision-makers and field air component commanders

**Develop** principles and doctrines of information dominance for application in future warfare

**Provide** combat commanders with data enabling them to decide when to exploit, jam, deceive, or destroy hostile military communications

**Provide** human and scientific-technical intelligence support to AIA customers

**Provide** tailored intelligence assessments in support of Air Staff planning and policy formulation

**Conduct** USAF Sensitive Compartmented Information security functions

**Assist** Air Force components in the development of concepts, exercises, and employment of agency assets to support low-intensity conflict, counterdrug, and special operations

**Provide** nuclear intelligence production and support (including data collection, analysis, and exploitation) to AIA customers

#### EQUIPMENT

Three AN/FLR-9 antennas located in Alaska, England, and Japan

#### FORCE STRUCTURE

Air Force Cryptologic Support Center, Kelly AFB, Tex.  
Air Force Information Warfare Center, Kelly AFB, Tex.  
National Air Intelligence Center, Wright-Patterson AFB, Ohio  
67th Intelligence Wing, Kelly AFB, Tex.  
26th Intelligence Wing, Ramstein AB, Germany  
26th Intelligence Group, Vogelweh, Germany  
497th Intelligence Group, Bolling AFB, D. C.  
480th Intelligence Group, Langley AFB, Va.  
544th Intelligence Group, Peterson AFB, Colo.  
692d Intelligence Group, Hickam AFB, Hawaii  
694th Intelligence Group, Fort Meade, Md.  
696th Intelligence Group, Andrews AFB, Md.  
67th Intelligence Group, Kelly AFB, Tex.  
6960th Electronic Security Group, Kelly AFB, Tex.  
Intelligence Systems Group, Kelly AFB, Tex.

#### PERSONNEL

Active-duty .....	13,618
Officers .....	1,868
Enlisted .....	11,750
Reserve component .....	1,502
ANG .....	91
AFRES .....	1,411
Civilians .....	2,533
<b>Total</b> .....	<b>17,653</b>

#### OPERATIONAL ACTIVITY

Provide Comfort, northern Iraq; Restore Hope, Somalia; Southern Watch, southern Iraq

#### NOTES

AIA was formed by integrating personnel and missions of the former Air Force Intelligence Command and Air Force Intelligence Support Agency and elements of Air Combat Command. The agency reports directly to the assistant chief of staff for intelligence. In 1993, the agency supported more than fifty worldwide, joint, unified, and specified command-sponsored exercises. General Minihan also serves as director of the Joint Electronic Warfare Center.

### Air National Guard

**Headquarters** ..... Washington, D. C.  
**Established** ..... September 18, 1947  
**Director** ..... Maj. Gen. Donald W. Shepperd

#### MISSION, PURPOSE, OPERATIONS

**Provide** air defense of continental US  
In emergencies, under federal government jurisdiction, enforce federal authority, suppress insurrection, and serve in the national defense

#### FORCE STRUCTURE

Major command assignments  
  Air Combat Command  
  Air Education and Training Command  
  Air Force Special Operations Command  
  Air Mobility Command  
  Pacific Air Forces  
Twenty-four wings  
Sixty-five groups

#### PERSONNEL

Officers .....	14,178
Enlisted .....	101,579
Civilians .....	1,805
<b>Total</b> .....	<b>117,562</b>

#### OPERATIONAL ACTIVITY

Provide Hope, former Soviet Union; Provide Promise, Bosnia-Herzegovina; Provide Relief, Somalia and Kenya; Restore Hope, Somalia; Southern Watch, Middle East  
Relief effort for victims of Mississippi River flooding, fire-fighting support in California

#### NOTES

ANG serves under state government jurisdiction except in emergencies. It provides 100 percent of USAF's fighter-interceptor force, 100 percent of the RF-4C force, thirty percent of the tactical air support, forty-one percent of the tactical airlift, twenty-nine percent of the air-rescue capability, thirty-one percent of the tactical fighters, forty-one percent of the KC-135 air refueling capability, and eight percent of the strategic airlift capability.

### Air Reserve Personnel Center

**Headquarters** ..... Denver, Colo.  
**Established** ..... November 1, 1953  
**Commander** ..... Col. James H. White, Jr.

#### MISSION, PURPOSE, OPERATIONS

**Provide** personnel services and administrative support to members of the Air Force Reserve and Air National Guard, including assignments, promotions, discharges, retirements, veterans' entitlements, and presidentially activated mobilizations

#### STRUCTURE

Chaplain Individual Reserve Programs Directorate  
Health Services Individual Reserve Programs Directorate  
Individual Reserve Programs Directorate  
Information Systems Support Directorate  
Personnel Directorate  
Personnel Records Management and Services Directorate  
Plans Directorate  
Public Affairs Directorate  
Resource Management and Support Services Directorate  
Staff Judge Advocate

#### PERSONNEL

Active-duty .....	145
Officers .....	33
Enlisted .....	112
Reserve component .....	0
Civilians .....	480
<b>Total</b> .....	<b>625</b>

### Air Weather Service

**Headquarters** ..... Scott AFB, Ill.  
**Established** ..... July 1, 1937  
**Commander** ..... Col. Frank J. Misciasci, Jr.

#### MISSION, PURPOSE, OPERATIONS

**Provide** centralized weather, climatological, and space support to the Air Force and Army  
**Render** technical advice, develop procedures, and field systems for the integrated weather support system

## The Air National Guard by Major Command Assignment

(As of April 1, 1994)

<b>Air Mobility Command</b>		<b>F-15A/B fighter—air defense</b>	
<b>C-5A transport</b>		102d Fighter Wing	Otis ANGB, Mass.
105th Airlift Group	Stewart IAP, N. Y.	142d Fighter Group	Portland, Ore.
<b>C-141B transport</b>		<b>F-16A/B/C/D fighter</b>	
164th Airlift Group	Memphis IAP, Tenn.	113th Fighter Wing	Andrews AFB, Md.
172d Airlift Group	Jackson, Miss.	114th Fighter Group	Sioux Falls, S. D.
<b>KC-135 tanker</b>		122d Fighter Wing	Fort Wayne, Ind.
101st Air Refueling Wing	Bangor IAP, Me.	127th Fighter Wing	Selfridge ANGB, Mich.
108th Air Refueling Wing	McGuire AFB, N. J.	128th Fighter Wing	Truax Field, Wis.
121st Air Refueling Wing	Rickenbacker ANGB, Ohio	132d Fighter Wing	Des Moines, Iowa
126th Air Refueling Wing	Chicago, Ill.	138th Fighter Group	Tulsa, Okla.
128th Air Refueling Group	Milwaukee, Wis.	140th Fighter Wing	Buckley ANGB, Colo.
134th Air Refueling Group	Knoxville, Tenn.	149th Fighter Group	Kelly AFB, Tex.
141st Air Refueling Wing	Fairchild AFB, Wash.	150th Fighter Group	Kirtland AFB, N. M.
151st Air Refueling Group	Salt Lake City, Utah	156th Fighter Group	San Juan, Puerto Rico
155th Air Refueling Group	Lincoln, Neb.	169th Fighter Group	McEntire ANGB, S. C.
157th Air Refueling Group	Pease ANGB, N. H.	174th Fighter Wing	Syracuse, N. Y.
161st Air Refueling Group	Phoenix, Ariz.	178th Fighter Group	Springfield, Ohio
163d Air Refueling Group	March AFB, Calif.	180th Fighter Group	Toledo, Ohio
171st Air Refueling Wing	Pittsburgh, Pa.	181st Fighter Group	Terre Haute, Ind.
186th Air Refueling Group	Meridian, Miss.	182d Fighter Group	Peoria, Ill.
190th Air Refueling Group	Forbes Field, Kan.	183d Fighter Group	Springfield, Ill.
		185th Fighter Group	Sioux City, Iowa
		187th Fighter Group	Montgomery, Ala.
		188th Fighter Group	Fort Smith, Ark.
		192d Fighter Group	Richmond, Va.
<b>Air Combat Command</b>		<b>F-16A/B fighter—air defense</b>	
<b>A-10A attack aircraft</b>		107th Fighter Group	Niagara Falls IAP/ARS, N. Y.
103d Fighter Group	Bradley IAP, Conn.	119th Fighter Group	Fargo, N. D.
104th Fighter Group	Barnes MAP, Mass.	120th Fighter Group	Great Falls, Mont.
110th Fighter Group <sup>a</sup>	Battle Creek, Mich.	125th Fighter Group	Jacksonville, Fla.
175th Fighter Group <sup>a</sup>	Baltimore, Md.	144th Fighter Wing	Fresno, Calif.
<b>C-130 transport</b>		147th Fighter Group	Ellington Field, Tex.
109th Airlift Group	Schenectady, N. Y.	148th Fighter Group	Duluth, Minn.
118th Airlift Wing	Nashville, Tenn.	158th Fighter Group	Burlington, Vt.
123d Airlift Wing	Louisville, Ky.	177th Fighter Group	Atlantic City, N. J.
130th Airlift Group	Charleston, W. Va.	191st Fighter Group	Selfridge ANGB, Mich.
133d Airlift Wing	Minneapolis—St. Paul IAP, Minn.		
135th Airlift Group	Baltimore, Md.	<b>HC-130/HH-60G rescue aircraft</b>	
136th Airlift Wing	NAS Dallas, Tex.	106th Rescue Group	F. S. Gabreski IAP, N. Y.
137th Airlift Wing	Will Rogers IAP, Okla.	129th Rescue Group	NAS Moffett Field, Calif.
139th Airlift Group	St. Joseph, Mo.		
143d Airlift Group	Quonset State Airport, R. I.	<b>OA-10A observation aircraft</b>	
145th Airlift Group	Charlotte, N. C.	111th Fighter Group	Willow Grove ARS, Pa.
146th Airlift Wing	Channel Islands ANGB, Calif.		
153d Airlift Group	Cheyenne, Wyo.	<b>RF-4C reconnaissance aircraft</b>	
165th Airlift Group	Savannah, Ga.	117th Reconnaissance Wing	Birmingham, Ala.
166th Airlift Group	Wilmington, Del.	152d Reconnaissance Group	Reno, Nev.
167th Airlift Group	Martinsburg, W. Va.		
179th Airlift Group	Mansfield, Ohio		
189th Airlift Group <sup>b</sup>	Little Rock AFB, Ark.		
<b>F-4G Wild Weasel</b>		<b>Air Education and Training Command</b>	
124th Fighter Group	Boise, Idaho	<b>F-16A/B/C/D fighter</b>	
<b>F-15A/B fighter</b>		162d Fighter Group <sup>c</sup>	Tucson, Ariz.
116th Fighter Wing	Dobbins ARB, Ga.	184th Fighter Group <sup>c</sup>	McConnell AFB, Kan.
131st Fighter Wing	St. Louis, Mo.		
159th Fighter Group	NAS New Orleans, La.		
		<b>Pacific Air Forces</b>	
		<b>C-130 transport</b>	
		176th Composite Group <sup>d</sup>	Anchorage, Alaska
		<b>F-15A/B fighter</b>	
		154th Composite Group <sup>e</sup>	Hickam AFB, Hawaii
		<b>KC-135 tanker</b>	
		168th Air Refueling Group	Eielson AFB, Alaska
		<b>Special Operations Command</b>	
		<b>EC-130E special operations aircraft</b>	
		193d Special Operations Group	Harrisburg, Pa.

On October 1, 1993, all C-130 units assigned to AMC were reassigned to ACC.

On July 1, 1993, the 162d Fighter Group, Tucson, Ariz., and the 184th Fighter Group, McConnell AFB, Kan., assigned to ACC were reassigned to AETC.

<sup>a</sup>Also OA-10A aircraft

<sup>b</sup>Aircrew CCTU

<sup>c</sup>Formal training unit (FTU)

<sup>d</sup>Includes 210th Air Rescue Squadron with HC-130 and HH-60G aircraft

<sup>e</sup>Includes 203d Air Refueling Squadron with KC-135 aircraft

## STRUCTURE

Air Force Global Weather Central, Offutt AFB, Neb.  
Air Force Environmental Technical Applications Center, Scott AFB, Ill.  
Air Force Space Forecast Center, Falcon AFB, Colo.

## PERSONNEL

Active-duty .....	1,026
Officers .....	329
Enlisted .....	697
Reserve component .....	3
ANG .....	0
AFRES .....	3
Civilians .....	258
<b>Total .....</b>	<b>1,287</b>

## Center for Air Force History

**Headquarters** ..... Washington, D. C.  
**Established** ..... December 4, 1991  
**Director** ..... Jacob Neufeld

## MISSION, PURPOSE, OPERATIONS

**Research**, write, and publish books and other studies on the history of the Air Force

**Provide** historical support through the Air Force historian to Hq. USAF

**Publish** books to help the Air Force formulate strategy, plans, and doctrine; conduct operations; educate Air Force students at professional military schools; provide scholars with research and teaching materials; and inform the public about the role of the Air Force and airpower in national security

## STRUCTURE

Editorial Division  
Histories Division  
Reference Division  
Hq. USAF Division

## PERSONNEL

Active-duty .....	5
Officers .....	3
Enlisted .....	2
Reserve component .....	4
ANG .....	0
AFRES .....	4
Civilians .....	27
<b>Total .....</b>	<b>36</b>

## Joint Services Survival, Evasion, Resistance, and Escape Agency

**Headquarters** ..... Fort Belvoir, Va.  
**Established** ..... November 15, 1991  
**Commander** ..... Col. Robert C. Bonn, Jr.

## MISSION, PURPOSE, OPERATIONS

**Serve** as Office of the Secretary of Defense executive agent for DoD Code of Combat/SERE-related training and DoD POW/MIA programs

**Serve** as Chairman of the Joint Chiefs of Staff executive agent office of primary responsibility for Joint Evasion and Escape matters

**Develop** area contingency guides, training programs, and SERE products for use in joint commands' regional and counterdrug operations

## STRUCTURE

Operations Support Division  
Training Division  
Three operating locations

## PERSONNEL

Active-duty .....	23
Officers .....	8
Enlisted .....	15
Reserve component .....	7
ANG .....	0
AFRES .....	7
Civilians .....	42
<b>Total .....</b>	<b>72</b>

## FACILITIES

Six buildings at Fort Belvoir, Va.  
Operating locations in Virginia, Washington, and Florida

## NOTES

In 1993, the Joint Services SERE Agency developed planning and execution guidance for repatriation from Somalia and SERE debriefing of former hostages and advised Senate and DoD agencies on technical matters related to Korean War and Vietnam War MIA accountability. A stockpile of SERE products and capabilities is available for use by the warfighting CINCs to meet contingency requirements.

## 7th Communications Group

**Headquarters** ..... Washington, D. C.  
**Established** ..... October 1, 1984  
**Commander** ..... Col. Stephen E. Anno

## MISSION, PURPOSE, OPERATIONS

**Provide** twenty-four-hour-a-day communications and computer support to the Office of the Secretary of Defense, the Joint Staff, the Office of the Secretary of the Air Force, National Military Command Center (NMCC), the Air Staff, and the Air Force Operations Center

**Maintain** five red (secure) communications switches and three black (nonsecure) switches, including the Washington Tactical Switch, 8,000 telephones, and 2,500 leased circuits

**Handle** 3,000 specialized secure telephone units, NMCC and AFOC networks, and an extensive pager and cellular telephone network

## STRUCTURE

Air Staff Systems Directorate  
Mission Support Directorate  
OSD Systems Directorate  
Security Directorate  
Systems Management Directorate  
Plans and Programs Directorate

## PERSONNEL

Active-duty .....	565
Officers .....	167
Enlisted .....	398
Reserve component .....	2
ANG .....	0
AFRES .....	2
Civilians .....	254
<b>Total .....</b>	<b>821</b>

## Direct Reporting Units

A direct reporting unit (DRU) is a subdivision of the Air Force, directly subordinate to Hq. USAF, separate from any major command or field operating agency because of a unique mission, legal requirements, or other factors. DRUs have the same administrative and organizational responsibilities as major commands.



### Air Force District of Washington

**Headquarters** ..... Bolling AFB, D. C.  
**Established** ..... October 1, 1985  
**Commander** ..... Col. Stevan B. Richards

#### MISSION, PURPOSE, OPERATIONS

**Manage** support of Air Force and other Air Force activities supporting Hq. USAF and other Air Force units in the National Capital Region

**Provide** personnel, operations, comptroller, accounting and finance, and recreation services for AFDW assets, including the day-to-day operations of Bolling AFB

**Manage** physical, personal, electronic, and information security within the Pentagon

**Plan**, direct, and execute USAF Band and Honor Guard support to ceremonies and activities of the Air Force Chief of Staff, Secretary of the Air Force, the White House, Arlington National Cemetery, and joint organizations

#### STRUCTURE

1100th Air Base Group  
 1100th National Capital Region Support Group

#### PERSONNEL

Active-duty ..... 1,355  
     Officers ..... 121  
     Enlisted ..... 1,234  
 Reserve component ..... 0  
 Civilians ..... 925  
**Total** ..... 2,280

### Air Force Operational Test and Evaluation Center

**Headquarters** ..... Kirtland AFB, N. M.  
**Established** ..... January 1, 1974  
**Commander** ..... Maj. Gen. George B. Harrison

#### MISSION, PURPOSE, OPERATIONS

**Conduct** operational testing and evaluation of new or modified weapons systems and components for Air Force and multiservice use

#### STRUCTURE

Det. 2, Eglin AFB, Fla.  
 Det. 5, Edwards AFB, Calif.  
 Det. 4, Peterson AFB, Colo.

#### PERSONNEL

Active-duty ..... 565  
     Officers ..... 424  
     Enlisted ..... 141

Reserve component ..... 1  
     ANG ..... 1  
     AFRES ..... 0  
 Civilians ..... 181  
**Total** ..... 747

#### NOTE

The center is currently conducting tests that involve the B-2 Stealth bomber, the C-17 transport, Cheyenne Mountain upgrades, and Joint Surveillance and Target Attack Radar System aircraft.

### US Air Force Academy

**Headquarters** ..... Colorado Springs, Colo.  
**Established** ..... April 1, 1954  
**Superintendent** ..... Lt. Gen. Bradley C. Hosmer

#### MISSION, PURPOSE, OPERATIONS

**Develop** and inspire air and space leaders for the future

**Produce** dedicated Air Force officers and leaders

**Instill** leadership through academics, military training, athletic conditioning, and spiritual and ethical development

#### STRUCTURE

The entire group of cadets is designated the Cadet Wing. The wing is composed of four groups consisting of ten squadrons each, with about 102 cadets assigned to a squadron. Each squadron consists of members of all four classes.

#### PERSONNEL

Active-duty ..... 2,795  
     Officers ..... 1,264  
     Enlisted ..... 1,531  
 Reserve component ..... 0  
 Cadets ..... 4,100  
 Civilians ..... 1,745  
**Total** ..... 8,640

#### EQUIPMENT

88 Trainers (T-41, UV-18, 126E sailplane, ASK-21 sailplane, SGS-2-33A glider, and TG-7A motorized glider). The T-3A Firefly Enhanced Flight Screener is scheduled to begin arriving in July 1994 and will eventually replace the T-41.

#### FACILITIES

18,325-acre site  
 Three runways  
 One grass airstrip

#### NOTE

Cadets complete four years of study for a bachelor of science degree. Four primary areas of military development are stressed: professional military studies, theoretical and applied leadership experiences, aviation science and airmanship programs, and military training.



## Our Pledge

I pledge allegiance to the flag  
of the United States of America  
and to the republic for which it stands,  
one nation  
under God,  
indivisible,  
with liberty  
and justice for all.



**E-SYSTEMS**

The science of systems.





## Major Installations

**Altus AFB, Okla.** 73523-5000; within Altus city limits. Phone (405) 482-8100; DSN 866-1110. AETC base. 97th Air Mobility Wing; 457th Operations Gp. (AMC). Base activated Jan. 1943; inactivated May 1945; reactivated Jan. 1953. Area 4,095 acres, plus 818 leased. Runway 13,440 ft. Altitude 1,376 ft. Military 3,326; civilians 739; approx. 300 TDY students (officer and enlisted) in training per month. Payroll \$138 million. Housing: 148 officer, 652 NCO, 296 VAQ, 160 VOQ, 14 TLF. 15-bed hospital.

**Andersen AFB, Guam,** APO AP 96542-5000; 2 mi. N of Yigo. DSN 366-1110. PACAF base. Hq. 13th Air Force. Host unit: 633d Air Base Wing. No aircraft assigned. Tenant unit: 605th Military Airlift Support Sqdn.; 44th Aerial Port Sqdn. (AFRES); 254th Air Base Gp. (ANG); Det. 5, 750th Space Gp.; Det. 602, Air Force Office of Special Investigations (AFOSI). Navy VRC-50 Fleet Logistics Support Sqdn., C-130, S-3, C-2 operations. Andersen serves as a logistic support and staging base for aircraft operating in the Pacific and Indian Oceans. Base activated late 1944; named for Gen. James Roy Andersen, lost at sea between Kwajalein and Hawaii Feb. 26, 1946. General Andersen was the Chief of Staff, Hq. Army Air Forces, Pacific Ocean Areas. Area: 20,504 acres. Runways (north) 10,555 ft. and (south) 11,182 ft. Altitude 612 ft. Military 2,521; civilians 650. Payroll \$102 million. Housing: 249 officer, 1,508 enlisted. Unaccompanied housing: 30 officer, 1,056 enlisted. Transient housing: 110 VOQ, 54 VAQ, 18 TLF. One USAF clinic and one Navy hospital on island.

**Andrews AFB, Md.** 20331-5000; 11 mi. SE of Washington, D. C. Phone (301) 981-1110; DSN 858-1110. AMC base. Home of Air Force One and gateway to the nation's capital. Host wing is 89th Airlift Wing. Responsible for presidential support and base operations. It supports all branches of service, several major commands, and federal agencies. The wing also hosts Det. 302, AFOSI; Air Force District of Washington Contracting Office; Air National Guard Readiness Center (ANGRC); 113th Fighter Wing (D. C. ANG); 459th Airlift Wing (AFRES); Det. 9, Combat Camera (1st CTCS); Naval Air Facility; Marine Aircraft Gp. 49, Det. A. Base activated May 1943; named for Lt. Gen. Frank M. Andrews, military air pioneer and WW II commander of the European theater, killed in aircraft accident May 3, 1943, in Iceland. Area 7,550 acres (incl. easements). Runways 9,300 ft. and 9,755 ft. Altitude 281 ft. Military 10,009; civilians 3,201. Payroll \$402.8 million. Housing: 377 officer, 1,755 NCO, 177 trailer spaces, 974 UEQ, 326 transient (incl. 69 temporary living quarters for incoming personnel, 21 DV suites, 180 VOQ, 56 VAQ). 235-bed hospital.

**Arnold AFB, Tenn.** 37389; approx. 7 mi. SE of Manchester. Phone (615) 454-3000; DSN 340-5011. AFMC base. Site of Arnold Engineering Development Center, the world's largest complex of wind tunnels, jet and rocket engine test cells,

space simulation chambers, and hyperballistic ranges. AEDC supports the acquisition of new aerospace systems by conducting research, development, and evaluation testing for DoD, other government agencies, and commercial aerospace firms. Base dedicated June 25, 1951; named for Gen. H. H. "Hap" Arnold, wartime Chief of the AAF. Area 40,118 acres. Runway 6,000 ft. Altitude 1,100 ft. Military 118; civilians 288; contract employees 3,252. Payroll \$183.6 million. Housing: 23 officer, 17 NCO, 45 transient. Medical aid station.

**Aviano AB, Italy,** APO AE 09601; adjacent to Aviano, 50 mi. N of Venice. Phone (commercial, from CONUS) 011-39-434-667111; DSN 632-1110. USAF base. 31st Fighter Wing (formerly 401st FW) supports USAF and NATO. The unit began flying F-16C/D aircraft in Apr. 1994. In event of war in Europe, the unit will exercise command and control of a variety of deployed weapon systems. It also provides administrative and logistical support to 50 off-base units at 31 locations throughout Italy. Aviano is the only USAF tactical air base in Italy. Originally an Italian flying school, which opened in 1939; the Air Force began operation in 1954. Area 1,140 acres. Runway 8,596 ft. Altitude 413 ft. Military 2,592; civilians 730. Payroll \$79 million. 175 govt.-leased housing units. 490 billeting spaces (including contracted spaces), 496 dorm bed spaces. Clinic.

**Barksdale AFB, La.** 71110-5000; in Bossier City. Phone (318) 456-2252; DSN 781-1110. ACC base. Hq. 8th Air Force; 2d Bomb Wing, B-52H and T-37 operations; 458th Operations Gp. (AMC), KC-10 operations; 1st Electronic Combat Range Gp.; Det. 1, 307th Civil Engineering Sqdn. RED HORSE; 49th Test Sqdn.; 98th Air Refueling Gp. (AFRES), KC-135 and KC-10 operations; 917th Wing (AFRES), B-52 and A-10 operations. 8th Air Force Museum. Base activated Feb. 2, 1933; named for Lt. Eugene H. Barksdale, WW I airman killed in Aug. 1926 crash near Wright Field, Ohio. Area 22,000 acres (18,000 acres reserved for recreation). Runway 11,756 ft. Altitude 166 ft. Military 7,428; civilians 1,193. Payroll \$169 million. Housing: 105 officer, 324 NCO, 154 transient, 1,488 UEQ, 24 TLF, 72 VOQ, 58 VAQ. 40-bed hospital.

**Beale AFB, Calif.** 95903-5000; 13 mi. E of Marysville. Phone (916) 634-3000; DSN 368-1110. ACC base. 9th Reconnaissance Wing; 7th Space Warning Sqdn. (AFSPC). Aircraft include U-2 reconnaissance aircraft, KC-135 Stratotankers, and T-38 Talon trainers. Originally US Army's Camp Beale. Became Air Force installation Apr. 1948; became AFB in Nov. 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. Military 3,452; civilians 762. Payroll \$95.7 million. Housing: 206 officer, 1,503 enlisted, 18 transient. 25-bed hospital.

**Bitburg AB, Germany,** APO AE 09132-5000; 15 mi. N of Trier. Phone (commercial, from CONUS) 011-49-6561-61-1110; DSN 453-1110. USAF

base. 36th Fighter Wing with two fighter squadrons flying F-15C/D Eagles. Base activated 1952. Area 1,735 acres. Runway 8,221 ft. Altitude 1,228 ft. Military 3,400; civilians 1,125. Payroll \$25 million. Housing: 75 officer, 1,128 NCO, 32 VOQ, 190 VAQ, 70 TLF. 20-bed hospital. Base scheduled to be partially returned to the host government in Sept. 1994.

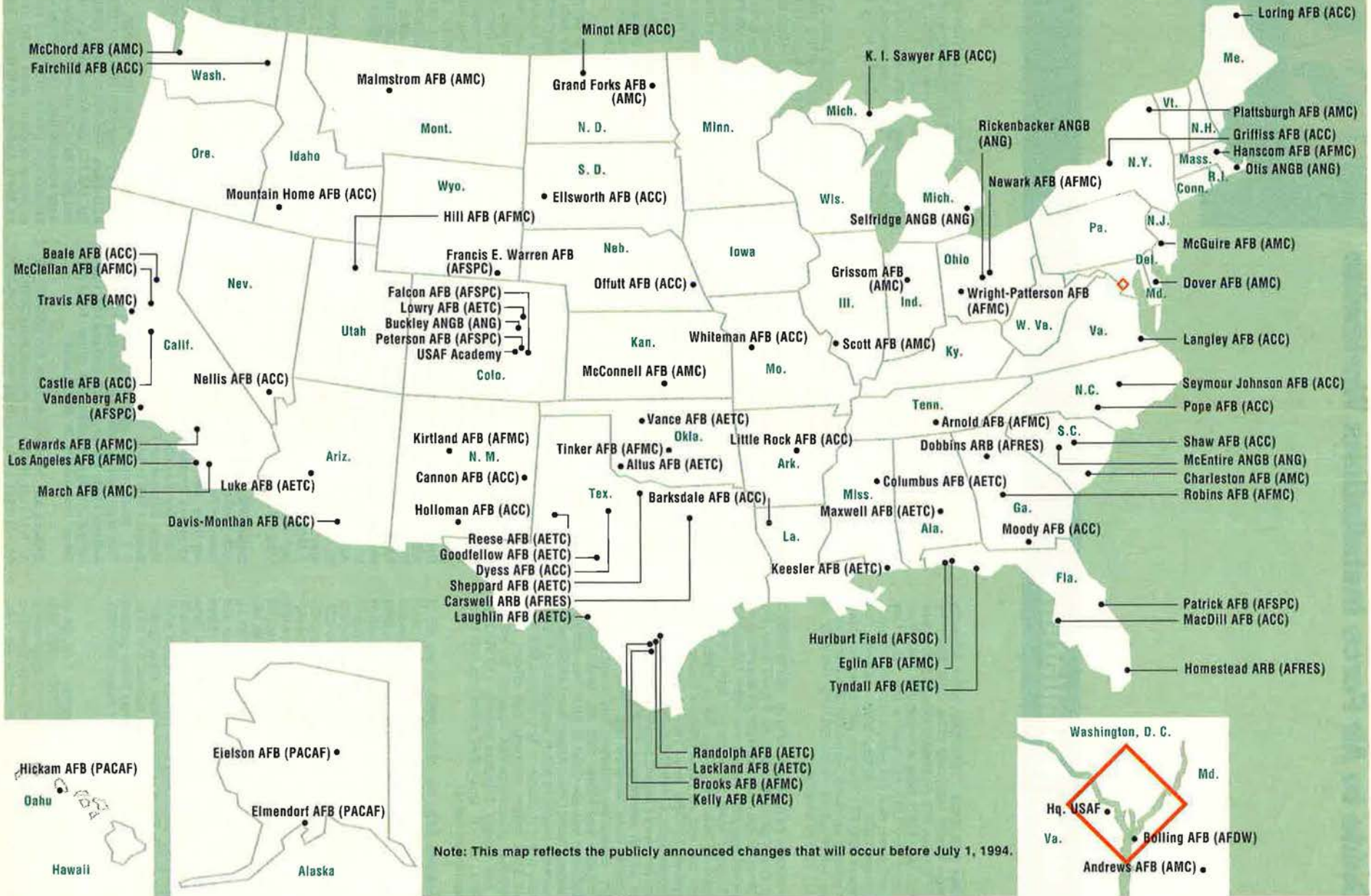
**Bolling AFB, D. C.** 20332-5000; 3 mi. S of US Capitol. Phone (202) 545-6700; DSN 227-0101. Air Force District of Washington. 1100th Air Base Gp.; 1100th Medical Sqdn.; 1100th National Capital Region Support Gp. (Pentagon); US Air Force Honor Guard; US Air Force Band; Air Force Office of Scientific Research (AFMC); Air Force Chief of Chaplains; Air Force Surgeon General; Center for Air Force History; Hq. Air Force Office of Special Investigations; Defense Intelligence Agency. Activated Oct. 1917; named for Col. Raynal C. Bolling, first high-ranking Air Service officer killed in WW I. Area 604 acres. No runway. Military 1,355; civilians 925. Payroll \$50 million. (Personnel and payroll apply to AFDW only.) Housing: 285 officer, 1,100 NCO, 220 transient. Clinic.

**Brooks AFB, Tex.** 78235; in SE San Antonio. Phone (210) 536-1110; DSN 240-1110. AFMC base. Human Systems Center; USAF School of Aerospace Medicine (AFMC); Armstrong Laboratory, Human Systems Program Office; 648th Air Base Gp. Associate units include 615th School Sqdn. (Systems Acquisition School); Air Force Medical Support Agency; 68th Intelligence Sqdn.; Air Force Center for Environmental Excellence; Medical Systems Implementation and Training Element. Base activated Dec. 8, 1917; named for Cadet Sidney J. Brooks, Jr., killed Nov. 13, 1917, on his commissioning flight. Area 1,310 acres. Runway length NA. Altitude 600 ft. Military 1,833; civilians 1,532. Payroll \$100 million. Housing: 70 officer, 1,000 NCO. Clinic.

**Cannon AFB, N. M.** 88103-5000; 7 mi. W of Clovis. Phone (505) 784-3311; DSN 681-1110. ACC base. 27th Fighter Wing, only USAF base with EF-111A/F-111E/F fighter operations. Base activated Aug. 1942; named for Gen. John K. Cannon, WW II commander of all Allied air forces in the Mediterranean theater and former commander, Tactical Air Command. Area 25,663 acres. Runways 10,400 ft. and 8,000 ft. Altitude 4,295 ft. Military 5,200; civilians 920. Payroll \$131.5 million. Housing: 143 officer, 1,217 enlisted, 90 transient (20 VAQ, 20 VOQ, 6 DV, 44 TLF). 20-bed hospital.

**Castle AFB, Calif.** 95342-5000; 7 mi. NW of Merced. Phone (209) 726-2011; DSN 347-1110. ACC base. 93d Bomb Wing; 398th Operations Gp. (AETC), conducts training of all ACC B-52 and AMC KC-135 aircrews; Castle Air Museum. Base activated Sept. 1941; named for Brig. Gen. Frederick W. Castle, WW II B-17 pilot and Medal of Honor recipient. Area 3,200 acres. Runway 13,300 ft. Altitude 186 ft. Military 3,824; civilians

# Major Air Force Installations in the US



Note: This map reflects the publicly announced changes that will occur before July 1, 1994.

1,114. Payroll \$125 million. Housing: 98 officer, 895 enlisted, 392 transient (incl. 60 VAQ, 272 VOQ, 12 family quarters, 24 DVQ). 9-bed hospital. Base scheduled to close Sept. 30, 1995.

**Charleston AFB**, S. C. 29404-5000; in North Charleston, 10 mi. from downtown Charleston. Phone (803) 566-6000; DSN 673-2100. AMC base. Joint-use airfield. 437th Airlift Wing; 315th AW (AFRES Assoc.); Det. 1, 177th Fighter Gp. (ANG); Det. 17, Site Activation Task Force; Field Training Det. 317; Det. 719, AFOSI; 1st Combat Camera Sqdn. Base activated Oct. 1942; inactivated March 1946; reactivated Aug. 1953. Area 6,235 acres (incl. auxiliary airfield). Runway length NA. Altitude 45 ft. Military 7,846 (incl. AFRES); civilians 1,701. Payroll \$170 million. Housing: 127 officer, 850 NCO, 1,636 dormitory spaces, 75 trailer spaces, 535 transient (7 DV suites, 128 VOQ, 400 VAQ). Medical clinic.

**Columbus AFB**, Miss. 39701-1000; 10 mi. NW of Columbus. Phone (601) 434-7322; DSN 742-1110. AETC base. 14th Flying Training Wing, undergraduate pilot training and introduction to fighter fundamentals. Base activated 1941 for pilot training. Area 6,025 acres. Runways 6,300 ft., 8,000 ft., and 12,000 ft. Altitude 214 ft. Military 1,415; civilians 1,362. Payroll \$82 million. Housing: 302 officer, 436 NCO, 67 transient. 7-bed hospital.

**Davis-Monthan AFB**, Ariz. 85707-5000; within Tucson city limits. Phone (602) 750-3900; DSN 361-1110. ACC base. 355th Wing; Hq. 12th Air Force; A-10 combat crew training; OA-10 and FAC training and operations; 41st and 43d Electronic Combat Sqdns., EC-130H electronic operations; 71st Special Operations Sqdn. (AFRES), MH-60G Pave Hawk helicopter operations; Det. 1, 120th Fighter Gp. (Mont. ANG), F-16 air defense operations. Also site of AFMC's Aerospace Maintenance and Regeneration Center, storage location for excess DoD aerospace vehicles. Base activated 1927; named for two local early aviators: 1st Lt. Samuel H. Davis, killed Dec. 28, 1921, and 2d Lt. Oscar Monthan, killed Mar. 27, 1924. Area 11,000 acres. Runway 13,645 ft. Altitude 2,620 ft. Military 5,155; civilians 1,369. Payroll \$174.1 million. Housing: 133 officer, 1,106 enlisted, 518 transient (334 VAQ, 168 VOQ, 16 TLF). 35-bed hospital.

**Dover AFB**, Del. 19902-7219; 3 mi. SE of Dover. Phone (302) 677-3000; DSN 445-3000. AMC base. 436th Airlift Wing; 512th AW (AFRES Assoc.). Dover operates the largest aerial port facility on the East Coast. Base activated Dec. 1941; inactivated 1946; reactivated Feb. 1951. Area 3,908 acres. Runway 12,900 ft. Altitude 28 ft. Military 7,115; civilians 1,302. Payroll \$140 million. Housing: 108 officer, 1,448 enlisted, 686 transient (512 VAQ, 160 VOQ, 14 TLF). 20-bed hospital.

**Dyess AFB**, Tex. 79607-1960; WSW border of Abilene. Phone (915) 696-0212; DSN 461-1110. ACC base. 7th Wing, two B-1B squadrons (one operational, one training); one KC-135 squadron attached to 43d ARW at Malmstrom AFB, Mont.; two C-130 squadrons; five T-38s. First base to activate an operational B-1B wing. Conducts all B-1 combat crew training for the Air Force. First B-1B arrived June 1985; wing met initial operational capability Oct. 1986. Base activated Apr. 1942; deactivated Dec. 1945; reactivated as Abilene AFB Sept. 1955. In Dec. 1956, renamed for Lt. Col. William E. Dyess, WW II fighter pilot who escaped from a Japanese prison camp, killed in P-38 crash at Burbank, Calif., Dec. 1943. Area 6,405 acres. Runway 13,500 ft. Altitude 1,789 ft. Military 5,013; civilians 693. Payroll \$181 million. Housing: 142 officer, 848 enlisted, 131 VAQ/VOQ, 40 TLF. 20-bed hospital.

**Edwards AFB**, Calif. 93524; 20 mi. E of Rosamond. Phone (805) 277-1110; DSN 527-1110. AFMC base. Site of Air Force Flight Test Center (AFFTC), which conducts developmental and follow-on testing and evaluation of manned and unmanned aircraft and related avionics flight-control and weapon systems. AFFTC also operates the USAF Test Pilot School, which trains test pilots, flight-test engineers, and flight-test navigators. Also site of Phillips Laboratory's Astronautics Directorate,

US Army Aviation Engineering Flight Activity, NASA's Ames Dryden Flight Research Facility, Jet Propulsion Laboratory's test facility, and secondary landing site for space shuttle missions. Base activities began in Sept. 1933. Originally Muroc Army Air Field; renamed for Capt. Glen W. Edwards, killed June 5, 1948, in crash of a YB-49 "Flying Wing." Area 301,000 acres. Twenty-one runways from 4,000 to 39,000 ft. Altitude 2,302 ft. Military 4,667 (incl. associate units); government and contract civilians 10,490. Payroll \$260 million (incl. associate units and contractors). Housing: 629 officer (incl. BOQ), 2,384 enlisted (incl. 765 dormitory spaces and 191 BNCOQ), 161 transient (49 VAQ, 42 VOQ, 9 SNOQ, 10 VIP/VOQ, 51 TLF), 188 trailer spaces. 15-bed hospital.

**Eglin AFB**, Fla. 32542; 2 mi. SW of the twin cities of Niceville and Valparaiso; 7 mi. NE of Fort Walton Beach. Phone (904) 882-1110; DSN 872-1110. AFMC base. Eglin is the nation's largest air force base in terms of land area, covering an area roughly two-thirds the size of Rhode Island. Host unit: Air Force Development Test Center. Associate units: Aeronautical Systems Center, Eglin, and Armament Directorate of Wright Laboratory (AFMC); 33d Fighter Wing; Air Warfare Center; Hq. 646th Communications-Computer Systems Gp.; 919th Special Operations Wing (AFRES); 20th Space Surveillance Sqdn.; 55th Special Operations Sqdn.; 9th Special Operations Sqdn.; 655th Special Operations Maintenance Sqdn.; 728th Tactical Control Sqdn.; US Army Ranger Training Battalion; a US Navy Explosive Ordnance Disposal School; Air Force Armament Museum. Base activated 1935; named for Lt. Col. Frederick I. Eglin, WW I flyer killed in aircraft accident Jan. 1, 1937. Area 463,452 acres. Runways 10,000 ft. and 12,000 ft. Altitude 85 ft. Military 8,429; civilians 4,199 (excl. Hurlburt Field). Payroll \$452.4 million (excl. Hurlburt Field). Housing: 263 officer, 2,071 enlisted, 1,200 unaccompanied enlisted units (dorm rooms), 226 trailer spaces (officer and enlisted), 88 family transient. 105-bed USAF regional hospital. AFMC clinic at Hurlburt Field.

**Eielson AFB**, Alaska 99702-5000; 26 mi. SE of Fairbanks. Phone (907) 377-1178; DSN (317) 377-1110. PACAF base. Host unit: 354th Fighter Wing, F-16C/D fighter operations and OA-10 forward air control operations. Cope Thunder exercises assigned in 1992 increased the base population by 126 permanent party military and civilians and 2,000 temporary duty members. Arctic Survival School (AETC); 168th Air Refueling Gp. (ANG). Base activated Oct. 1944; named for Carl Ben Eielson, Arctic aviation pioneer who died Nov. 1929. Area 23,500 acres. Runway length NA. Altitude 534 ft. Military 3,500; civilians 1,384. Payroll \$135.1 million. Housing: 140 officer, 1,227 enlisted. Unaccompanied housing: 2 officer, 767 enlisted, 118 VOQ, 152 VAQ. Clinic.

**Ellsworth AFB**, S. D. 57706-5000; 12 mi. ENE of Rapid City. Phone (605) 385-1000; DSN 675-1000. ACC base. Host unit: 28th Bomb Wing, two B-1B squadrons. Associate units: 44th Missile Wing, inactivating July 4, 1994, following removal of all 150 Minuteman II ICBMs. 99th Wing, Air Force's focal point for strategic tactics development and bomber crew training. AMC's 28th Air Refueling Sqdn., KC-135R, being reassigned in mid-1994. South Dakota Air and Space Museum. Base activated in July 1942 as Rapid City Army Air Base; renamed June 13, 1953, for Brig. Gen. Richard E. Ellsworth, killed Mar. 18, 1953, in crash of RB-36 in Newfoundland, Canada. Area 10,632 acres. Runway 13,497 ft. Altitude 3,286 ft. Military 5,200; civilians 580. Payroll \$101 million. Housing: 301 officer, 1,783 enlisted, 232 transient units (6 DV, 78 VOQ, 57 VAQ, 48 crew quarters, 43 TLF). 25-bed hospital.

**Elmendorf AFB**, Alaska 99506-5000; bordering Anchorage. Phone (907) 552-1110; DSN (317) 552-1110. PACAF base. Hq. Alaskan Command; Hq. 11th Air Force (PACAF); Hq. Alaskan NORAD Region. Host unit: 3d Wing, F-15/F-15E fighter and C-130, C-12 airlift operations, E-3 airborne warning and control operations, and 3d Medical Center. Tenant units: 11th Air Control Wing (PACAF); Alaskan NORAD Region Operations Control Center; Rescue Coordination Center (ANG); 381st Air Intelligence Sqdn.; 616th Airlift

Support Sqdn. (AMC); plus varied US Army, Navy, and Marine activities. Base activated July 1940; named for Capt. Hugh Elmendorf, killed Jan. 13, 1933, at Wright Field, Ohio, while flight-testing a new pursuit plane. Area 13,130 acres. Runways 7,500 ft. and 10,000 ft. Altitude 213 ft. Military 6,300; civilians 2,425. Payroll \$225 million. Housing: 196 officer, 1,480 NCO, 94 temporary lodging units, 94 VOQ, 301 VAQ, 1,126 UEQ. 110-bed hospital.

**Fairchild AFB**, Wash. 99011-5000; 12 mi. WSW of Spokane. Phone (509) 247-1212; DSN 657-1212. ACC base. The base will change from ACC to AMC July 1, 1994, to become the air refueling hub for the western US. Host unit: 92d Bomb Wing. Tenant units: 453d Operations Gp. (AMC); 366th Crew Training Gp. (Survival School, AETC); 141st Air Refueling Wing (ANG); Det. 1, 6th Space Operations Sqdn. (AFSPC). Base activated in Jan. 1942; named for Gen. Muir S. Fairchild, USAF Vice Chief of Staff at his death in 1950. Area 4,543 acres. Runway 13,901 ft. Altitude 2,462 ft. Military 4,246; civilians 1,914. Payroll \$136.9 million. Housing: 180 officer, 1,244 NCO, 26 TLF, 1,280 BAQ, 35 VOQ, 61 VAQ. 30-bed hospital.

**Falcon AFB**, Colo. 80912-5000; 10 mi. E of Colorado Springs. Phone (719) 550-4113; DSN 560-1110. AFSPC base. Host unit: 50th Space Wing. Tenant units: 73d Space Gp.; Air Force Space Forecast Center; Ballistic Missile Defense Organization National Test Facility; Air Force Space Warfare Center. Base activated Sept. 26, 1985. Area 3,840 acres. Runway length NA. Altitude 6,267 ft. Military active-duty 2,000; civilians 300; contractors 2,000. No housing or transient quarters. Medical aid station and dental clinic.

**Francis E. Warren AFB**, Wyo. 82005-5000; adjacent to Cheyenne. Phone (307) 775-1110; DSN 481-1110. AFSPC base. Hq. 20th Air Force. 90th Missile Wing, UH-1; 37th Air Rescue Flight. Base activated as Fort D. A. Russell July 4, 1887; under Army jurisdiction until 1947, when reassigned to USAF. Base renamed in 1930 for Francis Emory Warren, Wyoming senator and first state governor. Area 5,866 acres, plus 50 Peacekeeper and 150 Minuteman III missile sites distributed over 12,600 sq. mi. in Wyoming, Colorado, and Nebraska. Runway length NA. Altitude 6,142 ft. Military 3,494; civilians 594. Payroll \$112.1 million. Housing: 114 officer, 717 enlisted, 36 transient. 20-bed hospital.

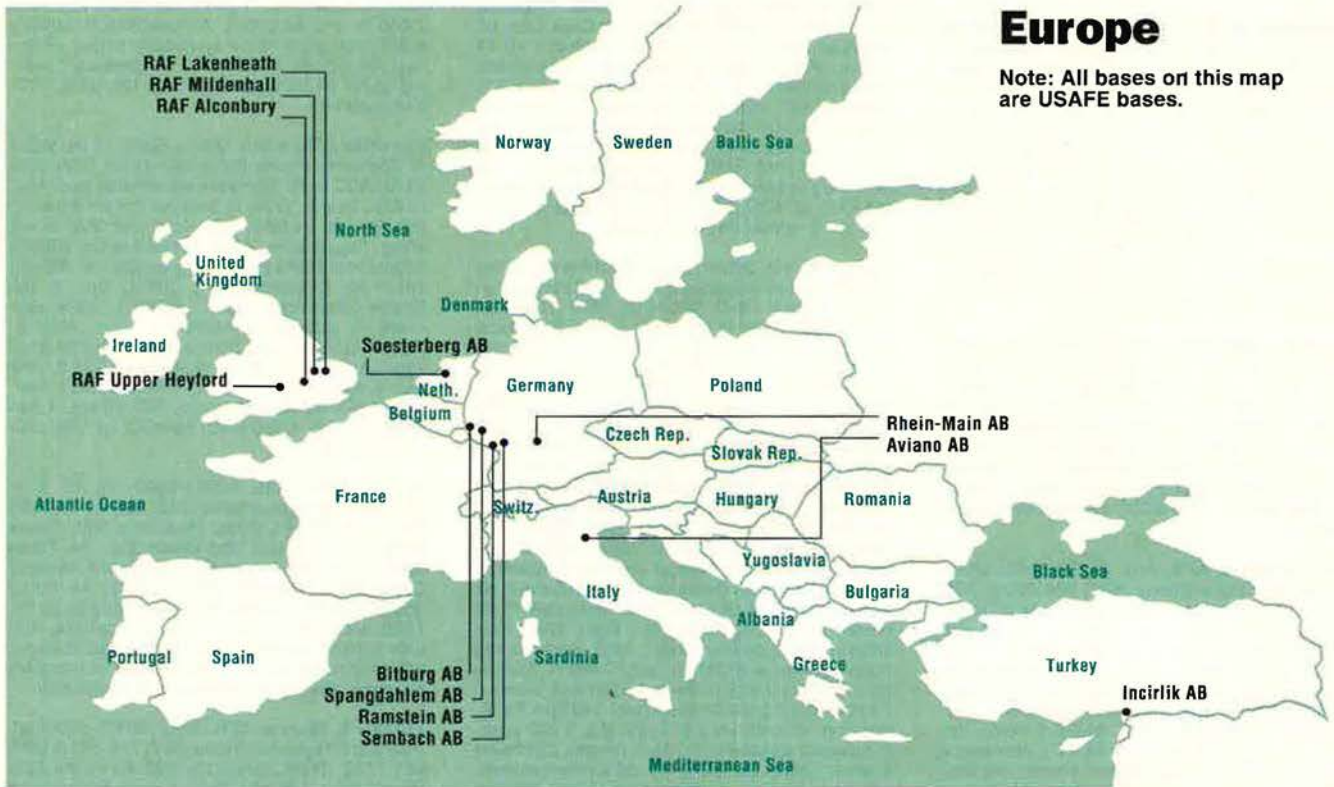
**Goodfellow AFB**, Tex. 76908-5000; 2 mi. SE of San Angelo. Phone (915) 654-3217; DSN 477-3217. AETC base. The 17th Training Wing provides technical training for all Air Force members entering intelligence career fields; provides cryptologic training for members of the other military services, civilian intelligence agencies, and foreign military services; and trains all US Air Force, Army, and Marine Corps personnel in fire protection and rescue. Major units include 17th Training Wing; 8th Space Warning Sqdn. (AFSPC) at Eldorado AFS, the location of Southwest Pave Paws radar site; Goodfellow NCO Academy; 344th Military Intelligence Battalion (US Army); Naval Technical Training Center Detachment; US Marine Corps Detachment. Base activated in Jan. 1941; named for Lt. John J. Goodfellow, Jr., WW I fighter pilot killed in combat Sept. 14, 1918. Area 1,136 acres. No runway. Altitude 1,877 ft. Military 2,900; civilians 625. Payroll \$121 million. Housing: 18 officer, 271 NCO, 949 transient (804 VAQ, 116 VOQ, 29 TLF). Clinic.

**Grand Forks AFB**, N. D. 58205-5000; 16 mi. W of Grand Forks. Phone (701) 747-3000; DSN 362-1110. AMC base. 319th Air Refueling Wing (KC-135R and C-12F); 321st Missile Wing (Minuteman III, UH-1); 319th Bomb Gp. (B-1B and T-38A). Home of the first of AMC's core air refueling wings. B-1Bs scheduled to depart for other bomber bases in summer 1994. Base activated 1956; named after the city of Grand Forks, whose citizens bought the property for the Air Force. Area 5,422 acres. Missile complex covers an additional 7,500 sq. mi. Runway 12,350 ft. Altitude 911 ft. Military 4,780; civilians 739. Payroll \$133 million. Housing: 384 officer, 1,887 NCO, 1,135 dormitory, 137 transient, 15-bed hospital.

# Major Air Force Installations Overseas

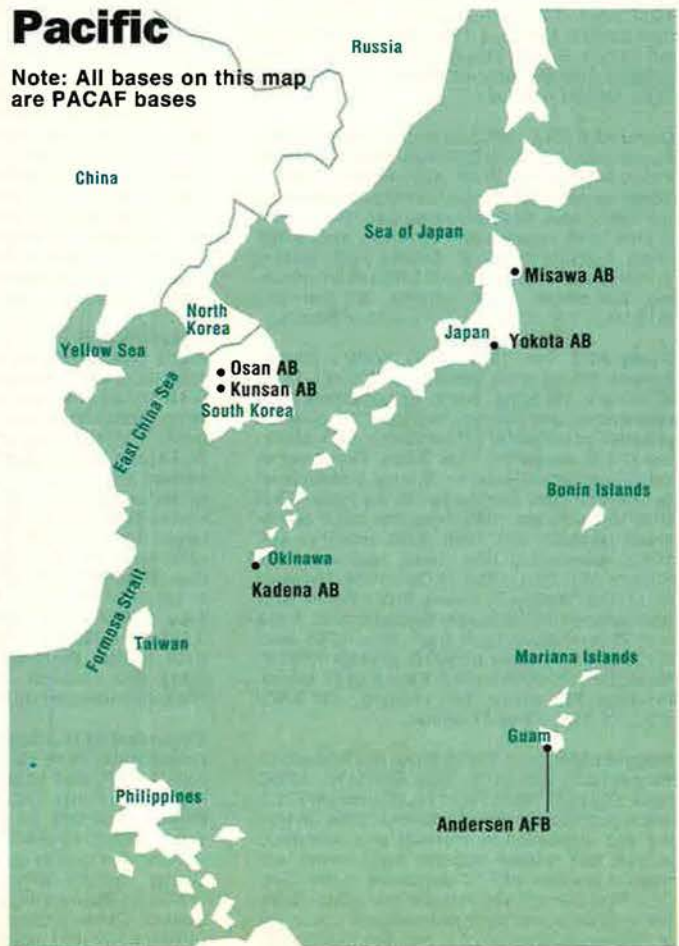
## Europe

Note: All bases on this map are USAFE bases.



## Pacific

Note: All bases on this map are PACAF bases



**Griffiss AFB**, N. Y. 13441-5000; 1 mi. NE of Rome. Phone (315) 330-1110; DSN 587-1110. ACC base. 416th Bomb Wing (slated for inactivation in Sept. 1995); Rome Laboratory (AFMC); 485th Engineering Installation Gp. (scheduled to move to Hill AFB, Utah, in 1995); Northeast Air Defense Sector; 509th Air Refueling Sqn. (AMC) (will inactivate in early 1995). Base activated Feb. 1, 1942; named for Lt. Col. Townsend E. Griffiss, killed in aircraft accident Feb. 15, 1942 (the first US airman to lose his life in Europe during WW II while in the line of duty). Area 3,896 acres. Runway 11,820 ft. Altitude 504 ft. Military 4,229; civilians 2,686. Payroll \$312.5 million. Housing: 169 officer, 566 NCO, 50 trailers, 109 transient. 20-bed hospital.

**Grissom AFB**, Ind. 46971-5000; 7 mi. S of Peru. Phone (317) 688-5211; DSN 928-1110. AMC base. As of Oct. 1, 1994, becomes a Reserve base. 305th Air Refueling Wing; 434th Wing (AFRES). Activated Jan. 1943 for Navy flight training; reactivated June 1954 as Bunker Hill AFB; renamed May 1968 for Lt. Col. Virgil I. "Gus" Grissom, killed Jan. 27, 1967, at Cape Kennedy, Fla., with astronauts Edward White and Roger Chaffee in Apollo capsule fire. Area 3,181 acres. Runway 12,500 ft. Altitude 800 ft. Military 2,405; civilians 825. Payroll \$8.8 million. Housing: 144 officer, 972 NCO, 198 transient. Clinic, dispensary status.

**Gunter AFB** (see Maxwell AFB, Gunter Annex).

**Hanscom AFB**, Mass. 01731-5000; 17 mi. NW of Boston. Phone (617) 377-4441; DSN 478-5980. AFMC base. Hq. Electronic Systems Center (AFMC) manages development and acquisition of C<sup>4</sup> systems. Also site of Geophysics Directorate of Phillips Laboratory (AFMC), center for research and exploratory development in the terrestrial, atmospheric, and space environments, as well as five divisions of Rome Laboratory's Directorate of Electromagnetics and Reliability. Base has no flying mission; transient USAF aircraft use runways of Laurence G. Hanscom Field, state-operated airfield adjoining the base. Base named for Laurence G. Hanscom, a pre-WW II advocate of private aviation, killed in a lightplane accident in 1941. Area 846 acres. Runway length NA. Altitude 133 ft. Military 2,299; civilians 2,195. Payroll \$217 million. Housing: 386 officer, 472 NCO, 35-unit TLF, 754 BOQ/VOQ. Clinic.

**Hickam AFB**, Hawaii 96853-5000; 9 mi. W of Honolulu. Phone (808) 471-7110 (Oahu military operator); DSN 471-7110. PACAF base. Hq. Pacific Air Forces. Host unit: 15th Air Base Wing, supporting Air Force units and installations in Hawaii and throughout the Pacific. Major tenant units include 154th Composite Gp. (ANG); 619th Airlift Support Gp. (AMC). Base activated in Sept. 1938; named for Lt. Col. Horace M. Hickam, air pioneer killed in crash Nov. 5, 1934, at Fort Crockett, Tex. Area 2,761 acres. Runway length NA. Altitude sea level. Military 3,341; civilians 1,389. Payroll \$118.3 million. Housing: 400 officer, 2,200 enlisted. Unaccompanied housing: 24 officer, 1,016 enlisted, 266 VOQ, 234 VAQ. Clinic.

**Hill AFB**, Utah 84056-5990; 8 mi. S of Ogden. Phone (801) 777-7221; DSN 458-1110. AFMC base. Hq. Ogden Air Logistics Center. Contributes to Integrated Weapon System Management and logistics support for silo-based ICBMs (Minuteman and Peacekeeper); F-4, F-16, and C-130 aircraft; conventional munitions, including Maverick air-to-ground missiles and laser, infrared, and electro-optical guided bombs; and other aerospace components, such as landing gear, photographic and reconnaissance equipment, and training devices. Technology center for software and photonics. Other units include 545th Test Gp. (AFMC), which manages the Utah Test and Training Range; 388th Fighter Wing (ACC); and 419th Fighter Wing (AFRES). Hill Aerospace Museum. Base activated in Nov. 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. Runway 13,500 ft. Altitude 4,788 ft. Military 4,700; civilians 11,700. Payroll \$580 million. Housing: 179 officer, 966 NCO, 45 transient. 35-bed hospital.

**Holloman AFB**, N. M. 88330-5000; 8 mi. SW of Alamogordo. Phone (505) 475-6511; DSN 867-

1110. ACC base. 49th Fighter Wing, F-117 Stealth fighter operations (7th, 8th, and 9th Fighter Sqdns.); F-4E aircrew training (20th Fighter Sqn. and 1st German Air Force Training Sqn.); AT-38B aircrew training (435th Fighter Sqn.); HH-60 helicopters (48th Rescue Sqn.); and 83d Air Control Sqn. Included in the base's more than 30 associate units are the 46th Test Gp. (AFMC); 4th Space Warning Sqn. (AFSPC), and Det. 1, 82d Aerial Target Sqn. (QF-106 drone operations). Base activated in 1942; named for Col. George Holloman, guided-missile pioneer. Area 59,000 acres. Runways 10,575 ft., 12,131 ft., and 8,054 ft. with 7,044 ft. overrun. Altitude 4,093 ft. Military 4,775 civilians 1,700. Payroll \$203 million. Housing: 191 officer, 1,310 NCO, 310 transient (70 VAQ, 190 VOQ, 50 TLF). 15-bed hospital.

**Howard AFB/Albrook AFS**, Panama, APO AA 34001-5000, DSN 284-9805. ACC base. With headquarters at Howard, 24th Wing represents USAF in operations throughout Latin America. 24th Wing is an ACC unit reporting to 12th Air Force, Davis-Monthan AFB, Ariz. Major tenants: 617th Airlift Support Sqn.; 33d Intelligence Sqn. Howard established in 1928 as a military post, known as Bruja Point Military Reservation; later named for Maj. Charles Harold Howard. Military 2,256; civilians 734. Payroll \$40.1 million. Housing: 256 officer, 918 enlisted.

**Hurlburt Field**, Fla. 32544-5000; 5 mi. W of Fort Walton Beach. Phone (904) 882-1110; DSN 579-1110. AFSOC base. Home of Air Force Special Operations Command, the focal point for all USAF special operations matters. Major tenant: 16th Special Operations Wing, equipped with MC-130E (Combat Talon I), MC-130H (Combat Talon II), AC-130H (Spectre Gunship), and MH-53J (Pave Low), MH-60G (Pave Hawk), and HC-130P/N (Combat Shadow, located at Eglin AFB). Other tenants include 505th Command and Control Evaluation Gp., which includes the USAF Air Ground Operations School, USAF Battle Staff Training School (Blue Flag), and the 727th Aircraft Control Sqn. (T); 720th Special Tactics Gp.; 23d Special Tactics Sqn.; Joint Warfare Center; USAF Special Operations School; Special Missions Operational Test and Evaluation Center; 823d Civil Engineering Sqn. RED HORSE; Det. 1, 335th Technical Training Sqn.; Det. 4, Air Weather Service; Det. 8, 1st Combat Camera Sqn.; Field Training Det. 327; and Det. 309, AFOSI. Base activated in 1943; named for Lt. Donald W. Hurlburt, WW II pilot killed Oct. 1, 1943, in a crash at nearby Eglin Field Military Reservation. Area 6,600 acres. Runway length NA. Altitude 38 ft. Military 6,700; civilians 483. Payroll NA. Housing: 48 officer, 632 enlisted, transient 258 VOQ/VAQ, 24 TLF. Medical clinic at Hurlburt, 145-bed hospital at Eglin Regional Hospital 12 mi. away.

**Incirlik AB**, Turkey, APO AE 09824; 10 mi. E of Adana. Phone (commercial, from CONUS) 011-90-71-221774 through 221780; DSN 676-1110. USAF base. Host unit: 39th Wing, supports rotational weapons training deployments for USAF fighter aircraft. Also home for 628th Airlift Support Sqn., which provides a full aerial port operation. Base activated in May 1954; present unit began operations in Mar. 1966. Incirlik, in Turkish, means fig orchard. Area 3,400 acres. Runway length NA. Altitude 240 ft. Military 2,094; civilians 2,055. Payroll \$31.2 million. Housing: 950 units, 59 BOQ, 293 TLF, 212 VAQ, 315 VOQ, 419 dorm rooms. Regional hospital.

**Kadena AB**, Japan, APO AP 96368-5000; 15 mi. N of Naha, Okinawa. Phone (commercial, from CONUS) 011-81-98938-1111; DSN 630-1110. PACAF base. Host organization: 18th Wing (12th, 44th, 67th Fighter Sqdns.), F-15/D operations; 909th Air Refueling Sqn., KC-135 operations; 961st Airborne Warning and Control Sqn., E-3 operations; 33d Rescue Sqn., HH-3/HH-60 operations; Western Pacific Rescue Coordination Center; 353d Special Operations Gp. (AFSOC), MC-130 and HC-130 operations; 82d Reconnaissance Sqn. (ACC); 390th Intelligence Sqn.; 603d Airlift Support Gp. (AMC). Base named for city of Kadena, Japan. Area 15,000 acres. Runway length NA. Military 7,100; appropriated fund civilians 3,200; nonappropriated fund civilians, including contractors, 10,000. Payroll \$300 mil-

lion. Housing: 900 officer, 3,100 enlisted, 125 temporary lodging units. Unaccompanied housing: 300 officer, 2,425 enlisted, 275 VOQ, 275 VAQ. Clinic. US Naval Hospital at Camp Lester.

**Keesler AFB**, Miss. 39534-5000; located in Biloxi. Phone (601) 377-1110; DSN 597-1110. AETC base. 81st Training Wing (avionics, communications, electronics, radar systems, computer and command-and-control systems, personnel, weather, and administrative courses); Keesler Medical Center. Hosts AFRES weather reconnaissance squadron; AFRES tactical airlift unit; ACC airborne command-and-control squadron; AFMC engineering installation group; Keesler NCO Academy. Base activated June 12, 1941; named for 2d Lt. Samuel R. Keesler, Jr., a native Mississippian and WW I aerial observer killed in action Oct. 9, 1918, near Verdun, France. Area 3,546 acres. Runway 5,600 ft. Altitude 26 ft. Military 8,500; civilians 2,109. Payroll \$297 million. Housing: 287 officer, 1,666 NCO, 49 trailer spaces, 2,122 transient (366 VOQ, 1,756 VAQ). 250-bed hospital.

**Keflavik Naval Air Station**, Iceland, APO AE 09725; 3 miles SW of Keflavik. Phone (commercial, from CONUS) 011-354-25-2000, DSN 450-2000. The 35th Wing (ACC) encompasses the 56th Rescue Sqn., 57th Fighter Sqn., and 932d Air Control Sqn. As the only permanent USAF presence in the North Atlantic, the 35th Wing's force of F-15 fighters and HH-60 Pave Hawk helicopters provides air defense for Iceland and air superiority for NATO's western flank as the air component of the Iceland Defense Force, a subunified command reporting to CINCUSACOM. Area 21,322 acres. Runway 6,963 ft. Altitude 171 ft. Military 1,308, civilians 66. 17-bed Naval hospital.

**Kelly AFB**, Tex. 78241-5000; 5 mi. SW of San Antonio. Phone (210) 925-1110; DSN 945-1110. AFMC base. Hq. San Antonio Air Logistics Center provides logistics management, procurement, and systems support for such Defense Department aircraft as the C-5A/B, C-17, C-9, T-37, and T-38, and for such foreign-operated aircraft as the OV-10, A-37, F-5, and C-47. As a specialized repair activity, San Antonio ALC modernizes and performs heavy depot maintenance on the entire fleet of C-5s and performs a significant work load on the T-38 fleet. The ALC also overhauls F100, TF39, and T58 engines and manages more than seventy-five percent of the USAF engine inventory, fuel and lubricants used by the Air Force and NASA, and nuclear weapons. Other major units on base include the Air Intelligence Agency, Air Force Electronic Warfare Center, Joint Electronic Warfare Center, Air Force News Agency, Defense Commissary Agency, 433d Airlift Wing (AFRES), 149th Fighter Gp. (ANG), Defense Reutilization and Marketing Office, Air Force Audit Agency Office, Defense Distribution Depot, and Defense Information Services Organization. Dating from Nov. 21, 1916, Kelly AFB is the oldest continuously active air base in the US. Named for Lt. George E. M. Kelly, first Army pilot to lose his life in a military aircraft, killed May 10, 1911. Area 4,660 acres. Runway 11,550 ft. Altitude 689 ft. Military 4,900; civilians 16,500. Payroll \$680 million. Housing: 45 officer, 368 NCO. Clinic.

**Kirtland AFB**, N. M. 87117-5606; SE quadrant of Albuquerque. Phone (505) 846-0011; DSN 246-0011. AFMC base. Hq. 377th Air Base Wing. Major agencies and units include 58th Special Operations Wing (AETC); Air Force Operational Test and Evaluation Center; Phillips Laboratory; 150th Fighter Gp. (ANG); Field Command's Defense Nuclear Agency; Sandia National Laboratories; Lovelace Biomedical and Environmental Research Institute; Department of Energy's Albuquerque Operations Office; Kirtland NCO Academy; 898th Aviation Depot Sqn.; Air Force Security Police Agency; Air Force Directorate of Nuclear Surety; Interservice Nuclear Weapons School; Air Force Inspection Agency; Air Force Safety Agency. These agencies furnish nuclear, advanced weapons, and space research, development, and testing; advanced helicopter training and search-and-rescue operations; pararescue training; and operational test and evaluation. Other major units include AFMC Nuclear Support Office; Albuquerque Seismological Laboratory; University of New Mexico Civil Engineering Re-

search Facility. Base activated Jan. 1941; named for Col. Roy C. Kirtland, air pioneer and commandant of Langley Field in the 1930s, who died May 2, 1941. Area 52,678 acres. Runway 19,375 ft. Altitude 5,352 ft. Military 6,240; civilians 14,260. Payroll \$764 million. Housing: 2,122 homes. VAQ/VOQ: 130 officer, 180 enlisted. Air Force/Veterans Administration joint medical center located outside base gates.

**K. I. Sawyer AFB**, Mich. 49843-5000; 21 mi. S of Marquette. Phone (906) 372-6511; DSN 472-6511. ACC base. 410th Bomb Wing; Defense Reutilization and Marketing Office; Det. 205, AFOSI. Base activated 1956; named for Kenneth Ingalls Sawyer, former county commissioner of Marquette who proposed site for county airport, died in 1944. Area 5,214 acres. Runway 12,370 ft. Altitude 1,220 ft. Military 3,000; civilians 900. Payroll \$95.9 million. Housing: 203 officer, 1,378 NCOQ, 9 SNCOQ, 199 trailer spaces, 754 single-room BNCOQ, 18 BOQ, 112 transient (35 fully furnished TLF, 35 VAQ, 30 VOQ, 3 DVQ, 9 SNCO DV). 15-bed hospital. Scheduled to close Sept. 30, 1995.

**Kunsan AB**, Republic of Korea, APO AP 96264-5000; 8 mi. SW of Kunsan City. Phone (commercial, from CONUS) 011-82-654-470-1110; DSN 782-1110. PACAF base. Host unit: 8th Fighter Wing, F-16C/D operations, home of the "Wolf Pack." The 8th FW converted to the F-16 Fighting Falcon in Sept. 1981, making it the first active overseas F-16 wing. Base built by Japanese in 1938. Area 2,174 acres. Runway length NA. Altitude 29 ft. Military 2,521; US civilians 35; local nationals 537. Payroll \$31.4 million. Unaccompanied housing: 263 officer, 3,697 enlisted, 46 VOQ, 120 VAQ. 6-bed hospital.

**Lackland AFB**, Tex. 78235-5000; 8 mi. SW of San Antonio. Phone (210) 671-1110; DSN 473-1110. AETC base. The 37th Training Wing provides basic military training and skills training for all enlisted Air Force and Air Reserve Component members. Joint service training for Air Force, Navy, and Marine personnel. Primary and advanced training is provided in transportation. Air Force recruiters are also trained at Lackland. The base is the home of the Inter-American Air Forces Academy and Defense Language Institute English Language Center. Wilford Hall Medical Center, the Air Force's largest medical facility, with 1,009 beds, handles patient care and conducts medical education and clinical research. Base activated 1941; named for Brig. Gen. Frank D. Lackland, early commandant of Kelly Field flying school, who died in 1943. Area 6,726 acres (incl. 3,973 acres at Lackland Training Annex). No runway. Altitude 745 ft. Military 7,000; civilians 3,700; students 8,000. Payroll \$624.7 million. Housing: 103 officer, 621 NCO, 3,435 transient, plus 158 TLF units.

**Lajes Field**, Azores, Portugal, APO AE 09720-5000; Terceira Island, 900 mi. W of Portugal. DSN 725-1410. ACC base. Host unit: 65th Air Base Wing. Base provides en route support for AMC, USAF, USN, USMC, third-nation, and other authorized aircraft crossing the Atlantic. Tenant units: US Forces Azores; Army 1324th Medium Port Command Azores; Naval Security Gp. Activity Azores (deactivates in June 1994); 650th Airlift Support Sqdn.; Det. 3, Air Force European Broadcasting Sqdn. US operations began at Lajes Field in 1946. Area 1,148 acres. Runway 10,865 ft. Altitude 180 ft. Military 1,246; civilians 1,287. Payroll \$39.9 million. Housing: 99 officer, 390 enlisted, 30 TLF, 178 VOQ, 701 VAQ, 6 DVQ, 4 senior NCO. Seven-bed hospital.

**Langley AFB**, Va. 23665-5000; 3 mi. N of Hampton. Phone (804) 764-9990; DSN 574-1110. ACC base. Hq. Air Combat Command. Host unit: 1st Fighter Wing, F-15 fighter operations. Associate units: 2d Aircraft Delivery Gp. (ACC); 480th Intelligence Gp.; 1912th Computer Systems Gp. (ACC); Air Combat Command Heritage of America Band; Det. 1, 158th Fighter Gp. (ANG); US Army TRADOC Flight Det.; Army/USAF Center for Low-Intensity Conflict; Air Force Doctrine Center; Air Force Rescue Coordination Center; 548th Air Intelligence Gp. (ACC). Base activated Dec. 30, 1916. Langley is one of the oldest continuously

active air bases in the US. Named for aviation pioneer and scientist Samuel Pierpont Langley, who died in 1906. NASA's Langley Research Center is adjacent to the base. Area 3,974 acres. Runway 10,000 ft. Altitude 10 ft. Military 8,767; civilians 2,710. Payroll \$400 million. Housing: 384 officer, 1,250 NCO, 417 transient (216 VAQ, 101 VOQ, 100 TLF). 50-bed hospital.

**Laughlin AFB**, Tex. 78843-5000; 6 mi. E of Del Rio. Phone (210) 298-3511; DSN 732-1110. AETC base. 47th Flying Training Wing, undergraduate pilot training. Base activated Oct. 1942; named for 1st Lt. Jack T. Laughlin, Del Rio native, B-17 pilot killed over Java Jan. 29, 1942. Area 5,239 acres. Runways 6,300 ft., 8,310 ft., and 8,850 ft. Altitude 1,080 ft. Military 1,209; civilians 1,232. Payroll \$71.5 million. Housing: 599 units, 54 trailer spaces, 62 transient, 24 TLF. Hospital.

**Laurence G. Hanscom AFB** (see Hanscom AFB).

**Little Rock AFB**, Ark. 72099-5000; 17 mi. NE of Little Rock. Phone (501) 988-3131; DSN 731-1110. ACC base. 314th Airlift Wing, only C-130 training base in DoD, training crew members from all branches of service and some foreign countries. Tenants include 189th Airlift Gp. (ANG); 96th Mobile Aerial Port Sqdn.; 348th USAF Recruiting Sqdn.; Ground Combat Readiness Evaluation Sqdn.; Det. 251, AFOSI; Det. 310, 373d Field Training Sqdn.; Det. 234, Air Force Audit Agency. Base activated 1955. Area 11,373 acres. Runway length NA. Altitude 310 ft. Military 6,692; civilians 521. Payroll \$133 million. Housing: 140 officer, 1,395 enlisted, 17 single-occupancy dormitories house 960 people, 348 transient (148 VAQ, 200 VOQ). 25-bed hospital.

**Loring AFB**, Me. 04751-5000; 4 mi. W of Limestone. Phone (207) 999-1110; DSN 920-1110. ACC base. 42d Bomb Wing was activated here Feb. 25, 1953, as Limestone AFB; renamed for Maj. Charles J. Loring, Jr., F-80 pilot killed Nov. 22, 1952, in North Korea and posthumously awarded Medal of Honor. Area 8,702 acres. Runway 12,100 ft. Altitude 756 ft. Military 700; civilians 650. Payroll \$60 million. Housing: 291 officer, 1,457 enlisted, 90 transient, 1 VIP. Medical aid station. Base scheduled to close Sept. 30, 1994.

**Los Angeles AFB**, Calif. 90009-2960; in South Bay Los Angeles, city of El Segundo, 3 mi. S of Los Angeles IAP. Phone (310) 363-1110; DSN 833-1110. AFMC base. Headquarters of AFMC's Space and Missile Systems Center, which manages the design, development, acquisition, launch, and on-orbit checkout of DoD's space program and shares rocket booster launch with Air Force Space Command. Support unit is 655th Air Base Sqdn. Area 96 acres at Los Angeles AFB and 96 acres at Fort MacArthur Annex and Pacific Crest/Heights housing areas. No runway. Altitude 95 ft. Military 1,812; civilians 1,258. Payroll \$150 million. Housing at Fort MacArthur Annex: 574 townhouses, 56 senior enlisted quarters, 29 VOQ, 4 DVQ, 22 TLF. Clinic, commissary, child-care center, and Air Force Family Support Center.

**Lowry AFB**, Colo. 80230-5000; on border between Denver and Aurora. Phone (303) 676-1110; DSN 926-1110. AETC base. Lowry Training Center conducts training in avionics, munitions, logistics, services, and combat camera fields. Other major organizations include the Defense Finance and Accounting Service-Denver Center; Air Reserve Personnel Center, which will remain open in a cantonment area after Sept. 30, 1994. Base activated Oct. 1, 1937; named for 1st Lt. Francis B. Lowry, killed in action Sept. 26, 1918, near Crepion, France, while on a photoreconnaissance mission. Area 1,688 acres. Runway length NA. Altitude 5,400 ft. Military 4,293; civilians 3,805. Payroll \$243.3 million. Housing: 71 officer, 791 NCO, 525 VOQ, 1,196 VAQ, 40 TLF. USAF clinic on base will close July 1, 1994. Fitzsimons Army Medical Center 15 minutes away. Base scheduled to close Sept. 30, 1994.

**Luke AFB**, Ariz. 85309-5000; 20 mi. WNW of downtown Phoenix. Phone (602) 856-7411; DSN 853-1110. AETC base. 58th Fighter Wing, F-15E and F-16 operations; 944th Fighter Gp. (AFRES), F-16 operations; 607th Air Control Sqdn., forward

air control operations. Luke, the largest fighter training base in the world, conducts USAF and allied aircrew training in the F-15E and F-16. Base activated 1941; named for 2d Lt. Frank Luke, Jr., observation balloon-busting ace of WW I and first American aviator to receive the Medal of Honor, killed in action Sept. 29, 1918, near Murvaux, France. Area 4,197 acres, plus 2.7 million-acre range at Gila Bend, Ariz. Runways 10,000 ft. and 9,910 ft. Altitude 1,090 ft. Military 5,526; civilians 1,400. Payroll \$171 million. Housing: 95 officer, 779 enlisted, 301 transient (137 VOQ, 124 VAQ, 40 TLF). 40-bed hospital.

**MacDill AFB**, Fla. 33621-5000; adjacent to Tampa city limits. Phone (813) 828-1110; DSN 968-1110. ACC base. 6th Air Base Wing; Hq. US Special Operations Command; Hq. US Central Command; and Joint Communications Support Element. The 6th ABW's mission is to operate the air base for the United States' warfighting commands. Base activated Apr. 15, 1941; named for Col. Leslie MacDill, killed in an aircraft accident Nov. 8, 1938, near Washington, D. C. Area 2,319 acres. Runway length NA. Altitude 6 ft. Military 3,922; civilians 2,094. Payroll \$162 million. Housing: 130 officer, 674 enlisted, 323 transient (139 VAQ, 137 VOQ, 24 TLF, 23 DVQ). 65-bed hospital.

**Malmstrom AFB**, Mont. 59402-5000; 1.5 mi. E of Great Falls. Phone (406) 731-1110; DSN 632-1110. AMC base. 43d Air Refueling Wing; 341st Missile Wing (AFSPC). Base activated Dec. 15, 1942; named for Col. Einar A. Malmstrom, WW II fighter commander killed in air accident Aug. 21, 1954. Site of SAC's first Minuteman wing. Area 4,137 acres, plus about 24,000 sq. mi. of missile complex. Runway length NA. Altitude 3,525 ft. Military 4,251; civilians 527. Payroll \$165.6 million. Housing: 258 officer, 1,148 enlisted, 105 transient. Clinic.

**March AFB**, Calif. 92518-5000; 9 mi. SE of Riverside. Phone (909) 655-1110; DSN 947-1110. AMC base. 722d Air Refueling Wing; Southwest Air Defense Sector; 722d Medical Gp.; Det. 1, 144th Fighter Wing (ANG); 452d Air Refueling Wing (AFRES); 445th Airlift Wing (AFRES) (inactivates Apr. 1, 1994); 163d Air Refueling Gp. (ANG); Customs Aviation Operations Center West. Base activated Mar. 1, 1918; named for 2d Lt. Peyton C. March, Jr., who died in Texas of crash injuries Feb. 18, 1918. Area 6,848 acres. Runway 13,300 ft. Altitude 1,530 ft. Military 6,824; civilians 1,676. Payroll \$164 million. Housing: 107 officer, 803 NCO, 172 transient. 80-bed hospital. Scheduled to realign to an AFRES/ANG base in 1996.

**Maxwell AFB**, Ala. 36112-5000; 1 mi. WNW of Montgomery. Phone (205) 953-1110; DSN 493-1110. AETC base. 502d Air Base Wing. Hq. Air University. Air War College; Air Command and Staff College; Air Force Quality Institute; Air University Library; College of Aerospace Doctrine, Research, and Education; Air Force Reserve Officers Training Corps; Officer Training School; Ira C. Eaker College for Professional Development; Hq. Civil Air Patrol-USA; Squadron Officer School; and Air Force Institute of Technology (at Wright-Patterson AFB, Ohio). Associate units: 908th Airlift Gp. (AFRES); Air Force Medical Management Engineering Team; and Air Force Historical Research Agency. Air University conducts professional military, graduate, and professional continuing education for precommissioned and commissioned officers, enlisted personnel, and civilians to prepare them for command, staff, leadership, and management responsibilities. Base activated 1918; named for 2d Lt. William C. Maxwell, killed in air accident Aug. 12, 1920, in the Philippines. Area 2,524 acres. Runway 7,000 ft. Altitude 168 ft. Military 3,189; civilians 1,648. Payroll \$324 million. Housing: 295 officer, 361 enlisted, 276 junior enlisted, 1,478 transient (1,349 VOQ, 91 VAQ, 38 TLF). 40-bed hospital.

**Maxwell AFB, Gunter Annex**, Ala. 36114; 4 mi. NE of Montgomery. Phone (205) 416-1110; DSN 596-1110. AETC base. Under Hq. Air University; College for Enlisted Professional Military Education (includes USAF Senior NCO Academy); Extension Course Institute; Standard Systems Center (AFMC); Air Force Logistics Management Agency. Activated Aug. 27, 1940; named for Wil-

liam A. Gunter, longtime mayor of Montgomery and airpower advocate who died in 1940. Area 368 acres. No runway. Altitude 220 ft. Military 1,395; civilians 868. Payroll included in Maxwell entry. Housing: 104 officer, 220 enlisted, 152 junior enlisted, 463 transient (209 VOQ, 251 VAQ, 3 TLF).

**McCord AFB**, Wash. 98438-5000; 10 mi. S of Tacoma. Phone (206) 984-1910; DSN 984-1110. AMC base. Host unit is 62d Airlift Wing. Major tenants include: 446th Airlift Wing (AFRES Assoc.); Northwest Air Defense Sector; 354th Fighter Sqn., A-10 Thunderbolt II. The 62d AW operates the C-141 StarLifter and is responsible for strategic airlift of personnel and cargo worldwide, on short notice, in support of national objectives. Base is adjacent to Fort Lewis, its primary customer. Base activated May 5, 1938; named for Col. William C. McCord, killed Aug. 18, 1937, while attempting a forced landing at Maidens, Va. Area 4,616 acres. Runway 10,100 ft. Altitude 323 ft. Military 4,661; civilians 1,708. Payroll \$200.2 million. Housing: 117 officer, 722 NCO, 744 transient. Dispensary. Madigan Army Medical Center is the newest regional DoD hospital, located 4 mi. SE, with 414 beds.

**McClellan AFB**, Calif. 95652-5000; 9 mi. NE of Sacramento. Phone (916) 643-2111; DSN 633-1110. AFMC base. Hq. Sacramento Air Logistics Center provides logistics management, procurement, maintenance, and distribution support for F/EF-111 and A-10, and, as a second source, for the F-15 and KC-135 weapon systems. The ALC is also program manager for the F-117A Stealth fighter and will be the support center for the F-22 (Advanced Tactical Fighter). Other responsibilities include more than 200 electronic systems and programs and eight space systems; technology centers for very-high-speed integrated circuits, fiber optics, and advanced composites. The ALC has unique capability for robotic non-destructive inspection using X-ray and neutron radiography on F-111-sized aircraft. Other major units include Defense Depot—McClellan; Defense Information Systems Organization—McClellan; 1849th Electronics Installation Sqn.; Technical Operations Division, Air Force Technical Applications Center; 4th Air Force (AFRES); US Coast Guard Air Station, Sacramento (DOT). Named for Maj. Hezekiah McClellan, pioneer in Arctic aeronautical experiments, killed in crash May 25, 1936. Area 3,763 acres. Runway 10,600 ft. Military 3,000; civilians 11,000. Payroll \$580 million. Housing: 100 officer, 564 enlisted, 19 transient. 652d Medical Gp. clinic also controls 652d Medical Gp. Hospital located at Mather AFB.

**McConnell AFB**, Kan. 67221-5000; SE corner of Wichita. Phone (316) 652-6100; DSN 743-1110. AMC base. 22d Air Refueling Wing; 384th Bomb Gp.; 184th Bomb Gp. (ANG). Base activated June 5, 1951; named for Capt. Fred J. McConnell, WW II B-24 pilot who died in crash of a private plane Oct. 25, 1945, and for his brother, 2d Lt. Thomas L. McConnell, also a WW II B-24 pilot, killed July 10, 1943, during an attack on Bougainville. Area 3,113 acres. Runway 12,000 ft. Altitude 1,371 ft. Military 3,091; civilians 331. Payroll \$111 million. Housing: 123 officer, 364 NCO, 97 transient (45 VOQ, 31 VAQ, 21 TLF).

**McGuire AFB**, N. J. 08641-5000; 18 mi. SE of Trenton. Phone (609) 724-1100; DSN 440-1100. AMC base. 438th Airlift Wing; Hq. 21st Air Force; N. J. ANG; N. J. Civil Air Patrol; 108th Air Refueling Wing (ANG); 514th Airlift Wing (AFRES Assoc.); McGuire NCO Academy (AETC). Base adjoins Army's Fort Dix; formerly Fort Dix AAB. Activated as AFB 1949; named for Maj. Thomas B. McGuire, Jr., P-38 pilot, second leading US ace of WW II, recipient of Medal of Honor, killed in action Jan. 7, 1945, in the Philippines. Area 3,597 acres. Runways 7,124 ft. and 10,000 ft. Altitude 133 ft. Military 9,558 (incl. AFRES and ANG); civilians 1,657. Payroll \$202 million. Housing: 193 officer, 1,560 NCO, 962 transient (210 VOQ, 752 VAQ). 250-bed hospital at Fort Dix.

**Minot AFB**, N. D. 58705-5000; 13 mi. N of Minot. Phone (701) 723-1110; DSN 453-1110. ACC base. 5th Bomb Wing (B-52H); 906th Air Refueling Sqn./Air Mobility Command (KC-135R); 91st

Missile Wing, Minuteman III operations (AFSPC); CPT Flight/23d Bomb Sqn. (T-38A); 54th Rescue Flight/91st Operations Gp. (HH-1H). Base activated Jan. 1957; named after the city of Minot, whose citizens donated \$50,000 toward purchase of the land for the Air Force. Area 5,085 acres, plus additional 19,324 acres for missile sites. Runway 13,300 ft. Altitude 1,668 ft. Military 4,823; civilians 1,036. Payroll \$109 million (military only). Housing: 427 officer, 1,737 enlisted, 295 junior enlisted. 45-bed hospital.

**Misawa AB**, Japan, APO AP 96319-5000; within Misawa city limits. Phone (commercial, from CONUS) 011-81-176-53-5181. DSN 226-1110. PACAF base; joint service base. Host unit: 432d Fighter Wing, F-16C/D operations. Tenant units: 301st Intelligence Sqn.; Naval Air Facility; Naval Security Gp. Activity; US Army field station; Company "E," US Marine Support Battalion. Base occupied by US forces Sept. 1945. Area 3,865 acres. Runway 10,000 ft. Altitude 119 ft. Military 5,176 (total US forces); US civilians 122; local nationals 804. Payroll \$166 million. Housing: 335 officer, 1,835 enlisted, 20 temporary lodging units. Unaccompanied housing: 120 officer, 1,711 enlisted, 158 transient (96 VOQ, 62 VAQ). Unaccompanied Navy housing: 108 officer (transient), 855 enlisted (336 permanent party, 519 transient). 25-bed hospital.

**Moody AFB**, Ga. 31699-5000; 10 mi. NNE of Valdosta. Phone (912) 333-4211; DSN 460-1110. ACC base. 347th Fighter Wing, F-16C/D (LANTIRN-equipped) fighter operations, becoming composite wing; 71st Air Control Sqn.; 336th USAF Recruiting Sqn.; Det. 717, AFOSI; Field Training Det. 322. Base activated in June 1941; named for Maj. George P. Moody, killed May 5, 1941, while test-flying a Beech AT-10. Area 6,050 acres. Runway 8,000 ft. Altitude 233 ft. Military 4,000; civilians 700. Payroll \$81 million. Housing: 36 officer, 268 enlisted, 79 transient (34 VAQ, 33 VOQ, 12 TLF), 39 trailer spaces. 15-bed hospital.

**Mountain Home AFB**, Idaho 83648-5000; 10 mi. SW of Mountain Home. Phone (208) 828-2111; DSN 728-2111. ACC base. 366th Wing, USAF's first air intervention composite wing, with F-16C attack, F-15E interdiction, F-15C air superiority, and KC-135R air refueling aircraft prepared to deploy rapidly worldwide and perform composite air intervention operations. Base activated in Aug. 1943. Area 9,112 acres. Runway 13,500 ft. Altitude 3,000 ft. Military 3,362; civilians 1,130. Payroll \$91 million. Housing: 246 officer, 1,271 enlisted, 263 transient (180 VAQ, 45 VOQ, 38 TLF). 20-bed hospital.

**Nellis AFB**, Nev. 89191-5000; 8 mi. NE of Las Vegas. Phone (702) 652-1110; DSN 682-1110. ACC base. USAF Weapons and Tactics Center, A-10, F-15, F-15E, F-16, and F-4G; 57th Fighter Wing; USAF Weapons School; USAF Combat Rescue School; USAF Air Demonstration Sqn. (Thunderbirds); 57th Operations Gp.; 414th Training Sqn. (Red Flag); 549th Joint Training Sqn. (Air Warrior); 57th Test Gp., including 422d Test and Evaluation Sqn.; 57th Logistics Gp.; 547th Adversary Threat Sqn.; 561st Fighter Sqn. (Wild Weasels); 66th Rescue Sqn. (HH-60); 554th Medical Gp.; 554th Support Gp.; 820th Civil Engineering Sqn. RED HORSE; 896th Aviation Depot Sqn. (AFMC). Base activated in July 1941 as AAF Flexible Gunnery School. Closed in 1947. Reopened in 1949 and named for 1st Lt. William H. Nellis, WW II P-47 fighter pilot, killed Dec. 27, 1944, in Europe. Range restricted area 3.5 million acres plus 12,000 sq. mi. of airspace. Runways 10,051 ft. and 10,119 ft. Altitude 1,868 ft. Military 7,200; civilians 2,000. Payroll NA. Housing: 107 officer, 1,275 enlisted, 100 trailer spaces, 737 transient (193 VOQ, 484 VAQ, 60 TLF). 129-bed joint Air Force/Veterans Administration hospital opens mid-1994.

**Newark AFB**, Ohio 43057-5990; 1 mi. SW of Newark. Phone (614) 522-2171; DSN 346-7000. AFMC base. Aerospace Guidance and Metrology Center repairs inertial guidance and navigation systems for most Air Force missiles and aircraft as well as a variety of inertial systems for other branches of the armed forces. Also manages the Air Force's worldwide measurement and calibra-

tion program, providing the link between the National Institutes of Science and Technology and the Air Force's 130 precision measurement equipment laboratories at bases around the world. Four tenant units. Activated as an Air Force station Nov. 7, 1962. Area 10-20 acres. No runway. Military 80; civilians 1,500. Payroll \$80 million. Base is scheduled for closure, date to be determined.

**Offutt AFB**, Neb. 68113-5000; 8 mi. S of Omaha. Phone (402) 294-1110; DSN 271-1110. ACC base. Hq. US Strategic Command. 55th Wing; Strategic Joint Intelligence Center; Hq. Strategic Communications-Computer Center; Air Force Global Weather Center; 6th Space Operations Sqn. (AFSPC); National Emergency Airborne Command Post (NEACP); Air Combat Command Heartland of America Band. Base activated 1896 as Army's Fort Crook; landing field named for 1st Lt. Jarvis J. Offutt, WW I pilot who died Aug. 13, 1918, from injuries received at Valheureux, France. Area 4,060 acres (incl. housing area and off-base sites). Runway 11,700 ft. Altitude 1,048 ft. Military 10,100; civilians 2,200. Payroll \$475 million. Housing: 513 officer, 2,137 enlisted, 80 VAQ, 171 VOQ, 60 TLF. 60-bed hospital.

**Osan AB**, Republic of Korea, APO AP 96278-5000; 38 mi. S of Seoul. Phone (commercial, from CONUS) 011-82-333-661-1110; DSN 784-4110. PACAF base. Hq. 7th Air Force. Host unit: 51st Fighter Wing, F-16C/D, C-12F, and OA-10A operations. Tenant units: 303d Intelligence Sqn.; 611th Airlift Support Sqn.; 554th Civil Engineering Sqn. RED HORSE (PACAF). Originally designated K-55; runway opened Dec. 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. Military 5,766; US civilians 208; local nationals 778. Payroll NA. Housing: 153 officer, 59 enlisted. 16 TLF. Unaccompanied housing: 355 officer, 5,656 enlisted, 70 VOQ, 400 VAQ. 30-bed hospital.

**Patrick AFB**, Fla. 32925-5000; 2 mi. S of Cocoa Beach. Phone (407) 494-1110; DSN 854-1110. AFSPC base. Operated by the 45th Space Wing in support of DoD, NASA, and other agency missile and space programs. Major tenants: Defense Equal Opportunity Management Institute; Air Force Technical Applications Center; 41st Rescue Sqn.; 71st Rescue Sqn.; 301st Rescue Sqn. (ANG); 741st Consolidated Aircraft Maintenance Sqn.; and the Joint Task Force for Joint STARS at Melbourne Regional Airport, Fla. Besides host responsibilities for Patrick AFB and Cape Canaveral AFS, 45th Space Wing also oversees operations at tracking stations on Antigua and Ascension Islands. Patrick has supported more than 3,000 space launches from Cape Canaveral since 1950. Base activated 1940. Named for Maj. Gen. Mason M. Patrick, Chief of AEF's Air Service in WW I and Chief of the Air Service/Air Corps, 1921-27. Area 2,341 acres. Runway 9,000 ft. Altitude 9 ft. Military 2,700; civilians 1,900. Payroll \$155 million (military, Civil Service). Housing: 136 officer, 1,230 NCO. 15-bed hospital.

**Peterson AFB**, Colo. 80914-5000; at eastern edge of Colorado Springs. Phone (719) 556-7321; DSN 834-7011. AFSPC base. Hq. Air Force Space Command. Host unit: 21st Space Wing (AFSPC). Provides support to Hq. North American Aerospace Defense Command; Hq. US Space Command; Hq. Army Space Command; 302d Airlift Wing (AFRES). Edward J. Peterson Air & Space Museum. Base activated 1942; named for 1st Lt. Edward J. Peterson, killed Aug. 8, 1942, in aircraft crash at the base. Area 1,277 acres. Runway length NA. Altitude 6,200 ft. Military active-duty 3,100; reserves 1,350; civilians 1,700. Payroll \$206 million. Housing: 107 officer, 384 NCO, 217 transient (75 VOQ, 102 VAQ, 40 TLF). Clinic.

**Plattsburgh AFB**, N. Y. 12903-5000; adjacent to Plattsburgh. Phone (518) 565-5000; DSN 689-5000. AMC base. 380th Air Refueling Wing, tanker operations with KC-135; Det. 203, OLA 373d Field Training Sqn. One of the oldest active military installations in the US, established 1812; AFB since 1955. Area 4,879 acres. Runway 11,758 ft. Altitude 235 ft. Military 2,218; civilians 792. Pay-

roll \$75.1 million. Housing: 218 officer, 1,421 NCO, 132 transient (60 VAQ, 49 VOQ, 23 TLF). 8-bed hospital. Scheduled to close Sept. 30, 1995.

**Pope AFB**, N. C. 28308-5000; 12 mi. NNW of Fayetteville. Phone (910) 394-0001; DSN 486-1110. ACC base. 23d Wing. 624th Airlift Support Gp. (AMC); 1st Aeromedical Evacuation Sqdn.; 23d Combat Control Sqdn.; 53d Mobile Aerial Port Sqdn. (AFRES); Det. 3, MACOS (Combat Control School); 18th Air Support Gp.; 1724th Special Tactics Sqdn. (AFSOC). Base adjoins Army's Fort Bragg and provides intratheater airlift and close air support for airborne forces and other personnel, equipment, and supplies. Base activated 1919; named after 1st Lt. Harley H. Pope, WW I flyer, killed Jan. 7, 1917, when his JN-4 "Jenny" crashed into the Cape Fear River near Fayetteville. Area 1,750 acres. Runway 7,500 ft. Altitude 218 ft. Military 4,700; civilians 719. Payroll \$172 million. Housing: 459 units, 1,208 dormitory spaces, 268 transient (144 officer, 116 enlisted, 8 TLF). Clinic.

**RAF Alconbury**, United Kingdom, APO AE 09470; 3 mi. NW of Huntingdon; 60 mi. N of London. Phone (commercial, from CONUS) 011-44-480-82-3000; DSN 223-1110. Royal Air Force base. 10th Air Base Wing (USAFE) is host unit and maintains tribase complex; 352d Special Operations Gp. (AFSOC) flies MC-130 Combat Talon, HC-130 Combat Shadow tanker, and MH-53J Pave Low helicopter; Joint Analysis Center (EUCOM) provides intelligence to US and NATO leaders from base at nearby RAF Molesworth. Initially activated in 1938; first used by US forces in Sept. 1942. Area 2,954 acres. Runway length NA. Altitude 160 ft. Military 3,000; civilians 1,250. Payroll \$122 million. Housing: 79 officer, 767 enlisted, 250 govt.-leased units (enlisted only), 1,187 dorm spaces. Clinic. Wing will inactivate and 352d SOG will transfer to 100th Air Refueling Wing, RAF Mildenhall, UK, in FY 1995.

**RAF Lakenheath**, United Kingdom, APO AE 09464-5000; 70 mi. NE of London; 25 mi. from Cambridge. Phone (commercial, from CONUS) 011-44-638-52-3000; DSN 226-1110. Royal Air Force base. 48th Fighter Wing (USAFE) flies the F-15E and the F-15C/D and trains for and conducts air operations in support of NATO. Base activated in 1941; 48th FW began operations at RAF Lakenheath in Jan. 1960. Named after nearby village. Area 2,226 acres. Runway length 9,000 ft. Altitude 32 ft. Military 4,480; civilians 2,025. Payroll \$169 million. Housing: 1,024 units, 1,065 govt.-leased housing, 161 billeting spaces. Regional medical center.

**RAF Mildenhall**, United Kingdom, APO AE 09459-5000; 30 mi. NE of Cambridge. Phone (commercial, from CONUS) 011-44-638-54-3000; DSN 238-1110. Royal Air Force base. Hq. 3d Air Force (USAFE). 100th Air Refueling Wing (USAFE), KC-135R and European Tanker Task Force operations, regional logistics support. Associate units include 627th Airlift Support Sqdn. (AMC); 922d Reconnaissance Sqdn. (ACC); 488th Intelligence Sqdn.; Naval Air Facility. Base activated in 1934; US presence began in July 1950. Named after nearby village. Area 1,144 acres. Runway length NA. Altitude 33 ft. Military 3,492; DoD civilians 193. Payroll NA. Housing: 40 officer, 79 enlisted; govt.-leased housing shared with RAF Lakenheath; 452 transient (40 TLF, 216 VOQ, 196 VAQ). Medical annex.

**RAF Upper Heyford**, United Kingdom, APO AE 09466; 13 mi. N of Oxford. Phone (commercial, from CONUS) 011-44-869-232331; DSN 263-1110. Royal Air Force base. 20th Fighter Wing was redesignated the 620th Air Base Wing in Jan. 1994. The base, originally scheduled to be placed in standby status, will be returned to the host government by Sept. 30, 1994.

**Ramstein AB**, Germany, APO AE 09094-5000; adjacent to Ramstein; 10 mi. W of Kaiserslautern. Phone (commercial, from CONUS) 011-49-6371-113; DSN 480-1110. USAF base. Hq. USAF; Hq. Allied Air Forces Central Europe (NATO). Host unit: 86th Wing, F-16C/D, C-20/21, CT-43, UH-1N, and C-9. The wing commander also serves as commander of the Kaiserslautern Military Com-

munity, the largest concentration of US citizens outside the US. Base activated and US presence began in 1953. Area 5,292 acres. Runway length NA. Altitude 782 ft. Military 8,330; civilians 3,612. Payroll \$435.3 million. Housing: 5,155 units, govt.-leased units 519, billeting units 1,078. Both the 512th and 526th Fighter Sqdns. are scheduled to inactivate. In Apr. 1994, the F-16s began moving to Aviano AB, Italy. Twelve C-130s from the 37th Airlift Sqdn. at Rhein-Main AB, Germany, will move to Ramstein in Oct. 1994.

**Randolph AFB**, Tex. 78150-5000; 17 mi. ENE of San Antonio. Phone (210) 652-1110; DSN 487-1110. AETC base. Hq. Air Education and Training Command; Hq. 19th Air Force; 12th Flying Training Wing; T-37, T-38, AT-38, and T-1 pilot instructor training; T-43 undergraduate navigator training and T-3 flight screening at Hondo, Tex.; Hq. Air Force Military Personnel Center; Hq. Air Force Management Engineering Agency; Hq. Air Force Services Agency; USAF Occupational Measurement Sqdn.; Air Force Civilian Personnel Management Center; Hq. USAF Recruiting Service. Base activated June 1930; named for Capt. William M. Randolph, killed Feb. 17, 1928, when his AT-4 crashed on takeoff at Gorman, Tex. Area 5,003 acres. Two runways, each 8,350 ft. Altitude 761 ft. Military 5,364; civilians 4,302. Payroll \$346 million. Housing: 181 officer, 838 NCO, 561 transient (173 VAQ, 358 VOQ, 30 TLF). Clinic.

**Reese AFB**, Tex. 79489-5000; adjacent to Lubbock. Phone (806) 885-4511; DSN 838-1110. AETC base. 64th Flying Training Wing, specialized undergraduate pilot training. Base activated 1942; named for 1st Lt. Augustus F. Reese, Jr., P-38 fighter pilot killed during a train-strafting mission at Cagliari, Sardinia, May 14, 1943. Area 3,953 acres. Runways 6,500 ft., 10,500 ft., and 10,500 ft. Altitude 3,338 ft. Military 1,192; civilians 617. Payroll \$50.5 million. Housing: 148 officer, 250 NCO, 63 transient (8 suites, 25 TLF, 14 VOQ, 16 VAQ). Clinic.

**Rhein-Main AB**, Germany, APO AE 09097-5000; 5 mi. S of Frankfurt. Phone (commercial, from CONUS) 011-49-69-699-1110; DSN 330-1110. USAF base. Host unit: 435th Airlift Wing. Largest combined cargo and passenger terminal in the Air Force. Shares runways with the busiest commercial airport on the Continent. The 37th Airlift Sqdn. flies C-130E aircraft in support of DoD and European theater airlift requirements. Other major units include 362d Airlift Gp.; On-Site Inspection Agency-Europe; Army's 21st Replacement Battalion. Base activated July 1936; US forces began operations Mar. 1945. Named after the confluence of the Rhein and Main rivers west of Frankfurt. Area 923 acres. Runway length NA. Altitude 365 ft. Military 3,546; civilians 1,051. Payroll NA. Housing, on-base, govt.-owned: 152 officer, 490 enlisted; off-base, govt.-owned and -leased: 602 units. 268 rooms/531 beds at base hotel, 176 rooms/278 beds VAQ. Clinic. Scheduled for partial return to host government in Oct. 1994.

**Robins AFB**, Ga. 31098; 15 mi. SSE of Macon at Warner Robins. Phone (912) 926-1110; DSN 468-1110. AFMC base. Hq. Warner Robins Air Logistics Center provides worldwide logistics management for the F-15 air-superiority fighter, C-130 and C-141 cargo aircraft, helicopters, missiles, and remotely piloted vehicles. Other management responsibilities include the LANTIRN system, JTIDS, E-3 AWACS 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 Worldwide Military Command and Control System. Warner Robins is the lead ALC for the National Aerospace Plane technology and demonstration program. In Apr. 1991, Robins AFB was selected as the US main operating base for the E-8 Joint STARS aircraft. Other major units include Hq. Air Force Reserve (AFRES); 653d Air Base Gp.; 19th Air Refueling Wing; 5th Combat Communications Gp. (ACC); 653d Communications-Computer Systems Gp. (AFMC); 9th Space Warning Sqdn. (AFSPC). Base activated Mar. 1942; named for Brig. Gen. Augustine Warner Robins, an early chief of the Materiel Division of the Air Corps, who died June 16, 1940. Area more than 8,700

acres. Runway 12,000 ft. Altitude 294 ft. Military approx. 4,400; civilians approx. 12,500. Payroll \$698.8 million. Housing: 245 officer, 1,149 NCO, 40 TLF, 137 VOQ. 20-bed hospital.

**Sawyer AFB** (see K. I. Sawyer AFB).

**Scott AFB**, Ill. 62225-5000; 6 mi. ENE of Belleville. Phone (618) 256-1110; DSN 576-1110. AMC base. 375th Airlift Wing; Hq. Air Mobility Command; Hq. Air Force C<sup>4</sup> Agency (an FOA); Hq. US Transportation Command; Hq. Air Weather Service; Environmental Technical Applications Center; USAF Medical Center, Scott; 932d Aeromedical Airlift Gp. (AFRES Assoc.). Base activated June 14, 1917; named for Cpl. Frank S. Scott, the first enlisted man to die in an aircraft accident, killed Sept. 28, 1912, in one of the Wright B Flyers at College Park, Md. Area 3,000 acres. Runway 7,061 ft. Altitude 453 ft. Military 6,600; civilians 3,550. Payroll \$300 million. Housing: 309 officer, 1,392 NCO, plus 104 spaces for privately owned trailers, 300 transient. 120-bed hospital; 100-bed aeromedical staging facility.

**Sembach AB**, Germany, APO AE 09130-5000; 9 mi. NE of Kaiserslautern. Phone (commercial, from CONUS) 011-49-6302-67-113; DSN 496-1110. USAF base. Hq. 17th Air Force (USAFE). Host unit: 601st Air Base Wing. Major associate units include USAF Air Ground Operations School; 601st Regional Support Gp.; Defense Commercial Communications Office; 1st Combat Communications Sqdn. Base activated 1930; US presence began July 1953. Named after a nearby farming community. Area 862 acres. Runway length NA. Altitude 1,037 ft. Military 2,617; civilians 600. Payroll \$72.8 million. Housing: 74 officer, 420 enlisted. Billeting: 73 officers, 330 enlisted, 4 chief master sergeant suites. Clinic. Base scheduled for partial return to host government in Sept. 1995.

**Seymour Johnson AFB**, N. C. 27531-5000; within city limits of Goldsboro. Phone (919) 736-5400; DSN 488-1110. ACC base. 4th Wing, F-15E fighter, KC-10 tanker, and T-38 operations; 916th Air Refueling Gp. (AFRES), KC-10 operations. Base activated June 12, 1942; named for Navy Lt. Seymour A. Johnson, Goldsboro native, killed Mar. 5, 1941, in aircraft accident in Maryland. Area 3,233 acres. Runway 11,758 ft. Altitude 109 ft. Military 4,570; civilians 1,185. Payroll \$149.2 million. Housing: 154 officer, 1,544 enlisted, 122 transient (56 VAQ, 39 VOQ, 27 TLF). 15-bed hospital.

**Shaw AFB**, S. C. 29152-5000; 10 mi. WNW of Sumter. Phone (803) 668-8110; DSN 965-1110. ACC base. 20th Fighter Wing, F-16 fighter operations and A/OA-10 close air support/forward air control operations; Hq. 9th Air Force. Base activated Aug. 30, 1941; named for 2d Lt. Ervin D. Shaw, one of the first Americans to see air action in WW I, killed in France July 9, 1918, when his Bristol fighter was shot down during a reconnaissance mission. Area 3,363 acres; supports another 13,000 acres. Runways 10,000 ft. and 8,000 ft. Altitude 244 ft. Military 6,000; civilians 1,100. Payroll \$167 million. Housing: 170 officer, 1,534 enlisted, 294 transient (164 VAQ, 90 VOQ, 40 TLF). 40-bed hospital.

**Sheppard AFB**, Tex. 76311-5000; 4 mi. N of Wichita Falls. Phone (817) 676-2511; DSN 736-1001. AETC base. The 82d Training Wing includes the 396th Technical Training Gp., which conducts courses in aircraft maintenance, civil engineering, communication, and comptroller and instructor training; the 82d Medical Training Gp., which provides training in biomedical sciences, dentistry, health service administration, medical readiness, medicine, nursing, and the Physician Assistant Training Program; the 82d Field Training Gp., which provides training on specific weapon systems at 46 field training detachments and 18 operating locations worldwide; the 82d Support Gp.; the 82d Medical Gp.; and the 82d Logistics Gp. The 82d Technical Training Gp. is scheduled to be activated in 1994. The 80th Flying Training Wing conducts T-37 and T-38 undergraduate pilot training and instructor pilot training for 12 nations in the Euro-NATO Joint Jet Pilot Training Program. The 80th FTW also conducts introduction to













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By John L. Frisbee, Contributing Editor

## Stealth, 1942

Skip bombing was a major airpower development in the Pacific war, and 2d Lt. Jim Murphy was one of its principal architects.



**W**HEN 2d Lt. James T. Murphy arrived in the southwest Pacific on August 18, 1942, he had already earned the first of many distinctions. Earlier, at Hamilton Field, Calif., where he joined the 63d Bomb Squadron of the 43d Bomb Group, he had been made an aircraft commander at a time when some B-17 copilots were captains.

The war was not going well for Maj. Gen. George C. Kenney's Fifth Air Force in the summer of 1942. Its primary mission was interdicting Japanese shipping from the great enemy base at Rabaul, New Britain. General Kenney had but a handful of B-17s, his only bombers with the range to reach Rabaul from New Guinea. The results of high-altitude bombing had been negligible. A better way had to be found. Maj. Bill Benn, commander of the 63d Squadron, convinced General Kenney that low-altitude skip bombing was the answer. Jim Murphy was one of several volunteers to perfect that technique, along with Capt. Kenneth McCullar. [See "Skip-Bombing Pioneer," December 1990, p. 87.]

Experiments showed that accurate delivery was best achieved at an altitude of 200 feet, flying at 200 to 230 miles an hour with bomb release about 300 yards from the target. The bombs then would skip across the water into the side of the target ship. This required precise flying. In his remarkable book, *Skip Bombing*, Murphy says the number of bomb hits increased from one percent in high-altitude attack to seventy-two percent by skip bombing. It was a major airpower development of the Pacific war.

Skip bombing was based on surprise—on stealth. The B-17F was a large, relatively slow target for enemy gunners. Rabaul was heavily defended by anti-aircraft guns and searchlights; hence all attacks were made at night to conceal the attacking bombers and to silhouette target ships against the rising moon or breaking dawn. Skip bombing was an extremely dangerous undertaking.

Flying presented plenty of hazards in that part of the world. The route from New Guinea to most targets was from 500 to 700 miles over dense jungle and open sea. The likelihood of rescue if downed was virtually zero. That area also is the home of violent weather fronts, unequalled in ferocity in any other combat zone of World War II. Add to that miserable living conditions in New Guinea, and a combat tour in the southwest Pacific was a test for the best.

Beyond skip bombing in Rabaul Harbor, Lieutenant Murphy was a major player in the Battle of the Bismarck Sea, where 43d Bomb Group B-17s were joined by Fifth Air Force medium bombers and fighters. The battle, fought under the worst weather conditions in early March 1943, was a desperate, and successful, attempt to destroy a large convoy of troop transports and warships sent to reinforce Japanese troops in northern New Guinea. Complete destruction of the convoy ended Japanese hopes of conquering the island.

Gen. Douglas MacArthur called this victory "the decisive aerial engagement" of the southwest Pacific. Jim Murphy was credited with sink-

ing one of the transports and several landing barges.

More than sixty percent of Lieutenant Murphy's combat missions involved skip bombing. On the night of November 13, 1942, he went against enemy shipping off the island of Bougainville. Murphy broke out of the most ferocious front he had encountered just as he approached the target area. As he descended for the bomb run, his number four engine was knocked out by flak, but his crew scored a direct hit on a cargo ship.

As the B-17 circled for a second run, a large section of its nose was blown out by ground fire. With a hurricane blasting through the open nose, Lieutenant Murphy destroyed another ship and fought off several Zeros. Now the challenge became fighting their way home through the front with one engine out, another running at half power, and torrents of rain pouring in through the shattered nose. Updrafts and downdrafts threw the B-17 from a near-stall to a 300-mile-an-hour dive before they finally made it through the front and landed at Port Moresby.

For that mission, Jim Murphy was awarded the Silver Star, presented by General MacArthur in General Kenney's office. Twice before, Murphy had been awarded the Distinguished Flying Cross (and several Air Medals) in a theater where decorations were not presented for number of missions flown but for outstanding achievement on a particular mission. Before Murphy returned to the States, he had sunk nine ships and stood second only to Ken McCullar in number of enemy ships destroyed by 43d Bomb Group crews.

After the war, Jim Murphy earned an MBA degree and spent several years in ballistic missile R&D before retiring from the Air Force as a lieutenant colonel in 1965. He then served with NASA at Marshall Space Flight Center, retiring in 1982 as MSFC's director of Administration and Program Support. Next, for eight years, he headed an aerospace consulting company. Now fully retired, he lives in Huntsville, Alabama. ■



## 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 (FAI), the world body of national aeronautic sporting interests. The FAI

today comprises the national aero clubs of seventy nations and certifies national records as world records.

Since 1922, the National Aeronautic Association (NAA), based in Washington, D. C., 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 su-

preme achievements of all the records open to flying machines. Several of these records are more than ten years old. The NAA notes that, "since the performance of many government-backed airplanes ... is wrapped in a blanket of national security, the breaking of some of these records will depend as much on political considerations as technical ones."

Record	Pilot(s)	Aircraft	Route/Location	Date(s)
Speed around the world, nonstop, nonrefueled: 115.65 mph (186.11 kph)	Richard Rutan and Jeana Yeager	<i>Voyager</i> experimental aircraft	Edwards AFB, Calif., to Edwards AFB, Calif.	December 14–23, 1986
Great circle distance without landing: 24,986.727 miles (40,212.139 kilometers)	Richard Rutan and Jeana Yeager	<i>Voyager</i> experimental aircraft	Edwards AFB, Calif., to Edwards AFB, Calif.	December 14–23, 1986
Distance in a closed circuit without landing: 24,986.727 miles (40,212.139 kilometers)	Richard Rutan and Jeana Yeager	<i>Voyager</i> experimental aircraft	Edwards AFB, Calif., to Edwards AFB, Calif.	December 14–23, 1986
Altitude: 123,523.58 feet (37,650.00 meters)	Alexander Fedotov	E-266M, a modified MiG-25 "Foxbat"	Podmoskovnoye, USSR	August 31, 1977
Altitude in an aircraft launched from a carrier airplane: 314,750.00 feet (95,935.99 meters)	Maj. Robert M. White, USAF	North American X-15 No. 3 research aircraft	Edwards AFB, Calif.	July 17, 1962
Altitude in horizontal flight: 85,068.997 feet (25,929.031 meters)	Capt. Robert C. Helt, USAF	Lockheed SR-71A "Blackbird" reconnaissance aircraft	Beale AFB, Calif.	July 28, 1976
Speed over a straight course: 2,193.16 mph (3,529.56 kph)	Capt. Eldon W. Joersz, USAF	Lockheed SR-71A "Blackbird" reconnaissance aircraft	Beale AFB, Calif.	July 28, 1976
Speed over a closed circuit: 2,092.294 mph (3,367.221 kph)	Maj. Adolphus H. Bledsoe, Jr., USAF	Lockheed SR-71A "Blackbird" reconnaissance aircraft	Beale AFB, Calif.	July 28, 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 pub-

lisher, sportsman, and aviator. Mr. 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-airplane.
- 1912 **Glenn H. Curtiss.** Flying boat.
- 1913 **Orville Wright.** Automatic stabilizer.
- 1914 **Elmer A. Sperry.** Gyroscopic control.
- 1915 **W. Sterling Burgess.** Burgess-Dunner hydro-aeroplane.
- 1916 **Elmer A. Sperry.** Drift indicator.
- 1917-20 **No award.** (World War I).
- 1921 **Grover Loening.** Aerial yacht.
- 1922 **US Mail Service.**
- 1923 **US Mail Service.** Night flying.
- 1924 **US Army.**
- 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.** NACA cowling.
- 1930 **Harold Pitcairn and staff.** Autogiro.
- 1931 **Packard Motor Car Co.** Aircraft diesel engine.
- 1932 **Glenn L. Martin.** Biengined, high-speed, weight-carrying airplane.
- 1933 **Hamilton Standard Propeller Co., Frank W. Caldwell.** Controllable-pitch propeller.
- 1934 **Maj. Albert F. Hegenberger.** Blind landing experiments.
- 1935 **Donald Douglas and staff.** DC-2.
- 1936 **Pan American Airways.** Transpacific and overwater operations.
- 1937 **Army Air Corps.** Design, equipment of substratosphere airplane.
- 1938 **Howard Hughes and crew.** Around-the-world flight.
- 1939 **US airlines.** Air travel safety record.
- 1940 **Dr. Sanford Moss, Army Air Corps.** Supercharger.
- 1941 **Air Forces and airlines.** Worldwide operations.
- 1942 **Gen. H. H. Arnold.** Leadership of US Army Air Forces.
- 1943 **Capt. Luis De Flores, USNR.** Synthetic training devices.
- 1944 **Gen. Carl A. Spaatz.** US air campaign against Germany.
- 1945 **Dr. Luis W. Alvarez.** Ground controlled approach radar landing system.
- 1946 **Lewis A. Rodert.** Thermal ice-prevention system.
- 1947 **John Stack, Lawrence D. Bell, 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 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.
- 1954 **Richard Travis Whitcomb.** Discovery, verification of area rule.
- 1955 **William M. Allen, Boeing, Gen. Nathan F. Twining, USAF.** B-52 bomber.
- 1956 **Charles I. 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 **US Air Force/Lockheed/GE F-104 team.** F-104 interceptor. **Clarence L. Johnson.** F-104 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, GD-Convair, Space Technologies Laboratories.** Atlas ICBM.
- 1960 **Vice Adm. William F. Raborn.** Polaris ballistic missile system.
- 1961 **Maj. Robert M. White, Joseph A. Walker, A. Scott Crossfield, Cmdr. Forrest Petersen.** X-15 test flights.
- 1962 **Lt. Cmdr. M. Scott Carpenter, Maj. L. Gordon Cooper, Lt. Col. John H. Glenn, Jr., Maj. Virgil I. Grissom, Cmdr. Walter M. Schirra, Jr., Cmdr. Alan B. Shepard, Jr., Maj. Donald K. Slayton.** Pioneering US manned spaceflight.
- 1963 **Clarence L. Johnson.** A-11 Mach 3 aircraft.
- 1964 **Gen. Curtis E. LeMay.** Lifetime achievement in airpower and defense.
- 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., Lt. Col. William A. Anders, US spaceflight team.** Apollo 8, first manned lunar orbit mission.
- 1969 **Neil A. Armstrong; Col. Edwin E. Aldrin, Jr., Col. Michael Collins.** Apollo 11, moon landing.
- 1970 **Boeing Co., Pratt & Whitney, Pan Am.** Commercial 747 service.
- 1971 **Col. David R. Scott, Col. James B. Irwin, Lt. Col. Alfred M. Worden, Dr. Robert T. Gilruth.** Apollo 15 mission.
- 1972 **Adm. Thomas H. Moorer, USAF Seventh and Eighth 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; NASA-industry LANDSAT team, RCA, Hughes.** Space technology in resource and environmental management.
- 1975 **David S. Lewis, General Dynamics, USAF-industry team.** F-16 aviation technologies.
- 1976 **USAF, Rockwell, B-1 industry team.** The B-1 bomber.
- 1977 **Gen. Robert J. Dixon and Tactical Air Command.** Red Flag.
- 1978 **Sam B. Williams, Williams Research Corp.** Turbofan cruise missile engines.
- 1979 **Paul B. MacCready, Aeroenvironment, Bryan Allen.** *Gossamer Albatross*.
- 1980 **NASA's Voyager mission team, Dr. Edward Stone.** *Voyager* flyby of Saturn.
- 1981 **NASA, Rockwell, Martin Marietta Corp., Thiokol Corp., government-industry shuttle team, Astronauts John W. Young, Capt. Robert L. Crippen, Col. Joe H. Engle, Capt. Richard H. Truly.** First flight of *Columbia*, first shuttle.
- 1982 **T. A. Wilson, Boeing Co., supported by the FAA, industry, airlines.** 757 and 767 airliners.
- 1983 **US Army, Hughes Helicopters, industry team.** AH-64A Apache helicopter.



## The Robert J. Collier Trophy

- 1984 **NASA, Martin Marietta, Astronaut Capt. Bruce McCandless II, Charles E. Whitsett, Jr., Walter W. Bollendonk.** Manned maneuvering units, satellite rescues.
- 1985 **Russell W. Meyer, Cessna Aircraft Co., 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 Stealth fighter.
- 1990 **Bell-Boeing team.** V-22 Osprey aircraft.
- 1991 **Northrop-USAF industry team.** B-2 bomber.
- 1992 **Aerospace Corp., Rockwell International Corp., IBM Federal Systems Co., US Naval Research Laboratory, USAF.** Navstar Global Positioning System.
- 1993 **Hubbell Space Telescope recovery team.** NASA Mission Directors: **Joseph Rothenberg, Brewster Shaw, J. Milton Heflin, Randy Brinkley,** and crew members of the space shuttle *Endeavor*: **Col. Richard O. Covey, Lt. Col. Tom D. Akers, Cmdr. Kenneth D. Bowersox, Kathryn C. Thornton, Claude Nicollier, Jeffery Hoffman, F. Story Musgrave.**

## Rodeo

Rodeo is Air Mobility Command's annual airlift and air refueling competition. It was held under different names by AMC's predecessor commands. The week-long Rodeo '93 at Little Rock AFB, Ark., showcased the top USAF active-duty, Air National Guard, and Air Force Reserve aircraft and teams and those of allied nations. The next Rodeo is scheduled for 1996. Since 1980, the trophy for the best overall wing has been named after Gen. William G. Moore, Jr., the eighth commander in chief of MAC.

### Moore Trophy Recipients

Year	Unit(s)
1962	1502d Air Transport Wing, Hickam AFB, Hawaii
1963	62d Air Transport Wing, McChord AFB, Wash.
1964	1608th Air Transport Wing, Charleston AFB, S. C.
1965-68	No competition
1969	21st Air Force (multiwing)
1970	21st Air Force (multiwing)
1971	22d Air Force (multiwing)
1972	21st Air Force (multiwing)
1973-78	No competition
1979	443d MAW, Altus AFB, Okla.
1980	317th TAW, Pope AFB, N. C.
1981	314th TAW, Little Rock AFB, Ark.
1982	Italian airlift wing
1983	314th TAW, Little Rock AFB, Ark.
1984	Italian airlift wing
1985	94th TAW (AFRES), Dobbins AFB, Ga.
1986	145th TAG (ANG), Charlotte, N. C.
1987	West German airlift wing
1988	No competition
1989	Australian airlift wing
1990	63d MAW, Norton AFB, Calif.
1991	No competition
1992	446th AW (AFRES Assoc.), McChord AFB, Wash.
1993	440th AW (AFRES), General Mitchell IAP, Wisc.

## The Hughes Achievement Trophy

The Hughes Achievement Trophy is presented annually to the top Air Force squadron with an air defense mission. Hughes Aircraft Co. 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, England	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	83d 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	32d FIS, Soesterberg AB, the Netherlands	F-102A
1967	317th FIS, Elmendorf AFB, Alaska	F-106A/B
1968	64th FIS, Clark AB, the 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	43d TFS, Elmendorf AFB, Alaska	F-4E
1973	555th TFS, Udorn RTAFB, 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	43d TFS, Elmendorf AFB, Alaska	F-4E
1978	49th FIS, Griffiss AFB, N. Y.	F-106A/B
1979	32d TFS, Soesterberg AB, the Netherlands	F-15A/B
1980	32d TFS, Soesterberg AB, the 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	22d 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

# The Mackay Trophy

The Mackay Trophy was established by Clarence H. Mackay, an industrialist, philanthropist, commu-

nications 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 2d Lt. Henry H. Arnold.  
 1913 2d Lt. Joseph E. Carberry and 2d Lt. Fred Seydel.  
 1914 Capt. Townsend F. Dodd and Lt. Shapler W. Fitzgerald.  
 1915 Lt. B. W. Jones.  
 1916-17 Inactive.  
 1918 Lt. Edward V. Rickenbacker.  
 1919 Lt. Belvin W. Maynard, Lt. Alexander Pearson, Jr., Lt. R. S. Worthington, Capt. John O. Donaldson, Capt. Lowell H. Smith, Lt. Col. Harold E. Hartney, Lt. E. H. Manzelman (posthumously), Lt. R. G. Bagby, Lt. D. B. Gish, and Capt. F. Steinle.  
 1920 Capt. St. Clair Streett, Capt. Howard T. Douglas, 1st Lt. Clifford C. Nutt, 2d Lt. Erik H. Nelson, 2d Lt. C. H. Crumrine, 2d Lt. Ross C. Kirkpatrick, Sgt. Edmond Henriques, Sgt. Albert T. Vierra, and Sgt. Joseph E. English.  
 1921 Lt. John A. Macready.  
 1922 Lt. John A. Macready and Lt. Oakley G. Kelly.  
 1923 Lt. John A. Macready and Lt. Oakley G. Kelly.  
 1924 Capt. Lowell H. Smith, 1st Lt. Leigh Wade, 1st Lt. Leslie P. Arnold, 1st Lt. Erik H. Nelson, 2d Lt. John Harding, Jr., and 2d Lt. Henry H. Ogden.  
 1925 Lt. Cyrus Bettis and Lt. James H. Doolittle.  
 1926 Maj. Herbert A. Dargue, Capt. Ira C. Eaker, Capt. Arthur B. McDaniel, Capt. C. F. Wolsey (posthumously), 1st Lt. J. W. Benton (posthumously), 1st Lt. Charles McRobinson, 1st Lt. Muir S. Fairchild, 1st Lt. Bernard S. Thompson, 1st Lt. Leonard D. Weddington, and 1st Lt. Ennis C. Whitehead.  
 1927 Lt. Albert F. Hegenberger and Lt. Lester J. Maitland.  
 1928 1st Lt. Harry A. Sutton.  
 1929 Capt. Albert W. Stevens.  
 1930 Maj. Ralph Royce.  
 1931 Maj. Gen. Benjamin D. Foulois.  
 1932 1st Lt. Charles H. Howard.  
 1933 Capt. Westside T. Larson.  
 1934 Brig. Gen. Henry H. Arnold.  
 1935 Maj. Albert W. Stevens and Capt. Orville Anderson.  
 1936 Capt. Richard E. Nugent, 1st Lt. Joseph A. Miller, 1st Lt. Edwing G. Simenson, 2d Lt. William P. Ragsdale, Jr., 2d Lt. Burton W. Armstrong, 2d Lt. Herbert Morgan, Jr., TSgt. Gilbert W. Olsen, SSgt. Howard M. Miller, and Corpsman 2d Class Frank B. Conner.  
 1937 Capt. Carl J. Crane and Capt. George V. Holloman.  
 1938 2d Bombardment Group (General Headquarters Air Force). All those in the 2d Bombardment Group at the time of the "Good Will" flight to Buenos Aires, Argentina, February 15-27, 1938, should be considered recipients.  
 1939 Maj. Caleb V. Haynes, Maj. William D. Old, Capt. John A. Samford, Capt. Richard S. Freeman, 1st Lt. Torgils G. Wold, MSgt. Adolph Cattarius, TSgt. Henry L. Hines, TSgt. William J. Heldt, TSgt. David L. Spicer, SSgt. Russel E. Junior, SSgt. James E. Sands. Earthquake relief mission to Chile.  
 1940-46 Inactive.  
 1947 Capt. Charles E. Yeager. First supersonic flight.  
 1948 Lt. Col. Emil Beaudry. Rescue in Greenland.  
 1949 Capt. James G. Gallagher and crew of *Lucky Lady II*. First around-the-world, nonstop flight.  
 1950 27th Fighter Escort Wing. Transatlantic movement of 180 fighters.  
 1951 Col. Fred J. Ascani. Speed record, 635.686 mph.  
 1952 Maj. Louis H. Carrington, Jr., Maj. Frederick W. Shook, and Capt. Wallace D. Yancey. First nonstop, transpacific flight of RB-45 jet bomber.  
 1953 40th Air Division, SAC. Nonstop, refueled transatlantic movement of fighters.  
 1954 308th Bombardment Wing (M). "Leapfrog" intercontinental maneuver.  
 1955 Col. Horace A. Hanes. Speed record, 822.135 mph.  
 1956 Capt. Iven C. Kincheloe, Jr., Air Research and Development Command. Altitude record in Bell X-2.  
 1957 93d Bombardment Wing, SAC. Three B-52s, in first nonstop, around-the-world jet flight.  
 1958 TAC Composite Air Strike Force, X-Ray Tango. Rapid deployment to Far East.  
 1959 4520th Aerial Demonstration Team. Goodwill tour of Far East.  
 1960 6593d Test Squadron (Special). Aerial recoveries of space capsules.  
 1961 Lt. Col. William R. Payne, Maj. William L. Polhemus, and Maj. Raymond R. Wagener, 43d Bomb Wing, SAC. Carswell AFB, Tex.-to-Paris nonstop flight, two speed records.  
 1962 Maj. Robert G. Sowers, Capt. Robert McDonald, and Capt. John T. Walton. Three transcontinental speed records in B-58.  
 1963 Capt. Warren P. Tomsett, Capt. John R. Ordemann, Capt. Donald R. Mack, TSgt. Edsol P. Inlow, SSgt. Jack E. Morgan, SSgt. Frank C. Barrett. Nighttime, under-fire evacuation of wounded in Vietnam.  
 1964 464th Troop Carrier Wing, TAC. Refugee airlift in Republic of Congo.  
 1965 YF-12A/SR-71 Test Force (Col. Robert L. Stephens, Lt. Col. Daniel Andre, Lt. Col. Walter F. Daniel, Maj. Noel T. Warner, and Maj. James P. Cooney). YF-12A flight that established nine speed and altitude records.  
 1966 Col. Albert R. Howarth. Courage and airmanship in southeast Asia.  
 1967 Maj. John J. Casteel, Capt. Dean L. Hoar, Capt. Richard L. Trail, and MSgt. Nathan C. Campbell. First emergency multiple air refuelings.  
 1968 Lt. Col. Daryl D. Cole. Conspicuous gallantry as C-130 pilot in southeast Asia.  
 1969 49th Tactical Fighter Wing, TAC. Deployment, with 504 air refuelings, of 72 F-4Ds from West Germany to New Mexico.  
 1970 Capt. Alan D. Milacek and AC-119K crew (Capt. James A. Russell, Capt. Roger E. Clancy, Capt. Ronald C. Jones, Capt. Brent C. O'Brien, TSgt. Albert A. Nash, SSgt. Adolfo Lopez, Jr., SSgt. Ronald R. Wilson, Sgt. Kenneth E. Firestone, A1C Donnell H. Cofar). Destruction of targets with a severely damaged aircraft.  
 1971 Lt. Col. Thomas B. Estes and Lt. Col. Dewain C. Vick. SR-71 record-shattering flights.  
 1972 Capt. Richard S. "Steve" Ritchie, Capt. Charles B. DeBellevue, and Capt. Jeffrey S. Feinstein. USAF's Vietnam War aces.  
 1973 MAC aircrews. Operation Homecoming, POWs' return.  
 1974 Maj. Roger J. Smith, Maj. David W. Peterson, Maj. Willard R. MacFarlane. Operation Streak Eagle (F-15) test pilots.  
 1975 Maj. Robert W. Undorf. Gallantry in *Mayaguez* incident.  
 1976 Capt. James A. Yule. Gallantry as instructor of B-52D flight.  
 1977 C-5 Aircrew, Mission AAM 1962-01 (Capt. David M. Sprinkel and crew). US-USSR energy research project.  
 1978 C-5 Aircrew, Mission AM 770021 (Lt. Col. Robert F. Schultz and crew and Capt. Todd H. Hohberger and crew, 436th MAW). C-5 airlift to Zaire.  
 1979 Maj. James E. McArdle, Jr. Rescue of 28 Taiwanese at sea.

## The Mackay Trophy

- 1980 Crews S-21 and S-31, 644th Bombardment Squadron. Nonstop, around-the-world mission to locate Soviet Navy operating in Arabian Sea.
- 1981 Capt. John J. Walters. Air rescue mission in Alaskan waters.
- 1982 B-52 Crew E-21, 19th Bombardment Wing. Successful emergency landing of B-52.
- 1983 Crew E-113, 42d Bombardment Wing, SAC. Emergency refueling and towing of an F-4E.
- 1984 Lt. Col. James L. Hobson, Jr. MC-130 assault in Grenada.
- 1985 Lt. Col. David E. Faught. Emergency KC-135 landing.
- 1986 KC-10 crew, 68th Air Refueling Group, SAC. Emergency transatlantic refueling of Marine A-4s.
- 1987 Det. 15, USAF Plant Representative Office, and B-1B SPO. 72 record B-1B flights.
- 1988 C-5 crew, 436th Military Airlift Wing. Mission to Semipalatinsk, USSR, as part of INF accord.
- 1989 B-1B crew, 96th Bombardment Wing. Emergency landing of B-1B.
- 1990 AC-130 crew, 16th Special Operations Squadron. Panama operations.
- 1991 MH-53 crew, 20th Special Operations Squadron. Rescue of downed Navy F-14 pilot inside Iraq during Persian Gulf War.
- 1992 C-130 crew (13 Air Combat Command members and one Air Force Intelligence Command member). Emergency landing of unarmed C-130 after incurring heavy damage from two Peruvian fighters in international airspace.
- 1993 B-52 crew, 668th Bomb Squadron, ACC. Successful emergency landing of B-52 after loss of four engines.

## Proud Shield

Proud Shield was Strategic Air Command's annual Bombing and Navigation Competition. The Gen. Muir S. Fairchild Trophy, named for the first commander of Air University, was awarded to the SAC bomber-tanker wing with the highest competition effectiveness. Beginning this year, Proud Shield (now run by Air Combat Command) will be held every other year.

## Fairchild Trophy Recipients

Year	Unit(s)	Aircraft
1951	97th BMW, Biggs AFB, Tex.	B-50D
1952	93d BMW, Castle AFB, Calif.	B-50D
	97th BMW, Biggs AFB, Tex. (tie)	B-50D
1953	92d BMW, Fairchild AFB, Wash.	B-36D
1954	11th BMW, Carswell AFB, Tex.	B-36H
1955	320th BMW, March AFB, Calif.	YRB-47B
1956	11th BMW, Carswell AFB, Tex.	B-36H
1957	321st BMW, Pinecastle AFB, Fla.	B-47B
1958	306th BMW, MacDill AFB, Fla.	B-47E
1959	307th BMW, Lincoln AFB, Neb.	B-47E
1960	11th BMW, Altus AFB, Okla.	B-52E
1961	4137th SW, Robins AFB, Ga.	B-52G
1962	No competition	
1963	2d BMW, Barksdale AFB, La. <sup>a</sup>	B-52F
1964	70th BMW, Clinton-Sherman AFB, Okla. <sup>a</sup>	B-52E
1965	454th BMW, Columbus AFB, Miss.	B-52F
1966	19th BMW, Homestead AFB, Fla.	B-52H
1967-68	No competition	
1969	319th BMW, Grand Forks AFB, N. D.	B-52H
1970	93d BMW, Castle AFB, Calif.	B-52F
1971	449th BMW, Kincheloe AFB, Mich.	B-52H
1972-73	No competition	
1974	380th BMW, Plattsburgh AFB, N. Y.	FB-111A
1975	No competition	
1976	380th BMW, Plattsburgh AFB, N. Y.	FB-111A
1977	380th BMW, Plattsburgh AFB, N. Y.	FB-111A
1978	380th BMW, Plattsburgh AFB, N. Y.	FB-111A
1979	509th BMW, Pease AFB, N. H.	FB-111A
1980	320th BMW, Mather AFB, Calif.	B-52G
1981	509th BMW, Pease AFB, N. H.	FB-111A
1982	509th BMW, Pease AFB, N. H.	FB-111A
1983	509th BMW, Pease AFB, N. H.	FB-111A
1984	380th BMW, Plattsburgh AFB, N. Y.	FB-111A
1985	97th BMW, Blytheville AFB, Ark.	B-52G
1986	92d BMW, Fairchild AFB, Wash.	B-52H
1987	379th BMW, Wurtsmith AFB, Mich.	B-52G
1988	5th BMW, Minot AFB, N. D.	B-52H
1989	28th BMW, Ellsworth AFB, S. D.	B-1B
1990	No competition	
1991	No competition	
1992	92d BW, Fairchild AFB, Wash.	B-52H
1994	To be announced mid-1994	

<sup>a</sup>Trophy given for overall annual performance, not for scores in SAC bombing and navigation competition.

## Olympic Arena

Olympic Arena was Strategic Air Command's annual competition to determine the top strategic missile wing. Held at Vandenberg AFB, Calif., it is now run by Air Combat Command. Each ICBM wing competes in operations, maintenance, security police, civil engineering, and communications. The winner of Olympic Arena receives a trophy named for former Air Force Vice Chief of Staff Gen. William H. Blanchard.

### Blanchard Trophy Recipients

Year, Unit(s)	System
1967 351st SMW, Whiteman AFB, Mo.	Minuteman
1968 No competition	
1969 321st SMW, Grand Forks AFB, N. D.	Minuteman
1970 44th SMW, Ellsworth AFB, S. D.	Minuteman
1971 351st SMW, Whiteman AFB, Mo.	Minuteman
1972 381st SMW, McConnell AFB, Kan.	Titan
1973 90th SMW, F. E. Warren AFB, Wyo.	Minuteman
1974 321st SMW, Grand Forks, N. D.	Minuteman
1975 381st SMW, McConnell AFB, Kan.	Titan
1976 341st SMW, Malmstrom AFB, Mont.	Minuteman
1977 351st SMW, Whiteman AFB, Mo.	Minuteman
1978 91st SMW, Minot AFB, N. D.	Minuteman
1979 390th SMW, Davis-Monthan AFB, Ariz.	Titan
1980 381st SMW, McConnell AFB, Kan.	Titan
1981 351st SMW, Whiteman AFB, Mo.	Minuteman
1982 44th SMW, Ellsworth AFB, S. D.	Minuteman
1983 381st SMW, McConnell AFB, Kan.	Titan
1984 90th SMW, F. E. Warren AFB, Wyo.	Minuteman
1985 308th SMW, Little Rock AFB, Ark.	Titan
1986 341st SMW, Malmstrom AFB, Mont.	Minuteman
1987 321st SMW, Grand Forks AFB, N. D.	Minuteman
1988 91st SMW, Minot AFB, N. D.	Minuteman
1989 351st SMW, Whiteman AFB, Mo.	Minuteman
1990 341st SMW, Malmstrom AFB, Mont.	Minuteman
1991 341st SMW, Malmstrom AFB, Mont.	Minuteman
1992 44th MW, Ellsworth AFB, S. D.	Minuteman
1993 351st MW, Whiteman AFB, Mo.	Minuteman

## The William Tell Weapons Meet

The Air Force's William Tell air-to-air weapons meet, held at Tyndall AFB, Fla., includes events for pilots, weapons controllers, weapons loaders, and maintainers to provide a complete test for a unit in the air-to-air business. The next meet is scheduled for October 1994.

### William Tell Winners

Year	Unit, Base	Aircraft
1954	3550th FTW (Interceptor), Moody AFB, Ga.	F-94C
1955	26th Air Division, Duluth MAP, Minn. (Members of the 48th, 96th, and 332d FISs)	F-94C
1956	94th FIS, Selfridge AFB, Mich.	F-86D
1958	465th FIS, Griffiss AFB, N. Y.	F-89J
	326th FIS, Richards-Gebaur AFB, Mo.	F-102A
	125th FIG (ANG), Jacksonville IAP, Fla.	F-86D
1959	319th FIS, Bunker Hill AFB, Ind.	F-89J
	460th FIS, Portland IAP, Ore.	F-102A
	538th FIS, Larson AFB, Wash.	F-104A
1961	445th FIS, Wurtsmith AFB, Mich.	F-101B
	59th FIS, Goose Bay, Labrador, Canada	F-102A
	456th FIS, Castle AFB, Calif.	F-106A
1963	445th FIS, Wurtsmith AFB, Mich.	F-101B
	146th FIS (ANG), Greater Pittsburgh IAP, Pa.	F-102A
	318th FIS, McChord AFB, Wash.	F-106A
1965	62d FIS, K. I. Sawyer AFB, Mich.	F-101B
	32d FIS, Camp New Amsterdam, the Netherlands	F-102A
	71st FIS, Selfridge AFB, Mich.	F-106A
	331st FIS, Webb AFB, Tex.	F-104A
1966-69	No competition	
1970	119th TFG (ANG), Hector Field, N. D.	F-101B
	148th TFG (ANG), Duluth IAP, Minneapolis, Minn.	F-102A
	71st FIS, Malmstrom AFB, Mont.	F-106A
1972	119th TFG (ANG), Hector Field, N. D.	F-101B
	115th TFG (ANG), Truax Field, Wis.	F-102A
	460th FIS, Grand Forks AFB, N. D.	F-106A
1974	101st TFG (ANG), Bangor IAP, Me.	F-101B
	124th FIG (ANG), Boise Air Terminal, Idaho	F-102A
	120th FIG (ANG), Great Falls IAP, Mont.	F-106A
1976	142d FIG (ANG), Portland IAP, Ore.	F-101B
	4th TFW, Seymour Johnson AFB, N. C.	F-4E
	120th FIG (ANG), Great Falls IAP, Mont.	F-106A
1978	147th FIG (ANG), Ellington AFB, Tex.	F-101B
	86th TFW, Ramstein AB, West Germany	F-4E
	49th FIS, Griffiss AFB, N. Y.	F-106A
1980	147th FIG (ANG), Ellington AFB, Tex.	F-101B
	347th TFW, Moody AFB, Ga.	F-4E
	144th FIW (ANG), Fresno ANGB, Calif. <sup>a</sup>	F-106A1
1982	409 Squadron, CFB Comox, British Columbia, Canada	CF-101B
	18th TFW, Kadena AB, Japan <sup>a</sup>	F-15C
	49th FIS, Griffiss AFB, N. Y.	F-106A
	57th FIS, NAS Keflavik, Iceland	F-4E
1984	33d TFW, Eglin AFB, Fla. <sup>a</sup>	F-15C
	142d FIG (ANG), Portland IAP, Ore.	F-4C
	177th FIG (ANG), Atlantic City IAP, N. J.	F-106A
1986	33d TFW, Eglin AFB, Fla. <sup>a</sup>	F-15C
	119th FIG (ANG), Hector Field, N. D.	F-4D
1988	49th TFW, Holloman AFB, N. M. <sup>a</sup>	F-15A
	33d TFW, Eglin AFB, Fla.	F-15C
	18th TFW, Kadena AB, Japan	F-15C
	57th FIS, NAS Keflavik, Iceland	F-15C
1990	No competition	
1992	18th Wing, Kadena AB, Japan	F-15C

<sup>a</sup>Overall competition winner. The naming of an overall winner was instituted with William Tell 1980.

William Tell Top Guns

Year	Top Gun	Aircraft
1954	Crew of Capt. Clarence W. Lewis and 1st Lt. James R. Boone, 3550th FTW (Interceptor), Moody AFB, Ga.	F-94C
1955	Crew of Col. B. H. King and Lt. F. S. Goad, 26th Air Division, Duluth MAP, Minn.	F-94C
1956	Crew of Col. Donald W. Graham and 1st Lt. Billy R. Thomson, 66th FIS, Elmendorf AFB, Alaska	F-89D
	1st Lt. Robert B. Long, 94th FIS, Selfridge AFB, Mich.	F-86D
1958	Crew piloted by Col. Frank J. Keller, 465th FIS, Griffiss AFB, N. Y.	F-89J
	Col. Roy B. Caviness, 482d FIS, Seymour Johnson AFB, N. C.	F-102A
	Col. Robert E. Dawson, 125th FIG, Jacksonville IAP, Fla.	F-86D
1959	Crew of Capt. Billy S. Linebaugh and 1st Lt. Donald M. Burke, 319th FIS, Bunker Hill AFB, Ind.	F-89J
	Capt. Frederick H. England, 460th FIS, Portland IAP, Ore.	F-102A
	Maj. John T. Guice, 125th FIG, Jacksonville IAP, Fla.	F-100A
1961	Lt. Col. Frank R. Jones, 59th FIS, Goose Bay, Labrador, Canada	F-102A
1963	Lt. Col. J. W. Rogers, 317th FIS, Elmendorf AFB, Alaska	F-102A
1965	Crew of Capt. D. E. Libby and Capt. L. R. Livingston, 62d FIS, K. I. Sawyer AFB, Mich.	F-101B
	Capt. J. McMichael, 326th FIS, Richards-Gebaur AFB, Mo.	F-102A
	Lt. Col. Glendon P. Dunaway, 71st FIS, Selfridge AFB, Mich.	F-106A
	Capt. J. D. Dunn, 319th FIS, Homestead AFB, Fla.	F-104A
1966-69	No competition	
1970	Crew of Capt. James Reimers and Capt. Arthur Jacobson, 119th TFG (ANG), Hector Field, N. D.	F-101B
1972	Crew of Capt. Lowell Butters and Capt. Douglas Danko, 425th All-Weather Fighter Squadron, Bagotville, Quebec, Canada	CF-101B
1974	Maj. Ralph D. Townsend, 124th FIG (ANG), Boise Air Terminal, Idaho	F-102A
1976	Crew of Maj. Bradford A. Newell and Lt. Col. Donald R. Tonole, 142d FIG (ANG), Portland IAP, Ore.	F-101B
1978	Crew of Earl G. Robertson and Capt. Brian J. Salmon, Canadian Forces Composite Group	CF-101B
1980	Crew of Lt. Col. Maurice Udell and Maj. David S. Miller, 147th FIG (ANG), Ellington AFB, Tex.	F-101B
1982	Crew of Maj. Bob Worbets and Capt. Bill Ricketts, 409 Squadron, CFB Comox, British Columbia, Canada	CF-101B
	Lt. Col. Jere Wallace, 18th TFW, Kadena AB, Japan	F-15C
	Lt. Col. Robert Boehringer, 144th FIW, Fresno ANGB, Calif.	F-106A
	Crew of Capt. Tom Watson and Capt. Dave Pfeifer, 57th FIS, NAS Keflavik, Iceland	F-4E
1984	Capt. Scott H. Turner, 32d TFS, Camp New Amsterdam, the Netherlands	F-15C
	Maj. Ron M. Moore and Maj. Bill C. Dejager, 142d FIG (ANG), Portland IAP, Ore.	F-4C
	Maj. Lynn Robinson, 177th FIG (ANG), Atlantic City IAP, N. J.	F-106A
1986	Capt. John Reed (USAF Exchange Pilot), 425 Squadron, CFB Bagotville, Quebec, Canada	CF-18A
1988	Capt. Teddy Varwig, 49th TFW, Holloman AFB, N. M.	F-15A
1990	No competition	
1992	Capt. Jeffery Prichard, 18th Wing, Kadena AB, Japan	F-15C

Gunsmoke

Gunsmoke was Tactical Air Command's air-to-ground fighter gunnery competition, held biannually at Nellis

AFB, Nev. It tested the capabilities of the tactical air forces and recognized the best aircrews, maintenance teams,

and munitions load teams. Now run by Air Combat Command, Gunsmoke first included bombers in 1993.

Gunsmoke Top Guns and Top Bomber Crews

Year	Individual	Aircraft	Unit, Base
1949	Unknown	F-86A	4th FIW, Langley AFB, Va.
1950	Lt. John W. Roberts	F-86	3525th FWS, Nellis AFB, Nev.
1951-53	No competition		
1954	Capt. Charles C. Carr	F-86	3595th TFW, Nellis AFB, Nev.
1955	Maj. Frederick C. Blesse	F-86	3596th CCTS, Nellis AFB, Nev.
1956	Capt. Asa Whitehead	F-86	3595th CCTW, Nellis AFB, Nev.
1958	Maj. Jack F. Brown	F-100	4520th CCTW, Nellis AFB, Nev.
1960	Capt. Aubrey C. Edinburgh	F-100	4520th CCTW, Nellis AFB, Nev.
1962	Capt. Charles E. Tofferi	F-104	479th TFW, George AFB, Calif.
1964-80	No competition		
1981	Lt. Col. Wayne Schultz	A-7	120th TFS (ANG), Buckley ANGB, Colo.
1983	Lt. Col. Roy Niesz	F-16	388th TFW, Hill AFB, Utah
1985	Capt. Mark Fredenburgh	F-16	50th TFW, Hahn AB, West Germany
1987	Maj. Danny Hamilton	F-16	419th TFW, Hill AFB, Utah
1989	Capt. Patrick Shay	F-16	944th TFG (AFRES), Luke AFB, Ariz.
1991	Lt. Col. Roger G. Disrud	A-10	442d TFW (AFRES), Richards-Gebaur AFB, Mo.
1993	Maj. Gregory Brewer	F-16	140th FW (ANG), Buckley ANGB, Colo.
1993	Top Bomber Crew: Capt. Dwayne Stich (commander), Capts. Barry Sebring, Steve Amato, David Conley, and Vernon Moore	B-52	93d BW, Castle AFB, Calif.

## 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. Sponsored by the National Geographic Society, the trophy is presented annually to Air Force individuals or organizations (civilian or military) who made the year's outstanding progress in the field of aerospace.

- 1961 **Capt. Virgil I. Grissom.** Mercury spacecraft *Liberty Bell 7* flight.
- 1962 **Maj. Robert M. White.** X-15 flight to 59.6 miles.
- 1963 **Maj. L. Gordon Cooper.** Twenty-two Earth orbits in Mercury spacecraft *Faith 7*.
- 1964 **Air Force Systems Command.** Reliable space-launch vehicles.
- 1965 **Lt. Col. Edward H. White II.** First US walk in space, Gemini 4.
- 1966 **Dr. Alexander H. Flax.** Direction of R&D programs.
- 1967 **Gen. John P. McConnell.** Promotion of use of aerospace vehicles.
- 1968 **Col. Frank Borman, Lt. Col. William A. Anders, Capt. James A. Lovell, Jr.** First manned moon orbit flight.
- 1969 **Neil A. Armstrong, Col. Edwin E. Aldrin, Jr., Col. Michael Collins.** Apollo 11 lunar landing.
- 1970 **Brig. Gen. Robert A. Duffy.** Advanced Ballistic Missile Reentry System program.
- 1971 **Lt. Gen. Samuel C. Phillips.** Space and missile R&D.
- 1972 **Hon. Robert C. Seamans, Jr.** Aeronautic and astronautic planning.
- 1973 **Lt. Col. Henry W. Hartsfield, Jr.** Skylabs 1, 2, 3, and 4 and parasol device for Skylab 1.
- 1974 **Col. William R. Pogue.** Third manned Skylab mission.
- 1975 **Maj. Gen. Thomas P. Stafford.** Apollo-Soyuz Test Project.
- 1976 **Gen. William J. Evans.** Development of space systems.
- 1977 **Fred W. Haise, Jr., Lt. Col. Charles G. Fullerton.** First test flight of space shuttle *Enterprise*.
- 1978 No award given.
- 1979 **Maj. Gen. John E. Kulpa, Jr.** Direction of Special Projects and Satellite Programs.
- 1980 **Gen. Lew Allen, Jr.** Operational military space support.
- 1981 **Col. Joe Henry Engle, USAF, Capt. Richard H. Truly, USN.** Second flight of orbiter *Columbia*.
- 1982 **Lt. Gen. Richard Charles Henry.** Military use of payload specialists on shuttle; established Air Force Space Command.
- 1983 **Gen. James V. Hartinger.** Strengthening national security through space operations.
- 1984 **Lt. Gen. Forrest S. McCartney.** Commander of Space Division, Air Force Systems Command.
- 1985 **Maj. Gen. Donald W. Henderson.** Commander of Air Force Space and Missile Test Organization.
- 1986 **Gen. Donald J. Kutyna.** Director of Space Systems and Command, Control, and Communications for the Deputy Chief of Staff.
- 1987 **Col. Victor Whitehead.** Restoring launch capacity after *Challenger* disaster and Titan 34D launch failures.
- 1988 **Dr. Robert R. Barthelemy.** X-30 hypersonic plane project.
- 1989 **Launch Systems Directorate, Space Systems Division.** Expendable launch boosters and satellite systems.
- 1990 **Lt. Gen. Donald L. Cromer, USAF (Ret.), Gen. John L. Piotrowski, USAF (Ret.).** Strengthening USAF space systems and forces.
- 1991 **Lt. Gen. Thomas S. Moorman, Jr.** Vice Commander of Air Force Space Command.
- 1992 **Maj. Gen. Nathan J. Lindsay, USAF (Ret.).** Director of the Office of Special Projects, Office of the Secretary of the Air Force, Los Angeles AFB, Calif.
- 1993 To be announced mid-1994

## The Reconnaissance Air Meet

Tactical Air Command's Reconnaissance Air Meet (RAM), held every two years, focused on procedures and techniques used by allied reconnaissance units. Teams came from Australia, Germany, the UK, and the US, among other nations. The competition is no longer held.

### RAM Competition Winners

Year	Unit, Location
1986	152d TRG (ANG), Reno, Nev.
1988	26th TRW, Zweibrücken AB, West Germany
1990	152d TRG (ANG), Reno, Nev.

# Gallery of USAF Weapons



By Susan H. H. Young

Edited by John W. R. Taylor

## Attack and Observation Aircraft

### A-10/OA-10 Thunderbolt II

Designed specifically for the close air support (CAS) mission, the A-10A's capabilities were exemplified during the Persian Gulf War when its ability to combine large military load, long loiter, and wide combat radius proved a vital asset in Operation Desert Storm. A-10s flew 8,100 sorties, with a mission capable rate of 95.7 percent; they launched 90 percent of the Maverick missiles used and achieved the only two air-to-air gun kills in the war. Five aircraft were lost. In a typical antiarmor close air support (CAS) mission, the A-10, affectionately nicknamed "Wart-hog," can fly 150 miles and remain on station for an hour. It can carry up to 16,000 lb of mixed ordnance with partial fuel or 12,086 lb with full internal fuel. The 30-mm GAU-8/A gun provides a cost-effective weapon with which to defeat the whole array of ground targets encountered in the CAS role, including tanks. Equipment includes an inertial navigation system (INS), head-up display (HUD), the Low-Altitude Safety and Targeting Enhancement system (which provides ground collision avoidance), Pave Penny laser target identification pod, electronic countermeasures (ECM), target penetration aids, self-protection systems, and associated equipment for AGM-65 Maverick missiles and AIM-9 Sidewinder air-to-air missiles.

Delivery of 713 A-10s was completed in March 1984. The first operational squadron was activated at Myrtle Beach AFB, S. C., in June 1977 and achieved operational capability in October of that year. Units equipped with A-10s include US Air Forces in Europe's (USAFE's) 510th FS at Spangdahlem AB, Germany, and Air Combat Command's (ACC's) 20th FW, Shaw AFB, S. C.; 23d Wing, Pope AFB, N. C.; and 355th Wing, Davis-Monthan AFB, Ariz. The 57th FW, Nellis AFB, Nev., has some A-10s. A-10s were the first first-line aircraft to be assigned to ANG; they also equip some AFRES units.

In October 1987, the first of 18 operational and two backup OA-10s entered service with the 23d TASS for use in the forward air control mission, providing coordination for, and control of, CAS assets. These aircraft are A-10s that have been redesigned and are intended to be used for airborne forward air control of fighter aircraft, combat escort, search and rescue, and visual reconnaissance. The 30-mm GAU-8/A gun is retained, but underwing stores are normally restricted to canisters of white phosphorous rockets for target marking. OA-10s also equip units of Pacific Air Forces (PACAF) and USAFE.

A/OA-10s have been deployed to Aviano AB, Italy, where they are currently operated by ANG and AFRES personnel in support of Operation Deny Flight over Bosnia. (Data for A-10.)

**Contractor:** Fairchild Republic Company, Division of Fairchild Industries.

**Power Plant:** two General Electric TF34-GE-100 turbofans; each 9,065 lb thrust.

**Accommodation:** pilot only.

**Dimensions:** span 57 ft 6 in, length 53 ft 4 in, height 14 ft 8 in.

**Weights:** empty 24,959 lb, max gross 50,000 lb.

**Performance:** combat speed at S/L, clean, 439 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, including various types of free-fall or guided bombs. Combined Effects Munition (CEM) dispensers, gun pods, six AGM-65 Maverick missiles, or four AIM-9 Sidewinder missiles, and jammer pods.



A-10A Thunderbolt II



AC-130H Spectre

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.

### AC-130A/H/U Spectre

Two versions of the AC-130 Spectre gunship are currently in service with USAF. Eight AC-130Hs are operated by Air Force Special Operations Command's (AFSOC's) 16th SOW, 16th SOS, at Hurlburt Field, Fla. Ten AC-130As are operated by Air Force Reserve's 711th SOS at Duke Field, Fla. The AC-130H is equipped with a digital fire-control computer, two fixed 20-mm Vulcan cannon, one trainable 40-mm cannon, and a trainable 105-mm howitzer. The A model is equipped with an analog fire-control computer, two fixed 20-mm cannon, and two fixed 40-mm cannon and is capable of employing two 7.62-mm Miniguns. Both models use electro-optical (EO) sensors and target-acquisition systems, including forward-looking infrared (FLIR) and low-light-level television (LLLTV). The H model is capable of in-flight refueling and has undergone modification and modernization of its fire-control computer, navigation, communications, and sensor suites.

With a need to replace the increasingly unsupportable AC-130A, 13 new C-130H airframes were procured for modification to AC-130U configuration. This model combines increased firepower, reliability, and superior accuracy, with the latest methods of target location. The AC-130U has the same 40-mm and 105-mm guns as the H model but replaces the two 20-mm cannon with one trainable 25-mm cannon. All weapons can be slaved to APQ-180 digital fire-control radar, FLIR, or all-light-level television (ALLTV) for true adverse weather ground attack operations. Delivery to the 16th SOS is scheduled to begin this year. As the AC-130U is delivered, AC-130Hs will transfer to the Reserve and the A models will be retired.

ECM on all versions of the gunship will enhance survivability in a low-to-medium-threat environment. Other equipment includes a HUD, combined INS, Navstar Global Positioning System (GPS), and Spectra ceramic armor protection. All models are capable of providing precise surgical firepower and of performing special operations and conventional missions, including escort, surveillance, armed reconnaissance/interdiction, CAS, and air base defense. (Data basically as for the C-130.)

## Bombers

### B-1B Lancer

The B-1B Lancer is undergoing a major enhancement to its conventional capability while retaining its nuclear capacity. With its speed, superior handling qualities, and large payload capability, the B-1B will form the backbone of the long-range bomber fleet and will constitute an essential element of a composite strike force, in either a penetration or standoff role. Each of ACC's 95 B-1Bs currently in the inventory possesses the flexibility to deliver a variety of nuclear and conventional gravity bombs, mines, or other weapons, or to carry additional fuel, as required. Under the 1994 budget, \$49 million has been allocated to the B-1B for R&D, with a further \$191.5 million for modifications and procurement. This will be used to fund interim contractor support, development of an organic maintenance capability, and an operational supportability test. Funding for ECM upgrades was withheld for FY 1994. Future plans include the installation of GPS receivers, a MIL-STD-1760 data bus, secure radios, and improved computers in preparation for the introduction of advanced precision guided munitions (PGMs), including the Joint Direct Attack Munition (JDAM), the Joint Standoff Weapon (JSOW), and the Triservice Standoff Attack Missile (TSSAM), within the next 10 years.

The B-1B has a blended wing/body configuration with variable-geometry wings. The unswept wing setting permits rapid takeoff from shorter runways and less sophisticated airfields. The fully swept position is used in supersonic flight and for the primary role of high-subsonic, low-level penetration. The bomber's offensive avionics include a modern forward-looking radar and terrain-following radar (TFR), an extremely accurate INS, computer-driven avionics, strategic Doppler radar, and a radar altimeter.

The current defensive avionics package, built around the ALQ-161 ECM system, is supplemented by such

expendables as 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. Modifications will include an ECM upgrade, integration of both precision and standoff conventional munitions, and the completion of fire-detection and fire-suppression systems installation in the aircraft's overwing fairing.

Initial operational capability (IOC) for the B-1B was achieved at Dyess AFB, Tex., in September 1986 and deliveries were completed in April 1988, with Dyess having 28 aircraft; Ellsworth AFB, S. D., 24; and Grand Forks AFB, N. D., and McConnell AFB, Kan., 16 each. FY 1995 proposals to reduce the operational force include a reduction to 38 combat-coded B-1Bs, transfer of 10 aircraft to the AFRES and ANG, and 12 others assigned to a training role.

In 1987, a series of international speed and distance with payload records was set by the B-1B. On July 4, a 2,000-km closed circuit was covered at a speed of 669.96 mph with a payload of 30,000 kg (66,140 lb). On September 17, a similar payload was carried around a 5,000-km circuit at 655.05 mph. In addition, the B-1B broke eight world time-to-climb records in its class and set marks in three new categories in February 1992.

**Contractors:** Rockwell International, North American Aircraft; Eaton Corporation, ALL Systems; Boeing Military Airplanes; General Electric.

**Power Plant:** four General Electric F101-GE-102 turbofans; each 30,780 lb thrust.

**Accommodation:** four: pilot, copilot, and two systems operators (offensive and defensive).

**Dimensions:** span spread 136 ft 8 1/2 in, fully swept 78 ft 2 1/2 in, length 147 ft 0 in, height 34 ft 0 in.

**Weights:** empty equipped 192,000 lb, max operating weight 477,000 lb.

**Performance:** max speed at low level high subsonic (supersonic at altitude); range intercontinental.

**Armament:** three internal weapons bays capable of accommodating in a nuclear role 12 B28 or 24 B61 or B83 free-fall nuclear bombs; in a nonnuclear role up to 84 Mk 82 (500-lb) bombs or Mk 36 (500-lb) mines.

#### B-2A Spirit

Delivery of the first operational version of this wholly unique advanced technology aircraft was made to Whiteman AFB, Mo., at the end of last year. The B-2 was conceived originally as a highly survivable strategic bomber to supplement, and ultimately replace, the B-1B in its penetration role. However, current plans for USAF's long-range bomber force, designed to reflect the changing world order, emphasize the B-2's conventional capabilities, casting it as the "pivotal tool" in bringing about the rapid destruction of an enemy. Employing sophisticated technologies, notably low-observable (LO) stealth techniques, to minimize the possibility of detection, and including the Hughes AN/APG-181 low-probability-of-intercept covert strike radar, the B-2 is expected to lead the bomber offensive on the first nights of a war, attacking the most heavily defended targets and neutralizing enemy defenses with its precision guided weapons, to allow less stealthy systems to operate.

Procurement of the final four aircraft, of a total of 20, was authorized in the FY 1994 budget. This will enable the 509th Bomb Wing to field two squadrons, each with eight operational aircraft. IOC with the 393d Bomb Squadron is scheduled for 1997. Full operational capability (FOC) with the 715th BS should occur early in the next decade. A further \$408 million has been requested in the FY 1995 budget.

Of flying wing configuration, the B-2A has no vertical tail surfaces. The smoothly blunted "fuselage" section accommodates a two-person flight crew, with room for a third person, and two large weapons bays side by side in



**B-52H Stratofortress**

the lower centerbody. These contain rotary launchers capable of carrying a total weapons load of between 40,000 and 75,000 lb; but under the nation's Single Integrated Operational Plan (SIOP), a nuclear load would normally be restricted to about 25,000 lb. Mounted in pairs within the wing structure are four nonafterburning turbofans, with scalloped overwing intake ducts and shielded overwing trailing-edge nozzles. An in-flight refueling receptacle is located in the centerbody spine. The aircraft has a quadruple-redundant fly-by-wire digital flight-control system, actuating movable surfaces at the wing trailing edges, which combine aileron, elevator, and flap functions. The beaver tail behind the center fuselage functions as a pitch-axis trimming surface and, with the elevons, as a gust alleviation system. A landing gear track of 40 ft enables the B-2A to use any runway that can handle a Boeing 727 airliner. In flight, the bomber is reported to be near neutrally stable. It is claimed to have almost 50 percent better fuel efficiency than the B-1B and to require less than half the latter's air refueling support to accomplish SIOP missions.

The B-2 will be produced in three blocks of capability. Block 10 aircraft will carry the B83 nuclear bomb and the Mk 84 2,000-lb conventional munition. Block 20 aircraft will additionally carry the B61, plus CBU-87, -89, and -97 cluster bomb munitions, and will have a limited PGM capability from mid-1997, including TSSAM, eight of which will be carried, four on each of the aircraft's rotary launchers, and a GPS-aided munition called the GPS Advanced Targeting System/JDAM. The last two aircraft will be Block 30 standard, with full PGM capability, including JDAM-1, and will carry the Mk 82 500-lb bomb, the M117 750-lb bomb, and the Mk 62 aerial mine. Other Block 30 enhancements will include fully operational defensive and offensive avionics, a more sophisticated mission planning system, and additional operating modes for the synthetic aperture radar (SAR).

The first B-2A made its first flight from Air Force Plant 42 in Palmdale, Calif., to Edwards AFB, Calif., in July 1989 and, subsequently, undertook a program of flight



**B-2A Spirit**

tests that expanded the flight envelope and included day- and nighttime aerial refuelings. Deficiencies detected during critical low-observability testing in July 1991 are to be corrected in a "set of treatments" to edges and surfaces at different points of the aircraft, which will have the additional benefit of reducing the B-2A's signature across the whole frequency range. This will only apply to advanced Block 30 aircraft, but all B-2s are expected to be configured to Block 30 standard by the end of the decade. The second B-2A, in nonstandard LO configuration, flew for the first time in October 1990 and is instrumented for dynamic loads testing. The third and fourth B-2As (flown in June 1991 and April 1992, respectively) are designed with full avionics and are assigned to LO and weapons testing. The fifth aircraft (flown in October 1992) is conducting climatic, weapons, and LO trials, and the sixth (flown in February 1993) is assigned to operational test and evaluation. More than 1,500 flight testing hours had been flown by the end of last year.

**Prime Contractor:** Northrop Corporation, with Boeing, LTV, and General Electric as key members of the development team.

**Power Plant:** four General Electric F118-GE-100 turbofans, each estimated at 19,000 lb thrust.

**Accommodation:** basic crew of two, with provision for third person.

**Dimensions:** span 172 ft 0 in, length 69 ft 0 in, height 17 ft 0 in.

**Weights:** empty 100,000-110,000 lb, gross 400,000 lb.

**Performance:** approach speed 161 mph, service ceiling 50,000 ft, typical estimated unrefueled range for a hi-lo-hi mission, with 16 B-61 nuclear free-fall bombs 5,182 miles, with one aerial refueling over 11,515 miles.

**Armament:** in a nuclear role: up to 20 B61 nuclear bombs, or B83 nuclear bombs, or a combination. In a conventional role: 80 x 500-lb bombs or various other conventional weapons, including sea mines and PGMs. There are no plans to carry the AGM-129A Advanced Cruise Missile (ACM) on the B-2A.

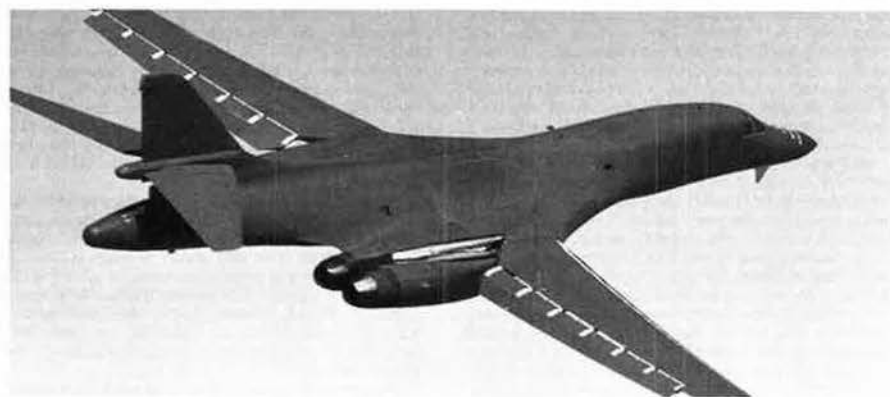
#### B-52G/H Stratofortress

Retaining a substantial role in the bomber inventory, USAF's B-52 fleet is evolving to reflect changes in global defense requirements and the introduction of new US advanced technology aircraft. The B-52 has a heavy payload capability, with a wide range of nuclear and conventional weapons that are capable of use on a variety of missions, including show of force, maritime interdiction, precision strikes, and defense suppression. The versatility of the B-52 was ably demonstrated during Operation Desert Storm, when conventionally equipped B-52s flew 1,624 missions, delivering 25,700 tons of weapons, including a conventionally armed version of the AGM-86 air-launched cruise missile (ALCM), against both tactical and strategic targets. A mission capable rate of 81 percent, better than the peacetime rate, was achieved. Their long range has suited them to other collateral missions in recent years, including sea surveillance flights, aerial minelaying, and antisurface warfare operations in cooperation with the US Navy, and support for NATO Allies.

Two versions are in service: the B-52G, which introduced a redesigned wing containing integral fuel tanks, fixed overwing external tanks, a tailfin of reduced height and broader chord, and a remotely controlled tailgun turret that allowed the gunner to be repositioned with the rest of the crew; deliveries began in February 1959; 193 were built; and the B-52H, which switched to TF33 turbofans, providing increased unrefueled range, and which has improved defensive armament, including a 20-mm Vulcan multibarrel tailgun; 102 were built, with deliveries beginning in May 1961; 95 remain operational in active and reserve units.

During the early 1970s, all B-52Gs and Hs were modified to carry AGM-69A short-range attack missiles, now deleted. Additionally, all Gs and Hs were equipped with an AN/ASQ-151 EO viewing system, using FLIR and LLLTV sensors to improve their low-level flight capability, and were updated with Phase VI avionics, including ALQ-122 SNOE (Smart Noise Operation Equipment) and AN/ALQ-155(V) advanced ECM; an Air Force satellite communications kit permitting worldwide communications via satellite; a Dalmo Victor ALR-46 digital radar warning receiver; Westinghouse ALQ-153 pulse-Doppler tail warning radar; and an improved ITT Avionics ALQ-172 ECM jamming system. A digital-based solid-state offensive avionics system that includes inertial guidance, Tercom (terrain comparison) guidance, and microprocessors to upgrade their navigation and weapons delivery systems was also fitted. B-52Gs are GPS-equipped.

Deployment of the B-1B and development of the B-2A led to a change in the primary role of the B-52 to ALCM (AGM-86) carrier. A typical profile envisaged multiple ALCM launches at high altitude, often followed by B-52 low-level descent to attack additional targets using gravity weapons. USAF originally deployed AGM-86s on 98 on-line B-52Gs and 95 B-52Hs, each with 12 external cruise missiles, but it was decided to retire all remaining



**B-1B Lancer**



strategic nuclear B-52Gs by the end of FY 1993. The Common Strategic Rotary Launcher (CSRL) permits internal carriage of eight additional AGM-86s in the B-52H, allowing a total ALCM offensive weapon load of 20 cruise missiles. FOC for this system was scheduled for last summer. B-52Hs are also being equipped with the AGM-129A ACM, which offers greater range and employs LO technology.

Plans for the future role of the B-52 emphasize the bomber's conventional capabilities. All B-52 crews train to drop conventional weapons, and B-52Gs have been assigned to support conventional operations by employing airpower over great distances at short notice on behalf of theater CINCs, as well as naval antisurface warfare operations, with 30 of the aircraft modified for AGM-84 Harpoon antiship missile deployment; one full squadron is based at Loring AFB, Me., for Atlantic operations.

Under current plans, all remaining conventional B-52Gs are to be retired gradually and their conventional capability transferred to the more highly powered and cost-efficient H models. A total combat-coded, ANG, AFRES, and training force of 40 B-52Hs is envisaged under FY 1995 proposals. The bomber's ability to provide massive firepower in low-threat environments will be supplemented by a standoff attack capability. Upgrades include the installation of GPS terminals, secure radios, and MIL-STD-1760 interfaces. Weapons capability will include naval mines; precision guided weapons, such as the Harpoon; and a version of the AGM-142 Have Nap from 1994, as well as the new TSSAM and JDAM-1 in 1997 and 2001, respectively. (Data for B-52G, except where noted.)

**Contractor:** Boeing Military Airplanes.

**Power Plant:** G model: eight Pratt & Whitney J57-P-43WB turbojets; each 13,750 lb thrust; H model: eight Pratt & Whitney T33-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 0 in, length 160 ft 11 in, height 40 ft 8 in.

**Weight:** G/H models gross more than 488,000 lb.

**Performance (approx):** max level speed at high altitude 595 mph, service ceiling 55,000 ft, range: more than 7,500 miles (G model), more than 10,000 miles (H model).

**Armament:** H models carry eight nuclear free-fall bombs internally and 12 AGM-86B ALCMs externally, with provision for eight more ALCMs or gravity weapons internally; AGM-129A ACM being introduced. Alternatively, G and H models can carry conventional weapons including bombs up to 2,000 lb, air-dropped mines, cluster bombs, and, on some B-52G aircraft, AGM-142A Have Nap missiles or eight to 12 AGM-84 Harpoons in underwing clusters.



**F-15C Eagle (Dana Bell)**



**F-15E**



**F-16C Fighting Falcon**



**F-16D (Dana Bell)**

## Fighters

### F-15 Eagle

The basic F-15 is USAF's primary air-superiority fighter, in service with ACC, PACAF, USAFE, Air Education and Training Command (AETC), and ANG. The original single-seat F-15A and two-seat F-15B were followed in June 1979 by the F-15C and F-15D, respectively, with 2,000 lb of additional internal fuel and provision for carrying conformal fuel tanks (CFTs). Basic F-15 equipment includes a Hughes Aircraft APG-63 or APG-70 lightweight X-band pulse-Doppler radar for long-range detection and tracking of small high-speed objects down to treetop level. Under ongoing contracts, first funded in February 1983, the F-15 is undergoing a Multistage Improvement Program (MSIP). First production MSIP F-15C produced in 1985. Improvements include an upgraded central computer, a Programmable Armament Control Set allowing for advanced versions of AIM-7, AIM-9, and AIM-120A Advanced Medium-Range Air-to-Air Missile (AMRAAM), and an expanded Tactical Electronic Warfare System that provides improvements to the ALR-56C radar warning receiver and ALQ-135 countermeasures set; the final 43 include a major upgrade to the Hughes APG-63 radar to APG-70 standard. F-15C/Ds deployed to the Persian Gulf in support of Operation Desert Storm accounted for 36 of the 39 USAF air-to-air victories. They have since been deployed to southern Iraq in support of Operation Southern Watch and to Bosnia as part of Operation Deny Flight.

The F-15E is USAF's two-seat, dual-role, totally integrated fighter for all-weather air-to-air and deep interdiction missions. The rear cockpit is upgraded to include four multipurpose CRT displays for aircraft systems and weapons management, with 17 separate menu displays to choose from. Modifications to the front cockpit include redesigned controls, a wide-field-of-view HUD, and three CRT multipurpose displays. The F-15E is capable of

carrying up to 24,500 lb of ordnance. The digital, triple-redundant Lear Siegler flight-control system permits coupled automatic terrain following, and navigational accuracy is improved by a Honeywell ring-laser gyro INS. 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 Hughes APG-70 radar and LANTIRN (Low-Altitude Navigation and Targeting Infrared for Night) pods, with wide-field FLIR. GPS capability is scheduled for installation in 1995.

To accommodate the new avionics, internal fuel capacity was reduced slightly, but the F-15E is fitted with CFTs, adapted to carry ordnance tangentially to reduce drag. In addition to its primary load of guided and unguided bombs and other air-to-ground weapons, the F-15E retains its air-superiority performance and weapons. Armament options include AIM-7 Sparrow, AIM-9 Sidewinder, and AIM-120A AMRAAM, as well as EO, infrared (IR), and standard bombs; AGM-65 Maverick; dispenser munitions; and nuclear weapons; AGM-130 was integrated in 1993. A new engine bay was developed by McDonnell Douglas to permit installation of improved turbofans. The 4th Wing at Seymour Johnson AFB, N. C., was the first operational F-15E wing. Forty-eight USAF F-15Es were deployed to the Persian Gulf, where they made a significant contribution to the realization of allied air supremacy. Operating mainly at night, they hunted Scud missile launchers and artillery sites using the LANTIRN system. They also forged a successful operational partnership with the Joint Surveillance and Target Attack Radar System (Joint STARS) aircraft.

A total of 209 F-15Es were authorized between FY 1986 and FY 1992; \$54 million was authorized for F-15 R&D in FY 1993.

An advanced one-off experimental version of the F-15, the F-15 short takeoff, landing, and maneuvering technology demonstrator (SMTD), has been used for research into advanced thrust-vectoring technology at the Air Force Flight Test Center at Edwards AFB, Calif. In testing, the aircraft demonstrated high maneuverability, in-flight thrust reversing, and reductions of 35 percent in takeoff distance and 65 percent in landing distance, as well as the ability to land autonomously at night and in poor weather. Tests this year will assess the performance and technology benefit of Pratt & Whitney's new axisymmetric, multidirectional, thrust-vectoring nozzle.

A further version of the F-15 is expected to fulfill USAF's requirement for a Follow-On Wild Weasel defense suppression aircraft, replacing the F-4G. Limited lethal suppression capability with the High-Speed Anti-radiation Missile (HARM) is scheduled for 1997, with autonomous targeting capability in 2001, following completion of the current precision direction finding program. (Data for F-15C, except where stated.)

**Contractor:** McDonnell Aircraft Company, Division of McDonnell Douglas Corporation.

**Power Plant:** F-15C: two Pratt & Whitney F100-PW-220 turbofans; each approx 23,450 lb thrust, standard since 1985. F-15E: two Pratt & Whitney F100-PW-220 or F100-PW-229 turbofans.

**Accommodation:** pilot only in F-15A/C; two seats in F-15B/D; crew of two in F-15E.

**Dimensions:** span 42 ft 9 3/4 in, length 63 ft 9 in, height 18 ft 5 1/2 in.

**Weights:** empty 28,600 lb, gross 68,000 lb in F-15A/B/C/D; empty 32,500 lb, gross 81,000 lb in F-15E.

**Performance:** F-15C: max speed Mach 2.5, service ceiling 60,000 ft, ferry range, with external fuel tanks, more than 2,878 miles; with CFTs, 3,570 miles. F-15E: max level speed at height Mach 2.5, max range 2,765 miles.

**Armament:** one internally mounted M61A1 20-mm six-barrel cannon; four AIM-9L/M Sidewinder and four AIM-7F/M Sparrow air-to-air missiles, or eight AMRAAMs, carried externally. Provision for carrying up to 24,500 lb of ordnance on weapon stations on F-15E.

### F-16 Fighting Falcon

The F-16 is standard equipment throughout ACC, USAFE, PACAF, AETC, AFRES, and ANG, and equips USAF's Thunderbirds team. Advanced technologies incorporated from the start in the single-seat F-16A and two-seat F-16B versions made them two of the most maneuverable fighters ever built. Equipment includes a multimode radar with a clutter-free look-down capability, advanced radar warning receiver, a HUD, internal chaff/flare dispensers, and a 500-round 20-mm internal gun.

The F-16 entered operational service with ACC's 388th TFW at Hill AFB, Utah, in January 1979. Production of the F-16A and B for USAF ended in 1985, and most now serve with the AFRES and ANG. However, USAF and NATO operators have cooperated in an operational capabilities upgrade. Under this 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. Scheduled reliability/maintainability improvements include a ring-laser gyro INS and installation of the upgraded F100-PW-220E turbofan.

A forward-looking plan for the aircraft, known as the Multinational Staged Improvement Program, was implemented by USAF in February 1980 to ensure the aircraft's ability to 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 multirelease flexibility. Stage II was applicable to Block 25 improved F-16C (single-seat) and F-16D (two-seat) versions, with cockpit, airframe, and core avionics changes, of which deliveries to USAF began in July 1984. Stage III extends to Block 50/52 F-16C/Ds, delivered from October 1991, and includes selected retrofits back to Block 25. These aircraft have a Westinghouse APG-68 multimode radar, with increased range and advanced electronic counter-countermeasures (ECCM), and advanced cockpit displays including a wide-angle HUD. Weapons improvements include multi-target AMRAAM compatibility. Also introduced were systems improvements that include installation of a LANTIRN nav/attack system, GPS, enhanced-envelope gunsight, digital flight controls, automatic terrain following, advanced identification, friend or foe (IFF), increased T-O weight and maneuvering limits, an 8,000-hour airframe, and 9g capability. Follow-on systems include ALE-47 improved defensive countermeasures, ALR-56M advanced radar warning receiver, advanced programmable signal processor employing very-high-speed integrated circuit (VHSIC) technology in the APG-68(V5) fire-control radar, full HARM capability, a ring-laser gyro INS, and Increased Performance Engines (IPEs) supplied by Pratt



F-111F (Guy Aceto)

& Whitney (F100-PW-229) and General Electric (F110-GE-129), F-16C/Ds, with interim HARM/Shrike capability, have been used for defense suppression/destruction missions in conjunction with F-4G Wild Weasels based at Spangdahlem AB, Germany—a partnership that proved highly successful during the Persian Gulf War. In all, the 249 USAF F-16 multimission fighters deployed to the Persian Gulf theater flew more sorties than any other type during Operation Desert Storm, with 13,500 missions. F-16Cs have also been deployed to patrol the no-fly zones in southern Iraq and over Bosnia.

An F-16D has been modified for use as a Variable Stability In-Flight Simulator Test Aircraft. Developed to replace the older NT-33, the NF-16D first flew in April 1992 and is intended for in-flight testing of advanced control systems.

Two hundred seventy-two of the original F-16A/Bs have been modified to F-16 ADF (air defense fighter) standard, under a contract awarded in October 1986, to replace F-106s and F-4s in 11 (now 10) ANG continental air defense units. Modifications include upgrade of APG-66 radar with AMRAAM data link, provisions for AIM-7 Sparrows, improved ECCM, and improved capability against cruise missiles. New equipment includes HF radio, an IFF interrogator, an ID light, a crash-survivable flight data recorder, and provisions for GPS. Armament includes the M61 gun and up to six missiles, including combinations of Sparrows, AMRAAMs, and Sidewinders. The F-16 ADF entered service in 1989; the program is now completed.

In addition, 229 Block 50 USAF F-16C/Ds are to be retrofitted with a new modular mission computer being developed under an F-16 midlife update codevelopment and coproduction program with the European participating governments of the F-16 Multinational Fighter Program.

Current proposals include the modification of 400 F-16C/Ds as CAS aircraft in the mid- to late-1990s. Modified F-16s will be equipped with improved data modem (formerly Automatic Target Handoff System, or ATHS), VHF antijam radio, and a laser spot tracker; and a 30-mm gun, night vision goggles with compatible cockpit lighting, or a missile warning system in selected production blocks. Meanwhile, ANG's 174th FW at Syracuse, N. Y., was the first unit to convert from A-10s to F-16As in the dedicated CAS/BAI role, with centerline GPU-5/A 30-mm gun pod.

A further 12 F-16s have been authorized in FY 1994, although sufficient funding for their purchase has not been allocated. The total F-16 program involves the US Air Force and Navy, as well as 17 foreign nations, more than 50 distinct aircraft configurations, and extensive foreign coproduction. (Data for F-16C.)

**Contractor:** Lockheed Fort Worth Company, division of Lockheed Aeronautical Systems Group.

**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. 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).

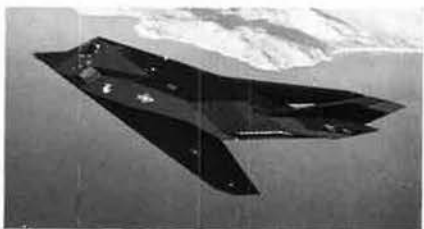
**Accommodation:** pilot only.

**Dimensions:** span over missiles 32 ft 9 3/4 in, length overall 49 ft 4 in, height 16 ft 8 1/2 in.

**Weights:** empty (F100-PW-220) 18,238 lb, (F110-GE-100) 19,020 lb; gross, with external load (Block 40/42) 42,300 lb.

**Performance:** max speed Mach 2 class, service ceiling more than 50,000 ft, ferry range more than 2,000 miles.

**Armament:** one M61A1 20-mm multibarrel cannon, with 511 rounds, mounted in fuselage; wingtip-mounted IR missiles; seven other external stores stations for fuel tanks and air-to-air and air-to-surface munitions.



F-117A

#### F-22A/B

As a result of the Pentagon's Bottom-Up Review, the planned \$16 billion engineering and manufacturing development (EMD) program for the F-22 is being modified to give this new air-superiority fighter added ground attack capability. Designed as follow-on to the F-15, the F-22A will penetrate high-threat enemy airspace and achieve air superiority with a first-look, first-kill capability against multiple targets. It combines a highly maneuverable airframe at both sub- and supersonic speeds with LO stealth technologies. The F-22A will cruise at supersonic speed without using its afterburners. Its integrated avionics and weapon systems will permit simultaneous engagement of multiple targets. Common signal processors are being developed using VHSIC technology to tie together various avionics functions. Projected armament includes an internal gun, AIM-9 Sidewinders stored internally in the sides of the air intake ducts, and/or AIM-120 AMRAAM in main weapons bay; for ground attack, two JDAMs will be carried internally, and two TSSAMs will be carried on underwing pylons. Program emphasis from the outset has been on achieving a proper balance of reliability, supportability, affordability, survivability, and performance.

Two prototype YF-22s were built for competitive evaluation with two Northrop/McDonnell Douglas YF-23s. In April 1991, the Lockheed/Boeing/General Dynamics team (General Dynamics has since sold its aircraft business to Lockheed) was selected to build the production-configured F-22, with Pratt & Whitney chosen to develop the F119 engine for the aircraft. In July 1991, the F-22 successfully passed the Defense Acquisition Board Milestone 2 and commenced the EMD phase. In this phase, USAF will receive nine aircraft, construction of which began last December, comprising two two-seat F-22Bs and seven single-seaters for flight testing, plus two airframes for stress testing; 27 engines are to be built. The preliminary design review of all aspects of the design was completed in April 1993. The critical design review is scheduled for later this year, and subassembly and assembly of the first F-22 should begin soon after. First flight of a development aircraft is due in 1996, and the F-22 should enter operational service in 2003. Funding totaling \$2.25 billion was authorized for FY 1994, although the appropriated sum was \$163 million less; a further \$2.46 billion has been requested for FY 1995. (Data for F-22A.)

**Contractor:** Lockheed Aeronautical Systems Company, with Boeing and Pratt & Whitney as key members of the development team.

**Power Plant:** two Pratt & Whitney F119-PW-100 turbofans, each in 35,000 lb thrust class.

**Accommodation:** pilot only.

**Dimensions:** span 44 ft 6 in, length 62 ft 1 in, height 16 ft 5 in.

**Weight:** gross approx 60,000 lb.

**Performance (F-22A design target):** max level speed at S/L 921 mph.

#### F-111

The first variable-geometry aircraft to enter operational service, the F-111 was designed to maintain USAF's around-the-clock, long-range interdiction mission. TFR and high wing loading when its wings are fully swept contribute to its sophisticated low-altitude capability. During the Persian Gulf War, F-111s flew 4,000 sorties against armored formations, bridges, C<sup>3</sup>I sites, aircraft shelters, and weapons production facilities, sometimes in unfamiliar medium-altitude attacks, achieving a mission capable rate of eighty-five percent. Two of the four versions built remain in service. The F-111E superseded the F-111A, with modified air intakes that improved engine performance above Mach 2.2; 94 were built; replacement of their analog bombing and navigation systems with digital equipment, begun in 1989 and due for completion last year, enables F-111E aircraft to handle the latest munitions and advanced sensors, as well as such systems as GPS; F-111Es will acquire the training role of the now-retired F-111G. The F-111F, of which 106 were built, has updated turbofans; a Pave Tack system carried in its weapons bay provides a day/night capability to acquire, track, and designate ground targets for laser, IR, and electro-optically guided weapons; it can employ GBU-12 and -15, as well as TV and IR precision guided weapons. An F-111F avionics modernization under the Pacer Strike program is designed to improve the aircraft's reliability, giving it 80 percent avionics commonality with the F-111E. The program involves the removal of outdated subsystems and the installation of a ring-laser gyro INS, GPS receiver, and new cockpit displays. It includes new computer software, integration and test of prototype models, and production of conversion kits. Flight testing of the new equipment in USAF aircraft began in July 1992, and delivery of production kits was scheduled to begin last September. Production of the F-111 was completed in 1976. Its electronic warfare (EW) capabilities are being updated with the ALQ-131/184 ECM pod system; AIM-9L/M missiles will provide self-defense capability. However, further funding for avionics and other upgrades will be delayed until a final decision is made regarding the future of the aircraft. All F-111E/Fs are assigned to the 27th FW at Cannon AFB, N. M.

In addition to its nuclear and conventional bombing capability, the F-111 can carry up to 12 French Durandal parachute-retarded, rocket-boosted, runway attack bombs for low-altitude, high-speed delivery and Gator, USAF's first air-delivered mine system. Future armament may include the JDAM.

The EF-111A is an ECM conversion of the F-111A (see p. 123).

**Contractor:** General Dynamics Corporation.

**Power Plant:** F-111E: two Pratt & Whitney TF30-P-103 turbofans; each 18,500 lb thrust with afterburning.

F-111F: two TF30-P-111 turbofans; each approx 25,100 lb thrust with afterburning.

**Accommodation:** crew of two, side by side in escape module.

**Dimensions:** span spread 63 ft 0 in, fully swept 31 ft 11 1/2 in, length 73 ft 6 in, height 17 ft 1 1/2 in.

**Weights (F-111F):** empty 47,481 lb, gross 100,000 lb.

**Performance (F-111F):** max speed at S/L Mach 1.2, max speed at altitude Mach 2.5, service ceiling more than 49,000 ft, range with max internal fuel more than 2,925 miles.

**Armament:** up to four nuclear bombs, on four pivoting wing pylons, and two in internal weapons bay. Wing pylons carry total external load of up to 25,000 lb of bombs, rockets, missiles, or fuel tanks.

#### F-117A

The first production combat type designed to exploit LO technology, the F-117A precision attack aircraft entered development and manufacture in November 1978 but was not officially revealed until November 1988. Until then, operations were restricted mainly to night flying in order to maintain secrecy, although three aircraft were lost in much-publicized accidents. Sixty were produced. Their first operational deployment was to Panama in support of Operation Just Cause. During the Gulf War, more than 40 F-117As undertook 1,270 missions, flying undetected and unmolesated while attacking top-priority targets. Until 1992, F-117As were deployed exclusively with the 37th TFW, at Tonopah Test Range Airfield, Nev.; they are now operational with the 49th FW at Holloman AFB, N. M.

The F-117A embodies many components that were either transferred or modified from existing aircraft, in order to minimize the potential risks involved in the decision to proceed concurrently with full-scale development (FSD) and low-level production, its designers, at the famous Lockheed "Skunk Works" at Burbank, Calif., relied on the concept of faceting to give the aircraft its minimal radar signature. The skin panels of the arrowhead-shaped airframe (leading-edge sweep of about 67.5 degrees) are divided into many small, perfectly flat

surfaces, which reflect at a variety of angles all signals from probing hostile ground or airborne radars. Much of the aircraft's external surface is made of composite radar-absorbent materials and has a dull black finish that reflects little light. The engine air intakes and exhaust nozzles are above the wings and rear fuselage, respectively, to shield them from IR seekers below.

Two General Electric F404 nonafterburning turbofans give the aircraft low noise signature and high subsonic performance. Quadruple redundant fly-by-wire flight controls and a state-of-the-art digital avionics suite, complemented by a specially developed automated mission planning system, are key features of the aircraft. A Pilot Activated Automatic Recovery System, which will recover a tumbling aircraft to straight and level flight, was delivered to Tactical Air Command (TAC, now ACC) in late 1990. Retractable radio antennas are located beneath the fuselage. High-precision INS is installed, with FLIR and DLIR (downward-looking infrared) housed in a steerable turret built into the underside of the aircraft, with a boresight laser designator and an autotracker, to ensure precision attack. Computer replacement began in 1984. Various major improvement programs have been under way since 1989, including installation of a "four-dimensional" flight management system and new cockpit instrumentation, featuring full-color multifunction displays and digital moving map. Further improvements include FLIR and DLIR upgrade, installation of GPS capability, and ring-laser gyro INS.

**Contractor:** Lockheed Advanced Development Company.

**Power Plant:** two General Electric F404-GE-F1D2 nonafterburning turbojets; each 10,800 lb thrust.

**Accommodation:** pilot only.

**Dimensions:** span 43 ft 4 in, length 65 ft 11 in, height 12 ft 5 in.

**Weight:** max gross 52,500 lb.

**Performance:** max level speed 646 mph, mission radius, unrefueled (5,000-lb weapon load) 691 miles.

**Armament:** full internal carriage of what is described as a wide variety of tactical weapons, including laser-guided 2,000-lb munitions; alternatively, AGM-65 Maverick or AGM-88 HARM; provisions for AIM-9 Sidewinder.

## Helicopters

### HH-1H Iroquois

Basically a military version of the Bell Model 205, the HH-1H is a general-purpose helicopter first ordered by USAF in 1970 and used for missile site support duties. **Contractor:** Bell Helicopter Textron Inc.

**Power Plant:** one Textron Lycoming T53-L-13B turbo-shaft; 1,400 shp.

**Accommodation:** two pilots and 12 passengers; or two crew and 2,400 lb of cargo.

**Dimensions:** rotor diameter 48 ft 4 in, length of fuselage 42 ft 0 in, height 13 ft 0 in.

**Weight:** gross 9,500 lb.

**Performance:** max speed 120 mph, service ceiling at mission gross weight 13,450 ft, range with max fuel 347 miles.

### UH-1N Iroquois

The UH-1N is a twin-engine version of the UH-1 utility helicopter. Seventy-nine were ordered for USAF, most of which remain in the inventory for missile site support duties and administrative airlift. The UH-1N is also used by the 542d CTW at Kirtland AFB, N. M., for training purposes.

**Contractor:** Bell Helicopter Textron Inc.

**Power Plant:** Pratt & Whitney Canada T400-CP-400 Turbo "Twin-Pac," consisting of two PT6 turboshafts coupled to a combining gearbox with a single output shaft; flat-rated to 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 1/4 in, length of fuselage 42 ft 4 3/4 in, height 14 ft 10 1/4 in.

**Weight:** gross and mission weight 11,200 lb.

**Performance:** max cruising speed at S/L 115 mph, service ceiling 13,000 ft, 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.

### CH-3E

This twin-engine amphibious transport helicopter, based on the US Navy's SH-3A Sea King, incorporates important design changes, permitting speedier cargo handling and ease of maintenance, with built-in equipment for the removal and replacement of all major components in remote areas. The initial version was the CH-3C. Intro-

duction of uprated engines led to the designation CH-3E in February 1966, applicable to 42 new production aircraft and 41 reengineered CH-3Cs, of which 50 were adapted subsequently as HH-3Es (see below). CH-3 missions include rescue, natural disaster relief, and evacuation. **Contractor:** Sikorsky Aircraft, Division of United Technologies Corporation.

**Power Plant:** two General Electric T58-GE-5 turbo-shafts; each 1,500 shp.

**Accommodation:** crew of two or three; 25 fully equipped troops, 15 litters, or 5,000 lb of cargo.

**Dimensions:** rotor diameter 62 ft 0 in, length of fuselage 57 ft 3 in, height 18 ft 1 in.

**Weights:** empty 13,255 lb, gross 22,050 lb.

**Performance:** max speed at S/L 162 mph, service ceiling 11,100 ft, max range, with 10 percent reserve, 465 miles.

**Armament:** none.

### HH-3E Jolly Green Giant

Modified version of the CH-3E for USAF's Air Rescue Service, originally to facilitate penetration deep into North Vietnam on rescue missions. Additional equipment includes self-sealing fuel tanks, armor, defensive armament, a rescue hoist, and a retractable in-flight refueling probe. HH-3Es have been almost completely replaced by newer H-60s. (Data basically similar to those for CH-3E, above.)

### MH-53J Pave Low/TH-53A

In a program initiated in 1986 to upgrade the special operations forces (SOF), Sikorsky modified the 41 remaining HH/CH-53B/C and MH-53H helicopters to MH-53J Pave Low III "Enhanced" standard. These sophisticated aircraft are equipped with a nose-mounted FLIR, an integrated digital avionics suite that includes Texas Instruments AN/APQ-158 terrain-following and terrain-avoidance radar, GPS, secure communications, armor plating, mounts for .50-caliber machine guns and/or 7.62-mm Miniguns, and an ECM/ECCM suite consisting

of AN/ALQ-162 continuous wave radar missile jammers, ALQ-157 IR missile jammers, ALE-40 flare/chaff dispensers, and ALR-69 missile warning receivers.

Programmed upgrades include the ALQ-136 radar missile jammer, AAR-47 missile plume detector, and the Integrated Defense Avionics System, which manages all ECM/ECCM automatically through the 1553 multiplex data bus. Additionally, the aircraft is completing a Service Life Extension Program (SLEP) to upgrade hydraulics, wiring, and basic airframe structure, as well as a shipboard fold/compatibility modification. MH-53Js were used extensively in Operations Just Cause and Desert Storm, performing both SOF and combat rescue missions. Deliveries had begun in the summer of 1987 to the 20th SOS at Hurlburt Field, Fla., followed by the 21st SOS, now at RAF Alconbury, UK, in 1988. Aircraft were also delivered to the 31st SOS at Osan AB, South Korea. A further four were delivered to the 542d CTW at Kirtland AFB, N. M. This unit also uses four TH-53As, modified USMC CH-53As, as basic qualification trainers. Modifications include the installation of General Electric T64-GE-416 engines, air refueling probe, and some standard USAF equipment. Two more CH-53As were scheduled for conversion. (Data for MH-53J.)

**Contractor:** Sikorsky Aircraft, Division of United Technologies Corporation.

**Power Plant:** two General Electric T64-GE-7A turbo-shafts; each 4,325 shp.

**Accommodation:** crew of six.

**Dimensions (HH-53B):** rotor diameter 72 ft 3 in, length of fuselage (without refueling probe) 67 ft 2 in, height 24 ft 11 in.

**Weight:** gross 50,000 lb.

### MH/HH-60G Pave Hawk

USAF modified 98 Black Hawk helicopters to MH-60G Pave Hawk configuration to meet combat search-and-rescue and SOF requirements. These aircraft, operated by AFSOC's 16th SOW, provide a wide variety of SOF mission capabilities, including infiltration/exfiltration and



MH-53J Pave Low



HH-60G Pave Hawk (Dana Bell)



UH-1N Iroquois

personnel recovery as a collateral SOF mission and humanitarian relief. The HH-60G, used by active-duty, AFRES, and ANG Air Rescue Service units, provides combat search-and-rescue and various mission support activities worldwide. Both aircraft are equipped with an integrated navigation system using GPS, INS, and Doppler. Additionally, the SOF aircraft's navigation suite provides input to a flight path vectored FLIR. A weather/ground mapping radar, with beacon tracking and KG-10 map reader, completes the tactical navigation suite for both aircraft. Both are equipped with unsecure VHF and secure FM, HF, UHF, and SATCOM for communications. Further modifications to the basic Black Hawk include an integral rescue hoist and window-mounted 7.62-mm miniguns, with provisions for a .50-caliber machine gun on SOF aircraft only. An air refueling system and removable long-range internal fuel tanks, combined with C-5 mobility modifications, make the MH/HH-60G extremely well suited for rapid response, long-range/lotter mission profiles requiring a broad scale of payload possibilities. (Data for MH-60G.)

**Contractor:** Sikorsky Aircraft, Division of United Technologies Corporation.

**Power Plant:** two General Electric T700-GE-700/701C turboshafts; each 1,560 shp.

**Accommodation:** crew of three or four; 11-14 troops, up to six litters, or internal or external cargo.

**Dimensions:** rotor diameter 53 ft 8 in, length of fuselage 50 ft 0 3/4 in, height 16 ft 10 in.

**Weights:** empty 10,624 lb, max gross 22,500 lb.

**Performance:** max speed 222 mph, service ceiling



135s were stationed in Saudi Arabia in support of military operations in that theater. The 55th Wing also operates a recently modified version of the WC-135, designated **OC-135B**, to monitor the 1992 Open Skies Treaty. Under the Milstar program, an **NKC-135** is assigned to collect data to assist airworthiness certification of the radome installation on the EC-135. A modified **NC-135E** is used as an airborne optical data collection system to support a variety of testing, including space-related events.

To minimize the cost of retrofitting the special-purpose -135s with more efficient turbofan engines, USAF installed in some aircraft refurbished Pratt & Whitney JT3D-3Bs taken from Boeing 707-100B aircraft, purchased as surplus from commercial air carriers. (Data basically as for C-135.)

#### EF-111A Raven

The EF-111A Raven is a conversion of the basic General Dynamics F-111A airframe, fitted with mainly off-the-shelf components that enable it to accomplish important defense-suppression missions in worldwide support of US tactical strike forces. Its ALQ-99E primary jammer is a derivative of the Navy ALQ-99 and is carried internally. This system's frequency coverage, reliability, and effective use of available jamming power enables the EF-111A to suppress extremely dense electronic defenses. Other equipment includes self-protection systems from the F-111 (ALQ-137, ALR-62). The cockpit is revised, and a new vertical stabilizer houses the ALQ-99E receivers. Under the EF-111 System Improvement Program, hardware and software that supports the ALQ-99E is being upgraded, enabling the system to counter advanced electronic defenses into the next century. A joint USAF/USN program is providing an improved AN/ALE-47 tactical countermeasures dispenser. Other improvements under the avionics modernization program include upgrading the TFR and installing GPS equipment and a new INS.

Forty-two EF-111As were produced for missions that include barrier standoff jamming, degradation of acquisition radars during CAS operations, and close-in jamming and direct support for deep strike missions. Flight testing began in March 1977, and the first "production" EF-111s were delivered in late 1981 to the 366th TFW at Mountain Home AFB, Idaho, where they achieved IOC with the 390th ECS in December 1983. Second operational location was at RAF Upper Heyford, UK, from February 1984, with the 42d ECS. Aircraft from this unit took part in the attack on Libyan targets in April 1986. However, all EF-111As are now consolidated in the 429th ECS at Cannon AFB, N. M. During the Gulf War, EF-111 area jamming was crucial to the maintenance of coalition air supremacy, pouring electrons into Iraqi target-acquisition radars and rendering them useless.

**Contractor:** Grumman Aerospace Corporation.

**Power Plant:** two Pratt & Whitney TF30-P-109 turbofans; each 19,600 lb thrust with afterburning.

**Accommodation:** crew of two, side by side in escape module.

**Dimensions:** span spread 63 ft 0 in, fully swept 31 ft 11½ in, length 76 ft 0 in, height 20 ft 0 in.

**Weights:** empty 55,275 lb, gross 88,948 lb.

**Performance:** max combat speed 1,377 mph, service ceiling with afterburning at combat weight 45,000 ft, combat radius with reserves 230-929 miles, according to mission.

**Armament:** none.

#### E-3B/C Sentry (AWACS)

The E-3 Airborne Warning and Control System aircraft is a mobile, flexible, survivable, and jam-resistant surveillance and command, control, and communications (C<sup>3</sup>) system capable of all-weather, long-range, high- or low-level surveillance of all air vehicles, manned or unmanned, above all kinds of terrain. A modified Boeing 707-320B AWACS carries an extensive complement of mission avionics, including computer, radar, IFF, communications, display, and navigation systems. The capability of AWACS is provided by its Westinghouse Electric Corp. look-down radar, which makes possible all-altitude surveillance over land or water, thus correcting a serious deficiency in earlier surveillance systems.

The E-3 serves a dual role within USAF: as a command-and-control center to support quick-reaction deployment and tactical operations by ACC units and as a survivable early warning command-and-control center for identification, surveillance, and tracking of airborne enemy forces and for the command and control of NORAD forces over the continental US.

Deliveries of the basic production version, designated **E-3A Sentry**, began in March 1977, when the first aircraft was handed over to TAC's (now ACC's) 552d ACW at Tinker AFB, Okla. Twenty-four were built. Twenty-two of them, plus two prototypes, were upgraded to **E-3B** configuration. Improvements included much-enhanced computer capabilities, anti-jam communications, an austere maritime surveillance capability, additional radio communications, and five additional display consoles.

A US/NATO Standard E-3A configuration was intro-



EF-111A Raven (Guy Aceto)



E-3C Sentry (Dana Bell)



E-8C Joint STARS

duced starting with the twenty-fifth production USAF Sentry, delivered in December 1981. In this version, the data-processing capability was improved and a maritime detection capability included. Nine were built for USAF, and one of the original E-3As was upgraded to this standard. The 10 US Standard E-3A aircraft were, subsequently, upgraded to E-3Cs, with additional command-and-control capability, in 1984-88. A further 18 Standard E-3As are operated by NATO as part of a cooperative program to upgrade the command and control of NATO's air defense forces. Saudi Arabia has five E-3s; Britain's Royal Air Force and the French Air Force have also acquired AWACS aircraft.

A \$425 million MSIP for the E-3 was initiated by USAF's Electronic Systems Division (now Electronics Systems Center), phased over five years. All USAF and NATO E-3s are to be equipped with the Joint Tactical Information Distribution System (JTIDS) for anti-jam digital communications. As a first step, Boeing was awarded a contract in May 1987 for E-3 improvements that include FSD and integration into US and NATO aircraft of the Quick Look electronic support measures system that detects signals emitted by both hostile and friendly targets. Additional enhancements to US E-3s include upgrading of JTIDS to TADIL-J (Tactical Data Information Link-Joint) capability, central computer memory upgrade, and ability to employ GPS. FSD contracts for a major upgrade to the Westinghouse APY-1 and APY-2 radar, under the Radar System Improvement Program, were awarded in September 1989. This will enable the AWACS aircraft to detect much smaller radar cross-section targets. IOC for these improvements is scheduled for FY 1999, with contract completion after 2000.

E-3s assumed a continental US air defense role in January 1979, when NORAD personnel began augmenting TAC E-3 flight crews on all operational NORAD missions by the 552d ACW. E-3s also form part of the new composite wing at Mountain Home AFB, Idaho. Overseas units include the 961st and 962d AWACS Squadrons based at Kadena AB, Japan, and Elmendorf AFB, Alaska, respectively. Deployments have been made to the Pacific, the Middle East, southwest Asia, the Mediterranean area, and Europe and in support of Operations Desert Storm, Provide Comfort, and Southern Watch. AWACS aircraft are also used in support of the US drug enforcement program.

**Contractor:** Electronic Systems Division, Boeing Defense & Space Group.

**Power Plant:** four Pratt & Whitney TF33-PW-100/100A turbofans; each 21,000 lb thrust.

**Accommodation:** basic operational crew of 22, including 18 AWACS mission specialists.

**Dimensions:** span 145 ft 9 in, length 152 ft 11 in, height 41 ft 9 in.

**Weight:** gross 335,000 lb.

**Performance:** max speed 530 mph, service ceiling above 29,000 ft, endurance six hr on station 1,000 miles from base.

#### E-4B

ACC is the Air Force's single-resource manager for the E-4 airborne command post aircraft, the main operating base for which is Offutt AFB, Neb. Three E-4As were built initially to support the National Emergency Airborne Command Post (NEACP). Each had a modified Boeing 747 airframe and provided an interim capability by utilizing existing EC-135 C<sup>3</sup> equipment. Four fully developed **E-4B** Airborne Command Post aircraft (three of them converted from E-4As) now support the NEACP mission. They are hardened against the effects of nuclear explosions, including electromagnetic pulse; are equipped for in-flight refueling; contain a 1,200kVA electrical system designed to support advanced electronics; and have a wide variety of communications equipment. This includes an LF/VLF system, improved satellite communications system, and communications processing equipment. These systems will support operations in a nuclear environment over extended ranges. The E-4B system is capable of tying into commercial telephone and radio networks and could be used for radio broadcasts to the general population. Improvements have included a data-processing capability and more survivable C<sup>3</sup>, including initial Milstar modification. The first E-4B entered service with SAC in January 1980, and the first operational mission was flown in March of that year.

**Contractor:** Boeing Aerospace Company.

**Power Plant:** four General Electric CF6-50E2 turbofans; each 52,500 lb thrust.

**Dimensions:** span 195 ft 8 in, length 231 ft 4 in, height 63 ft 5 in.

**Weight:** gross 800,000 lb.

**Performance:** unrefueled endurance in excess of 12 hours.

#### E-8 Joint STARS

The USAF/US Army Joint Surveillance and Target Attack Radar System (Joint STARS) was developed to undertake ground surveillance, targeting, and battle management missions. However, following the unexpected, but highly successful, demonstration of the Joint STARS prototype capabilities during Operation Desert Storm, USAF is expanding its role to include bomb-damage assessment, suppression of Enemy Air Defenses, and theater missile defense, with emphasis on the detection of mobile missile launchers and their decoys.

The original contract for FSD of the system was awarded to Grumman in September 1985. The company was made responsible for subsystems installation, integration, and flight testing of specialized equipment aboard two 707-320 airframes specially modified by Boeing for this purpose. The first modified airframe was delivered to Grumman in August 1987, followed by the second in November 1988. First flight of a fully Joint STARS-configured aircraft took place in December 1988. The second aircraft flew in August 1989 and became the primary test version, following the installation of additional equipment. Airborne equipment on the prototypes includes a Norden multimode side-looking radar antenna, some 25 ft long, faired into the belly of each aircraft. With a reported range in excess of 155 miles, this radar, which is integrated with GPS, operates in SAR mode to detect and locate stationary objects, such as parked tanks, and alternates between SAR and a Doppler-type mode to locate and track slow-moving targets. The Joint STARS system then directs attack on the targets, in real time, via a jam-resistant, high-capacity, digital data link or radio. Sensor and signal-processing systems are currently being upgraded. A third aircraft, contracted to Grumman in November 1990, will serve as the preproduction example. Each production E-8 will carry a crew of USAF and Army specialists to man 18 operations-and-control consoles, two of them doubling as communications stations, that display color-coded images of behind-the-lines terrain and of wheeled and tracked vehicles moving anywhere on it. Existing E-8A prototypes have 10 operations consoles and two communications stations. An estimated 386,100 sq miles can be covered in a single eight-hour sortie, cruising at 30,000-40,000 ft.

The prototype system was deployed to Europe in 1990, where it successfully demonstrated its capabilities in a NATO environment before being sent to Saudi Arabia, where the two E-8As served as USAF's 4411th Joint STARS Squadron. They logged 535 combat hours and flew 49 missions, with great success, linking with



airlift of all classes of military cargo, including outside. It will be able to operate routinely into small, austere airfields (3,000 ft x 90 ft) previously restricted to C-130s and will provide the first capability to airlift or airdrop/extract outside cargo in the tactical environment. Based at active-duty locations, the C-17A will not only enhance US airlift capability across the board but will also provide much-needed force structure modernization.

The C-17A made its first flight September 15, 1991; by this February the 10 C-17s then flying in the test program at Edwards AFB, Calif., and in the 437th AW had flown 3,054 hours. The test program includes the prototype aircraft ("T-1"), production models, and two ground test articles (for static and durability testing). The program, which is now in initial operational testing, has accomplished many major test events, including aerial refueling, airdrop, 100 percent airloads testing, short-field landings, and formation flight and has established 18 new world records for payloads-to-altitude and three in the time-to-climb category.

McDonnell Douglas was announced as the selected prime contractor in August 1981 and received a low-level R&D contract the following July. This was intended to cover C-17 technologies that would also benefit other airlift programs, while preserving the option to proceed to FSD work on the C-17. FSD was approved in February 1985. Initial procurement funding was authorized in the FY 1987 budget, together with continued R&D. Twenty production aircraft were funded between FYs 1988 and 1993, and a further six authorized in FY 1994, although funding for two C-17As was fenced and provision made for other nondevelopmental intertheater airlift options; advance procurement of components was also approved for a further six aircraft in FY 1995. Forty C-17s have been funded to date.

The C-17 is the first military transport to feature a full digital fly-by-wire control system and two-crew cockpit, with two full-time, all-function HUDs and four multifunction electronic displays.

Subcontractors for the C-17 program include Beech Aircraft Corp. (composite winglets), Delco Electronics Corp. (mission computer and electronic display system), Grumman Aircraft Systems (ailerons, rudder, and elevators), GEC-Marconi (advanced HUD), LTV Aircraft Products (vertical and horizontal stabilizers, engine nacelles), Honeywell Inc. (support equipment and air data computers), Martin Marietta (tailcone), and General Electric (electronic flight-control system).

**Prime Contractor:** McDonnell Douglas Aerospace Transport Aircraft, Division of McDonnell Douglas Aerospace.

**Power Plant:** four Pratt & Whitney F117-PW-100 turboprops; each 40,000 lb thrust, on early aircraft.

**Accommodation:** normal flight crew of two, plus loadmaster. Provisions for the full range of military airlift missions.

**Dimensions:** span between winglet tips 169 ft 10 in, length 174 ft 0 in, height 55 ft 1 in.

**Weights:** max payload (2.25g) 172,200 lb, gross 585,000 lb.

**Performance** (estimated): normal cruising speed at height 518 mph (Mach 0.77), range with 160,000 lb payload 2,765 miles.

### C-20A/B/H Gulfstream III/IV

The Air Force acquired 10 off-the-shelf Gulfstream III transports, each with accommodation for five crew and 14 passengers, for VIP duties, to replace aging, fuel-inefficient C-140Bs. Three C-20As and one C-20B, delivered to the 89th AW in FY 1983 and FY 1984 under a lease/purchase agreement, were subsequently purchased. Another six C-20Bs, with advanced mission communications equipment and revised interior, were ordered in January 1986. As these were delivered to Andrews AFB, Md., the original three C-20As were transferred to Ramstein AB, Germany, in support of the 58th AS's special airlift mission in Europe. The C-20s provide the Special Airlift Mission (SAM) fleet with intercontinental range and ability to operate from short runways. A Gulfstream IV, with advanced technology flight management systems and upgraded Rolls-Royce engines, is being acquired by USAF to meet expanding SAM requirements. Designated C-20H, this aircraft will be based at Andrews AFB. (Data for C-20A/B.)

**Contractor:** Gulfstream Aerospace Corporation.  
**Power Plant:** two Rolls-Royce F113-RR-100 turboprops; each 11,400 lb thrust.

**Accommodation:** crew of five; 14–18 passengers.  
**Dimensions:** span 77 ft 10 in, length 83 ft 1 in, height 24 ft 4½ in.

**Weight:** gross 69,700 lb.  
**Performance:** max cruising speed 561 mph, service ceiling 45,000 ft, range 4,050 miles.

### C-21A

Seventy-eight C-21As are operated by active-duty and ANG units from nine US bases and four overseas locations. These aircraft are used to provide operational support airlift for time-sensitive movement of people and cargo throughout the US and the Pacific and European



C-21A (Dana Bell)



C-22B (Dana Bell)



C-26A

theaters, including aeromedical missions if required. In addition, Air Force Space Command's (AFSPC's) 774th Airlift Flight uses six C-21As, primarily for training new pilots for transition to major weapon systems and for operational support airlift. The first C-21A was delivered to USAF in 1984. In 1987, ANG acquired four C-21s to replace its T-39s based at Andrews AFB, Md.

**Contractor:** Learjet Corporation.  
**Power Plant:** two Garrett TFE731-2 turboprops; 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 8 in, height 12 ft 3 in.

**Weight:** gross 18,300 lb.  
**Performance:** cruising speed Mach 0.81, service ceiling 45,000 ft, range with maximum passenger load 2,420 miles, with maximum cargo load 1,653 miles.

### C-22B

Under the designation C-22B, four Boeing 727 commercial transports were purchased and modified for use by ANG on operational support airlift missions. Two of them have been further modified to accommodate an additional 1,100 gallons of fuel and landing gear rated for 170,000 lb gross landing weight.

### C-23A Sherpa

Air Force Materiel Command (AFMC) operates three C-23A Sherpa light transport aircraft, previously assigned to MAC (now AMC), from Edwards AFB, Calif. The Sherpa, which entered the USAF inventory in 1984, is an all-freight version of the Shorts 330 regional airliner, with a 6 ft 6 in square cabin section over an unimpeded hold length of 29 ft. Through loading is provided via a large forward freight door, a full-width hydraulically operated rear ramp door, and removable roller conveyors.

**Contractor:** Short Brothers PLC.

**Power Plant:** two Pratt & Whitney Canada PT6A-45R turboprops; each 1,198 shp.

**Accommodation:** crew of three; up to 7,000 lb of freight, including four LD3 containers, and engines the size of the F100 series.

**Dimensions:** span 74 ft 8 in, length 58 ft 0½ in, height 16 ft 3 in.

**Weight:** gross 25,500 lb.

**Performance:** max cruising speed at 10,000 ft 218 mph, range 770 miles with 5,000 lb payload.

### VC-25A

The first of two Boeing VC-25A presidential transports was delivered to the 89th Airlift Wing at Andrews AFB, Md., in August 1990, followed by the second four months later. Based on Boeing 747-200B airframes, they replaced the former primary and backup "Air Force One" transports (C-137Cs). The VC-25As have a Bendix Aerospace EFIS-10 electronic flight instrument system and state-of-the-art on-board communications equipment. A pair of self-contained air-stairs is located on the left side and a built-in baggage loader on the right side. Together with a second auxiliary power unit, they allow the aircraft to be practically self-sufficient and reduce the need for ground-support equipment. Despite its long range, the VC-25A is air refuelable.

**Contractor:** Boeing Military Airplanes.

**Power Plant:** four General Electric F103-GE-102 turbofans, each 56,750 lb thrust.

**Accommodation:** crew of 23; up to 70 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.

**Performance:** high speed cruise Mach 0.88–0.91, normal cruising speed Mach 0.84, unrefueled range 7,140 miles.

### C-26A/B

USAF acquired 11 Fairchild Metro III commuter transport aircraft to replace ANG C-131s, under the designation C-26A. The first aircraft was delivered in March 1989 and was assigned to the 147th FIG at Ellington ANGB, Tex. The C-26As serve in the Air National Guard Operational Support Aircraft role. They have a quick-change interior, enabling passenger seats to be replaced by a medevac or cargo-carrying configuration. In addition, 30 C-26Bs, with options for a further 23, were ordered in 1991 for the National Guard Bureau. Delivered from January 1992, the C-26Bs have TCAS II, GPS, and microwave landing systems. (Data for C-26A.)

**Contractor:** Fairchild Aircraft Corporation.  
**Power Plant:** two Garrett TPE331-11U-612G turboprops, each 1,100 shp.

**Accommodation:** crew of two; 19–20 passengers.  
**Dimensions:** span 57 ft 0 in, length 59 ft 4¼ in, height 16 ft 8 in.

**Weights:** empty 9,494 lb, gross 16,000 lb.  
**Performance:** max cruising speed at midcruise weight of 12,500 lb 321 mph, service ceiling 26,700 ft, range with 19 passengers 1,224 miles.

### C-27A Spartan

Under contracts awarded in August 1990 and February 1991, Chrysler Technologies Airborne Systems has delivered ten C-27A short takeoff and landing (STOL) intratheater transports for use by US Southern Command, with options for a further eight aircraft. The C-27As are commercially available Alenia G222 medium airlifters, modified by Chrysler to include new HF/VHF communi-

cations, autopilot, and INS. The aircraft provide rapid response airlift of personnel and cargo to remote locations accessible primarily through unimproved airfields with short, unprepared landing surfaces. The first C-27A was assigned to Howard AFB, Panama.

**Contractor:** Chrysler Technologies Airborne Systems Inc.

**Power Plant:** two Fiat-built General Electric T64-GE-P4D turboprops, each 3,400 shp.

**Accommodation (C-27A):** crew of three; various configurations, including provision for 34 fully equipped troops or 14,850 lb cargo.

**Dimensions:** span 94 ft 2 in, length 74 ft 5½ in, height 34 ft 8¾ in.

**Weights:** empty 35,500 lb, gross 56,878 lb.

**Performance:** max cruising speed 288 mph, service ceiling 22,000 ft, ferry range with max fuel 1,727 miles.

### C-130 Hercules

Introduced in the mid-1950s, more than 2,000 of these remarkable transport aircraft have been built by Lockheed, for more than 60 nations, spanning four decades of production. C-130s operate throughout USAF, serving with ACC, theater commands, and the new, specially conceived, 23d Wing, demonstrating wide operational capabilities in both peace and war situations. Basic and specialized versions perform a diversity of roles, including airlift support, DEW Line and Arctic ice cap resupply, aeromedical missions, natural disaster relief missions, aerial spray missions, and fire-fighting duties for the US Forest Service. Recently, they have been used to bring relief to stricken communities worldwide, including nighttime airdrop of aid to isolated areas in Bosnia. The initial C-130A production model, first flown in April 1955, has now been retired. Two **DC-130As** (originally GC-130As) were built as drone launchers/directors for ARDC (now AFMC), carrying up to four drones on underwing pylons. All special equipment was removable, permitting the aircraft to be used as freighters, assault transports, or ambulances, as required. The **C-130B** introduced 4,050 ehp Allison T56-A-7 turboprops; the first of 134 entered USAF service in April 1959. C-130Bs are used in aerial fire-fighting missions by ANG units. Six C-130Bs were modified in 1961 for airsnatch recovery of classified USAF satellites by the 6593d Test Squadron at Hickam AFB, Hawaii. Twelve **C-130Ds** were modified C-130As for use in the Arctic, with wheel-ski landing gear, increased fuel capacity, and provision for Jet-Assisted Takeoff rockets. The **C-130E** is an extended-range development of the C-130B, with large underwing fuel tanks; 389 were ordered for MAC (now AMC) and TAC (now ACC), with deliveries beginning in April 1962. A wing modification to correct fatigue and corrosion on USAF's current force of C-130B/Es has extended the life of the aircraft well into the next century. Ongoing modifications include a Self-Contained Navigation System (SCNS) to enhance navigation capabilities, especially in the low-level environment. The SCNS incorporates an integrated communications/navigation management system that features the USAF standard laser gyro inertial navigational unit and the 1553B data bus; installation began in 1990. Other modifications include enhanced station-keeping equipment, 50kHz VHF Omirange/Instrument Landing System (VOR/ILS) receivers, secure voice capability, replacement radar for the adverse weather aerial delivery system, and GPS capability. Eleven were scheduled for an extensive modification to enhance their Special Operations Low Level (SOLL) capability. Another major modification installs a state-of-the-art autopilot that incorporates a ground collision avoidance system. Specifically modified aircraft are used by the 757th AS, AFRES, based at Youngstown MAP/ARS, Ohio, for aerial spraying, typically to suppress mosquito-spread epidemics.

Generally similar to the E model, the basic **C-130H** has updated T56-A-15 turboprops, a redesigned outer wing, updated avionics, and other, minor improvements; delivery began in April 1975. More than 350 C-130Hs and derivatives have been ordered for active and reserve units of the US services. ANG and AFRES C-130Hs are used in fire-fighting missions. Four **LC-130Hs**, modified with wheel-ski gear, are operated by ANG's 109th AG in support of Arctic operations. Partially in response to the "overwhelming role" played by the tactical airlift fleet in Operation Just Cause and in the Persian Gulf War, Congress approved the procurement of more C-130Hs to replace aging Es. These will be equipped with new monopulse precision ground-mapping radars.

Other variants include **HC-130N/P**, **MC-130E/H**, **AC-130A/H/U**, and **WC-130E/H**, all described separately. Four HC-130Hs were modified as **JC-130H** with added equipment for aerial recovery of reentering space capsules, and the **DC-130H** is used for drone control duties. ANG C-130s acquired a new role in 1987 when about 10 aircraft were assigned to ANG fighter wings and groups

to provide support for jet fighter units on deployments. Last October, authority for 10 AFRES C-130 units transferred from AMC to ACC. (Data for C-130H.)

**Contractor:** Lockheed Aeronautical Systems Company. **Power Plant:** four Allison T56-A-15 turboprops; each 4,508 ehp.

**Accommodation:** crew of five; up to 92 troops, 64 paratroops, 74 litter patients, or up to five 463L standard freight pallets, etc.

**Dimensions:** span 132 ft 7 in, length 97 ft 9 in, height 38 ft 3 in.

**Weights:** empty 76,469 lb, max payload 42,673 lb, gross 175,000 lb.

**Performance:** max cruising speed at 20,000 ft 374 mph, service ceiling (at 130,000 lb) 33,000 ft, range with max payload 2,356 miles.

### MC-130E/H Combat Talon I and II

Fourteen C-130Es were modified to **MC-130E (Combat Talon I)** standard and equipped for use in low-level deep-penetration tactical missions by the 1st and 8th Special Operations Squadrons based in the Pacific and North America, respectively, and now part of AFSOC. Nine of these aircraft are modified to conduct air-to-air refueling with special operations helicopters; the remaining five are being similarly modified. In addition, nine are modified with the Fulton Recovery System. Operation Desert Storm proved the Combat Talon I to be a very adaptable and capable air delivery platform, particularly when called upon to deliver the largest conventional weapon in the US arsenal, the 15,000-lb BLU-82. The MC-130E is being supplemented by the improved, night/adverse weather, low-level **MC-130H (Combat Talon II)**. Twenty-four aircraft are being acquired, equipped with an in-flight refueling receptacle; explosion-suppressive fuel tanks; a modified cargo ramp area for the high-speed, low-level aerial delivery system; Emerson Electric AN/APQ-170 precision terrain-following and terrain-avoidance radar; dual radar altimeters; dual INS; and provision for a GPS receiver. The Combat Talon II defensive avionics suite is much improved over the Combat Talon I. Deliveries of the Combat Talon II aircraft began in mid-1991 and will continue into the near future. Units currently operating the Combat Talon II are the 7th and 15th SOSs, based, respectively, in Europe and North America. Combat Talon II operational training takes place at the 542d CTW at Kirtland AFB, N. M. (Data similar to those for C-130.)



C-130H



MC-130E Combat Talon I



MC-130H Combat Talon II

### HC-130N/P Combat Shadow/Tankers

Twenty-eight active-duty **HC-130N/P** Combat Shadow aircraft are now dedicated to special operations missions. Eleven primary aircraft are assigned to the 9th SOS, Eglin AFB, Fla. Five further aircraft are assigned to the 17th SOS, Kadena AB, Japan, and four to the 67th SOS, RAF Alconbury, UK. Others are assigned to the 542d CTW at Kirtland AFB, N. M. All are modified with new secure communications, self-contained inertial navigation, and countermeasures systems, and night vision goggle (NVG) compatible lighting. The aircraft's primary mission is to conduct single-ship or formation in-flight refueling of special operations helicopters in a no- to low-threat environment. These missions involve NVG low-level flights using minimum lighting and communications-out procedures. These SOF HC-130s are being further modified with advanced integrated navigation equipment, including digital scan radar, ring-laser gyro INS, FLIR, GPS, and dual nav stations. They are also receiving new missile warning systems and countermeasures for refueling missions in hostile environments. Fifteen of these aircraft will also receive an in-flight refueling receptacle to extend their range indefinitely.

Air Rescue Service maintains additional search-and-rescue HC-130 tanker aircraft. Six rescue aircraft are located with an active-duty unit at Patrick AFB, Fla.; 14 others are assigned to various AFRES and ANG units. (Data similar to those for C-130.)

### KC-135A/E/R/T Stratotanker

Another veteran of the USAF inventory, the KC-135 forms the backbone of the USAF tanker fleet, meeting the aerial refueling requirements of USAF bomber, fighter, cargo, and reconnaissance forces, as well as the needs of the US Navy and Marines and allied nations. During the Gulf conflict, KC-135 aircraft made an invaluable contribution to the success of coalition operations, flying around-the-clock missions to maintain the operability of coalition warplanes. Subsequent deployments have included support for operations in Somalia and Bosnia. Control of all CONUS-based KC-135s passed to AMC on October 1 last year, except for the aircraft assigned to ACC's 366th Wing at Mountain Home AFB, Idaho. KC-135s also serve with PACAF, USAF, and with AFRES and ANG units. Although similar in size and appearance to commercial 707 aircraft, the KC-135 was designed to military specifications, incorporating different structural details and materials, and was designed to operate at high gross weights. The KC-135 fuel tankage is located in the "wet wings" and in fuel tanks below the floor in the fuselage. First flight of the KC-135A was in August 1956,



HC-130P (Guy Aceto)



and by 1966 a total of 732 had been built. Many of the 552 remaining in operational service have been modified to later standards in three programs initiated to enhance the KC-135's capability and extend its operational utility well into the next century. First, the 22,000 lb thrust General Electric/SNECMA F108-CF-100 (CFM56) fuel-efficient engine was selected for retrofit of the KC-135 fleet in 1980.

Reengined aircraft are designated **KC-135R** and **KC-135T**, each with a gross weight of 322,000 lb. They embody modifications to 25 major systems and subsystems and not only carry more fuel farther but have reduced maintenance costs, are able to operate from shorter runways, and meet Stage III requirements. The first KC-135R flight was in August 1982, and first deliveries to SAC (now US Strategic Command) were in July 1984; the program continues. A three-point aerial refueling system is under development. Second, the JT3D reengining program upgraded 163 AFRES and ANG KC-135As to **KC-135E** standard with JT3D turbofans removed from surplus commercial 707s. Finally, the Life Extension Structural Modification provided for the renewal of the lower wing skin, enabling the fleet of KC-135s to remain fully operational past 2020. An avionics upgrade is being evaluated that would significantly improve systems reliability and maintainability. (Data for KC-135R.)

**Contractor:** Boeing Military Airplanes.

**Power Plant:** four CFM International F108-CF-100 turbofans; each 22,224 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.

**Weights:** empty 119,231 lb, gross 322,000 lb.

**Performance:** max speed at 30,000 ft 610 mph, service ceiling 50,000 ft, range with 120,000 lb of transfer fuel 2,128 miles, ferry mission 11,192 miles.

### C-135B Stratolifter

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/cargo transports, pending delivery of C-141s. Three converted KC-135s were followed by 45 production Stratolifters in two versions: the **C-135A**, with J57-P-59W turbojets, and the **C-135B**, with Pratt & Whitney TF33-P-5 turbofans. Eleven Bs were retrofitted with revised interior for VIP transportation; others became **WC-135Bs** and **RC-135E/Es**. ACC's 55th Wing operates **TC-135S/W** variants. C-135s have been deployed in support of Operation Deny Flight. (Data similar to KC-135, except where indicated.)

**Dimensions:** length 134 ft 6 in.

**Weights (C-135B):** operating weight empty 102,300 lb, gross 275,500 lb.

**Accommodation (C-135B):** 60 passengers.

**Performance (C-135B):** max speed 600 mph, range with 54,000 lb payload 4,625 miles.

### VC-137B/C Stratoliner

Seven specially modified Boeing 707 transports are operated by AMC's 89th Airlift Wing from Andrews AFB, Md., for VIP duties. There are four **VC-137Cs**, which are Boeing 707-320s, and three smaller 707-120s, currently designated **VC-137B**. Two of the VC-137Cs were the original "Air Force One" aircraft.

**Contractor:** The Boeing Company.

**Power Plant:** four Pratt & Whitney JT3D-3 turbofans; each 17,200 lb thrust.

**Dimensions:** VC-137B: span 130 ft 10 in, length 144 ft 6 in, height 42 ft 0 in; VC-137C: span 145 ft 9 in, length 152 ft 11 in, height 42 ft 5 in.

**Weights:** VC-137B: gross 258,000 lb; VC-137C: gross 322,000 lb.

**Performance (VC-137C):** max speed 627 mph, service ceiling 42,000 ft, range 5,150 miles.

### C-141A/B StarLifter

Plans for the long-term operational future of the C-141 have yet to be finalized. The massive movement of troops and equipment to the Persian Gulf for Operations Desert Shield and Desert Storm relied heavily on the capabilities of 227 C-141 StarLifters, and C-141s have since been deployed in support of UN peacekeeping missions. However, the type is currently operating under restrictions dictated by weep holes and fatigue cracks, most notably in the wings, which have grounded more than 40 aircraft and restricted payload and aerial refueling on others, and at the cockpit posts, which restrict altitude. The **C-141A** entered service with MAC in April 1965, and 285 were built, some of which were structurally modified to accommodate the 82,207 lb Minuteman ICBM. Subsequently, USAF funded modification of the entire then-available force of 270 aircraft to **C-141B** standard (except four AFMC aircraft used for test purposes) in order to realize the aircraft's full payload potential. The fuselage was lengthened by 23 ft 4 in, and an in-flight refueling capability was added. Deliveries of B aircraft took place between December 1979 and June 1982. The modification significantly increased MAC's



**KC-135R**



**C-141 (Dana Bell)**



**KC-10 (Dana Bell)**

airlift capability, giving USAF the equivalent of 90 additional C-141A aircraft. Under the Pave Center program initiated in 1987, 118 aircraft were slated for a center wing structural modification, which, coupled with other structural upgrades, was expected to extend the C-141's original flying life by 15,000 hours. Other planned C-141 modifications include installation of 50kHz VOR/ILS receivers, secure voice capability on UHF and HF radios, permanently mounted SATCOM antennas, and a digital display fuel-quantity-indicating system. A program to install a state-of-the-art autopilot and all-weather landing system with enhanced flight display instrumentation is a major modification to enhance maintenance supportability. Improved airdrop systems for the C-141 are also in production. However, further proposed C-141 SLEPs have been ruled out. One C-141A has been greatly modified as an **Advanced Radar Test-Bed (ARTB)** for use as an airborne laboratory platform to test a wide range of sensors in a dynamic ECM environment. In addition, thirteen 437th AW C-141Bs are scheduled for modification to increase their SOLL capability and survivability. AETC also operates C-141 aircraft.

Since 1986, AFRES and ANG have received C-141s transferred from the active force; 64 aircraft are scheduled for transfer by 1997. These C-141s play a major role in intertheater medevac missions and are used frequently for humanitarian missions, transporting vital supplies to areas that, in recent years, have been devastated by natural disasters or civil conflict. AMC controls Air Force C-141s, all of which are due to be painted flat gray. (Data for C-141B.)

**Contractor:** Lockheed-Georgia Company.

**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 3 3/4 in, height 39 ft 3 in.

**Weights:** 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.

**Performance:** max cruising speed 566 mph, range with max payload 2,170 miles without air refueling.

### KC-10A Extender

The KC-10 was conceived to meet USAF requirements for an advanced tanker/cargo aircraft. It is based on the commercial DC-10 Series 30CF, modified to include fuselage fuel cells, a boom operator's station with aerial refueling boom and integral hose reel/drogue unit, a receiver refueling receptacle, and military avionics. In its primary role of enhancing worldwide air mobility, the KC-10A combines the tasks of tanker and cargo aircraft in a single unit. With this capability, the Extender supports fighter deployments, strategic airlift, strategic

reconnaissance, and conventional operations and, as such, played a crucial role in the Persian Gulf deployment and in later humanitarian and UN peacekeeping missions. Since it has both types of tanker refueling equipment installed, the KC-10A can service US Air Force, Navy, and Marine Corps and allied aircraft on the same mission.

In many deployment situations, the KC-10A's refueling capabilities and long range permit it to dispense with the need for forward bases, leaving vital fuel supplies in the theater of operations untouched. Aircraft maintenance is performed under the contractor logistics support concept, where flight-line maintenance is provided by USAF while intermediate- and depot-level maintenance is supported by a contractor. In addition, extensive commonality with the commercial DC-10 allows USAF to capitalize on a worldwide network of spares and maintenance facilities.

The KC-10A made its first flight in July 1980, and the first service usage by SAC (now US Strategic Command) took place in March 1981. Fifty-nine KC-10As are in the USAF inventory, under the control of AMC, and are operated by active and Associate Reserve units. The final production aircraft, delivered in April 1990, was used to test wing-mounted air refueling pods designed to supplement the standard fuselage hose reel/drogue unit and refueling boom. Plans called for 20 aircraft to be modified to accept the wing-mounted pods. An additional modification introduced an on-board loader that allowed pallet handling without prepositioning wide-body cargo loading equipment, and so permitted autonomous cargo operations at austere locations.

**Contractor:** Douglas Aircraft Company, Division of McDonnell Douglas Corporation.

**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 4 1/2 in, length 181 ft 7 in, height 58 ft 1 in.

**Weight:** gross 590,000 lb.

**Performance:** cruising speed Mach 0.825, service ceiling 42,000 ft, range with max cargo 4,370 miles.

## Trainers

### T-1A Jayhawk

Employed by AETC for specialized undergraduate pilot training (SUPT), the first T-1A was delivered to USAF in January 1992. As leader of the T-1A contractor team, McDonnell Douglas is responsible for system integration; Quintron is supplying flight simulators, Beech the aircraft. Designated Beechjet 400T, these are similar to the Beechjet 400A corporate transport. The flight deck is configured for a student in the left seat, an instructor

in the right seat, and another student to the rear. Structural enhancements provide for a large number of landings per flight hour, increased birdstrike resistance, and an additional fuselage fuel tank. A Rockwell Collins avionics package includes a five-tube EFIS, turbulence detection radar, digital autopilot, tactical air navigation with air-to-air capability, and a central diagnostics and maintenance system.

One hundred forty-eight Jayhawks have been ordered to date, with a likely total buy of 180. Deliveries totaled 65 by March of this year. Instructor pilot training at the 64th FTW, Reese AFB, Tex., began in September 1992, with student training following in January 1993. Pilots trained on the T-1A will progress to transports, such as



**T-1A Jayhawk (Walter Wright)**



**T-3A Firefly**

the C-5 and C-17, and tankers, such as the KC-10 and KC-135.

**Contractor:** Beech Aircraft Corporation.

**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 use as a personnel transport.

**Dimensions (400A):** span 43 ft 6 in, length 48 ft 5 in, height 13 ft 11 in.

**Weights:** empty 5,200 lb, gross (400A) 16,100 lb.

**Performance:** max speed at 27,000 ft 538 mph, max operating altitude 41,000 ft, range 2,222 miles.

#### T-3A Firefly

Selected in April 1992 to meet USAF's Enhanced Flight Screener requirement, replacing the T-41 Mesclero, the T-3A is used by AETC to screen prospective pilots prior to SUPT. Pilot training was expected to begin this February. The basic airframe is the Slingsby T67M260 Firefly built in the UK, Northrop Worldwide Aircraft Services is responsible for final assembly, test, delivery, and logistical support. Deliveries are scheduled to be completed by autumn 1995.

**Contractors:** Slingsby Aviation Limited; Northrop Worldwide Aircraft Services Inc.

**Power Plant:** development of Textron Lycoming AEIO-540-D4A5 engine; 260 hp.

**Accommodation:** two, side by side.

**Dimensions:** span 35 ft 1 in, length 24 ft 10 in, height 7 ft 9 in.

**Weights:** empty 1,760 lb, gross 2,525 lb.

**Performance:** max level speed 178 mph, service ceiling 19,000 ft, range with max fuel 747 miles.

#### T-37B Tweet

USAF's first purpose-built jet trainer, the T-37 is AETC's standard two-seat primary trainer. The original T-37A was superseded in November 1959 by the T-37B; all A models were later converted to B standard. A contract was awarded in August 1989 to Sabreliner Corp. for the T-37B SLEP. The contract included the design, testing, and production of kits, to be installed by USAF as they are delivered, to modify or replace critical structural components for the entire fleet, extending the capability of the T-37 into the next century. Almost 1,000 T-37s were built, and 531 remain in USAF's active inventory. All are being repainted in a distinctive dark blue and white to help formation training and to ease maintenance. AETC plans to replace the T-37B with a new Joint Primary Aircraft Training System (JPATS) from the fourth quarter of FY 1996. Seven contractor teams are expected to submit proposals.

**Contractor:** Cessna Aircraft Company.

**Power Plant:** two Continental J69-T-25 turbojets; each 1,025 lb thrust.

**Accommodation:** two, side by side.

**Dimensions:** span 33 ft 9 1/4 in, length 29 ft 3 in, height 9 ft 2 1/4 in.

**Weights:** empty 3,870 lb, gross 6,575 lb.

**Performance:** max speed at 25,000 ft 426 mph, service ceiling 35,100 ft, range at 360 mph with standard tankage 870 miles.

#### T-38A and AT-38B Talon

Almost identical in structure to the F-5A export tactical fighter, the T-38A lightweight twin-jet advanced trainer is capable of flying well above supersonic speed in level flight. First flown in April 1959, it was in continuous production from 1956 to 1972 and entered operational service in March 1961. Of 1,187 T-38s built, more than 1,100 were delivered to USAF, and well over 600 remain in service throughout the Air Force. Most are used by AETC for high-performance pilot training. A slightly different version, designated AT-38B, with a gunsight and practice bomb dispensers, is used by AETC for Introduction to Fighter Fundamentals.

An ongoing program called Pacer Classic (the T-38



**T-37B Tweet**



**T-38A Talon (Walter Wright)**

SLEP) is integrating 10 modifications, including major structural renewal, into one program. As a result, the service life of the T-38s should extend to 2010. Additionally, introduction of the T-1A is significantly relieving the T-38's training work load.

**Contractor:** Northrop Corporation.

**Power Plant:** two General Electric J85-GE-5A turbojets; each 2,680 lb thrust dry, 3,850 lb thrust with afterburning.

**Accommodation:** student and instructor, in tandem.

**Dimensions:** span 25 ft 3 in, length 46 ft 4 1/2 in, height 12 ft 10 1/2 in.

**Weights:** empty 7,164 lb, gross 12,093 lb.

**Performance:** max level speed at 36,000 ft more than Mach 1.23 (812 mph), service ceiling above 55,000 ft, range, with reserves, 1,093 miles.

#### T-43A and CT-43

Derived from the commercial Boeing Model 737-200, the T-43A navigation trainer first flew in April 1973 and was equipped with the same on-board avionics as the most advanced USAF operational aircraft of that time, including celestial, radar, and inertial navigation systems, a Long-Range Aid to Navigation (LORAN) system, and other radio systems. Deliveries of the 19 aircraft ordered for ATC (now AETC) were completed in July 1974. Most remain in the AETC inventory; four others are assigned to the ANG; and two aircraft with VIP interior are assigned to the 58th AS at Ramstein AB, Germany, and the 310th AS at Howard AFB, Panama (as CT-43). The aircraft are being repainted in an all-white paint scheme.

**Contractor:** Boeing Aerospace Company.

**Power Plant:** two Pratt & Whitney JT8D-9 turbofans; each 14,500 lb thrust.

**Accommodation:** crew of two, 12 students, five advanced students, and three instructors.

**Dimensions:** span 93 ft 0 in, length 100 ft 0 in, height 37 ft 0 in.

**Weight:** gross 115,500 lb.

**Performance:** econ cruising speed at 35,000 ft Mach 0.7, operational range 2,995 miles.

#### UV-18B Twin Otter

The UV-18B is a military version of the DHC-6 Twin Otter STOL utility transport. Two were procured in FY 1977 for use as parachute jump training aircraft at the Air Force Academy.

**Contractor:** The de Havilland Aircraft of Canada Ltd.

**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 0 in, length 51 ft 9 in, height 19 ft 6 in.

**Weight:** gross 12,500 lb.

**Performance:** max cruising speed 210 mph, service ceiling 26,700 ft, range with 2,500 lb payload 806 miles.

## Strategic Missiles

#### LGM-30F/G Minuteman

For over three decades, Minuteman has represented a key element of 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. A depot-level maintenance refurbishment, known as Rivet Mile, has been in progress to correct existing, and retard future, age-related deterioration of facilities in Minuteman silos and launch control centers. Current versions:

**LGM-30F Minuteman II:** Operational since 1965, the Minuteman II is based at Malmstrom AFB, Mont.; Ellsworth AFB, S. D.; and Whiteman AFB, Mo. As part of the nuclear strategic force reductions, President Bush removed all Minuteman II missiles from alert status in 1991. Since that time, all the warheads have been removed from the missiles and nearly two-thirds of the missiles have been removed from the silos. The 150 Malmstrom AFB Minuteman II silos are being converted to carry the Minuteman III, and the 300 Minuteman II silos at Whiteman and Ellsworth AFBs are to be destroyed in accordance with Strategic Arms Reduction Treaty (START) protocols. Silo destruction is projected to be completed in early 1997.

**LGM-30G Minuteman III:** Improved range and multiple independently targetable reentry vehicle (MIRV) capability enables the Minuteman III to place warheads on three targets with a high degree of accuracy. A command data buffer system permits rapid missile re-targeting. Operational since 1970, it is based at Minot AFB, N. D.; F. E. Warren AFB, Wyo.; Grand Forks AFB, N. D.; and Malmstrom AFB, Mont.

Enhancements and modifications under way will maintain the viability of the Minuteman III force through 2020.





**Weight:** 2,450 lb.  
**Performance:** cruising speed subsonic.

#### GBU-24/27

In a move to replace laser-guided weapons expended in the Persian Gulf War, USAF is purchasing 7,728 GBU-24 and GBU-27 laser bomb kits to replace GBU-10s and GBU-12s. During development the new kits were known as Paveway III Low-Level Laser-Guided Bombs. High-lift wings and improved seekers permit very-low-altitude launch over standoff ranges.

#### GBU-28

Under USAF's rapid response program, a new bunker-busting weapon was developed for Operation Desert Storm, for use against deeply buried, hardened command-and-control facilities. Four of the laser-guided GBU-28 4,700-lb weapons were used in the war: two for testing and two by F-111Fs against a bunker complex on February 27, 1991. The body design is based on the BLU-109/B penetrator, extended by 54 in to 152 in, and doubling the wall thickness to 2 3/4 in. Guidance is by a modified GBU-27 system. Flight tested on the F-15E and F-111F, the GBU-28 demonstrated the capability to penetrate more than 100 ft of dirt or 20 ft of concrete. Thirty were built, and an additional 100 are planned. Advanced versions to improve operational flexibility are being studied.

**Contractor:** Lockheed Missiles and Space Systems.

#### AGM-137 TSSAM

EMD of the Triservice Standoff Attack Missile is in progress. USAF is heading the joint-service effort to produce a subsonic 2,300-lb stealthy missile with a range of less than 375 miles for the air-launched AGM-137 and 310 miles for the ground-launched MGM-137 variant. It will carry IR-guided and acoustically guided submunitions. The missile is being developed by Northrop, with Boeing as second source, and completed a successful test flight in June 1992. It will arm USAF B-1s, B-2s, B-52s, F-16s, and F-22s, as well as USN A-6s and F/A-18s. Production for all services is planned to be 4,525 missiles, with IOC by 2000.

#### Joint Direct Attack Munition (JDAM)

A weapon system currently being developed to meet USAF/USN requirements for highly accurate, autonomous, all-weather, conventional bombing capability, the JDAM consists of a general-purpose Mk 83 or Mk 84 bomb or BLU-109 tactical munitions dispenser linked with an inertial guidance kit in a modified tailcone. While still aboard the launch aircraft, JDAM will be continually updated with target information through the aircraft's avionics system. Once released, the inertial guidance kit will take over, guiding the weapon to its target. The JDAM program is multiphase: during Phase 1, an accurate, all-weather INS/GPS guidance kit will be developed; for Phase 2, Motorola is developing a joint programmable fuze; a precision adverse-weather capability will be incorporated in Phase 3. Initial fielding is expected in 1996-97. JDAM is intended for use on a variety of aircraft, including the B-1, B-2, F-15E, F-16, F-111, and F/A-18.

#### Joint Standoff Weapon (JSOW)

The folding-wing JSOW combines the USN's Advanced Interdiction Weapon System with cluster-type, self-contained, target-homing, autonomous submunitions. It will share many features with JDAM, including a common advanced seeker and INS/GPS. JSOW passed its preliminary design review early last year. Texas Instruments is contracted to integrate JSOW with the BLU-108B Sensor-Fuzed Weapon. The critical design review is scheduled for January next year, and procurement could begin in FY 1995. A glide weapon propulsion system is being evaluated for JSOW.

#### AGM-142 Have Nap

Under the Have Nap program, USAF began acquisition of the Israeli-built Popeye medium-range, standoff missile. Initial operational test and evaluation launches were completed in May 1990, and a coproduction agreement was entered into between Rafael and Martin Marietta.

The purpose of Have Nap is to provide long-range bombers with a conventional precision strike capability in support of worldwide theater commanders. Primary carrier aircraft will be the conventionally dedicated B-52s.

**Contractor:** Rafael Armament Development Authority.  
**Power Plant:** solid-propellant rocket motor.

**Guidance:** inertial, with data link, TV, or IIR homing.  
**Warhead:** high-explosive, 750-lb-class blast/fragmentation or penetrator.

**Dimensions:** length 15 ft 11 in, body diameter 1 ft 9 in, wingspan 6 ft 6 in.

**Weight:** 3,300 lb.  
**Performance:** range 50 miles.

#### Rapier

Rapier is unusual in that US landbased anti-aircraft missiles are normally operated by the Army. Under a



AGM-130



AGM-142A Have Nap



FIM-92A Stinger

decision confirmed by an initial contract for 32 fire units in February 1981, British-built Rapier missile systems were deployed at seven USAF bases in the UK to protect Air Force installations. The last unit became operational in July 1986. Manned by RAF Regiment personnel, the USAF version of Rapier is intended primarily for defense against fast (Mach 1+), maneuvering, low-flying targets by day and night. The four-round fire unit, Blindfire radar, and a trailer of reload missiles are towed by Land Rovers loaded with support equipment.

Under a similar agreement, the government of Turkey operates 14 US-owned fire units for the defense of US air bases in that country.

**Contractor:** British Aerospace plc, Dynamics Division.  
**Power Plant:** IMI two-stage solid-propellant rocket motor.

**Guidance:** Racal-Decca surveillance radar and command to line-of-sight guidance. Optional Marconi DN181 Blindfire radar or optical target tracking, depending on conditions.

**Warhead:** semi-armor-piercing, with impact fuze.  
**Dimensions:** length 7 ft 4 in, body diameter 5 in, wingspan 1 ft 3 in.

**Weight:** approx 94 lb.  
**Performance:** max speed more than Mach 2, range 4 miles.

#### FIM-92A Stinger

Stinger was developed originally as a man-portable, tube-launched surface-to-air missile for the US Army, as a much-superior successor to the pioneer Redeye. It has been employed since 1984 by air personnel in South Korea to provide base defense against high-speed, low-level, ground attack aircraft.

**Contractor:** General Dynamics, Pomona Division/Raytheon Company.

**Power Plant:** Solid-propellant rocket motor.  
**Guidance:** IR homing guidance.

**Warhead:** high-explosive blast fragmentation, weighing 6.6 lb.

**Dimensions:** length 5 ft 0 in, body diameter 2 3/4 in, wingspan 5 1/2 in.

**Weight:** launch weight 35.3 lb.  
**Performance:** range 1.85 miles.

## Launch Vehicles

#### Atlas E

Atlas E is a modified ICBM, used to launch various USAF and NOAA satellites. Three vehicles remain available for launch at Vandenberg AFB, Calif., with the last launch currently scheduled for FY 1995.

**Prime Contractor:** General Dynamics Corporation, Space Systems Division.

**Power Plant:** Rocketdyne MA-3 propulsion system, comprising central sustainer motor and two boosters; total thrust 387,000 lb.

**Dimensions (Atlas stage):** length 61 ft 8 in, body diameter 10 ft 0 in.

**Launch Weight:** 275,000 lb.

**Performance:** capable of putting 1,750 lb into a 100 nm polar orbit.

#### Atlas II

Atlas II is an upgraded version of the Atlas/Centaur vehicle, developed to meet USAF's continuing medium launch vehicle (MLV II) requirement. The familiar "stage-and-a-half" configuration of the original ICBM is retained for the basic Atlas. Changes include lower-cost advanced avionics, an improved flight computer, booster engines with greater thrust, and longer propellant tanks. The engine and tank changes have been made to both

the Atlas and Centaur stages. Ten Atlas II vehicles will be procured. Primary DoD payload is the Defense Satellite Communications System (DSCS). The first Atlas II/DSCS launch took place from Cape Canaveral AFS, Fla., in February 1992; one launch is planned for FY 1994.

Since their initial operation in 1957, Atlas and Atlas/Centaur vehicles have achieved a 90th percentile success rate for more than 500 launches of military and commercial satellites, as well as manned spacecraft.

**Prime Contractor:** General Dynamics Corporation, Space Systems Division.

**Power Plant:** uprated Rocketdyne MA-5 propulsion system in Atlas stage, comprising central sustainer motor and two boosters; total thrust 488,000 lb.

**Dimensions (Atlas stage):** length 81 ft 7 in, max body diameter 10 ft 0 in.

**Launch Weight:** 412,000 lb.

**Performance:** capable of putting 8,000 lb into a low-Earth orbit and 6,400 lb into a geosynchronous transfer orbit.

#### Centaur

Centaur was the first US high-energy upper stage and the first to utilize liquid hydrogen as a propellant. Its multiburn and extended coast capability were first used operationally during the 1977 Mariner Jupiter/Saturn missions. The D-1A version used with the Atlas demonstrated widely 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 command-and-control systems for the launch vehicle. A 10 ft diameter fairing protected payloads for Centaur D-1A.

The D-2A, used with the Atlas II, has been stretched three feet to include more propellant and thus has increased thrust.

The modified Centaur G-prime upper stage, with high-energy cryogenic propellants and multiple restart capability, is used with the Titan IV, creating the greatest weight-to-altitude capability of any US launch vehicle by placing a 10,200 lb payload into geosynchronous orbit. (Data for Centaur D-1A and G-prime, except where indicated.)

**Prime Contractor:** General Dynamics Corporation, Space Systems Division.

**Power Plant:** two Pratt & Whitney RL 10A-3A liquid oxygen/liquid hydrogen rocket engines; each 16,500 lb thrust.

**Guidance:** inertial guidance system.

**Dimensions** (Centaur D-2A only): length 33 ft 0 in, diameter 10 ft 0 in.

**Launch Weight:** (D-2A, approx) 45,000 lb; (G-prime-mod, approx) 53,000 lb.

#### Titan II

Five modified Titan II ICBMs are being used to provide additional expendable launch capability. Three had been launched successfully by May 1993.

**Prime Contractor:** Martin Marietta Space Launch Systems.

**Power Plant:** first and second stages: Aerojet liquid hypergolic propellants; first stage 430,000 lb thrust; second stage 100,000 lb thrust. Strap-on solid rocket motors can be added to the first stage to increase payload capability.

**Guidance:** Delco inertial guidance system.

**Dimensions:** first and second stages: height 110 ft 0 in, diameter 10 ft 0 in; payload fairing heights 20, 25, and 30 ft, diameter 10 ft 0 in.

**Launch Weight:** 408,000 lb.

**Performance:** more than 4,200 lb to low-Earth polar orbit.

#### Titan IV

Titan IV was selected originally in 1985 to augment the space shuttle and to allow greater flexibility in launching critical military payloads. It is a growth version of the earlier Titan 34D, with stretched first and second stages, seven-segment solid boosters, a 16 ft 8½ in diameter payload fairing, and a modified Centaur G-prime upper stage, enabling it to place a 10,200 lb payload into geosynchronous orbit, 32,000 lb into low polar orbit, or 39,000 lb into low equatorial orbit. With an alternative Inertial Upper Stage (IUS), it can place 5,200 lb into geosynchronous orbit. It may also be flown with no upper stage. The scheduled addition of upgraded solid rocket motors last year will enhance performance by approximately 25 percent. USAF's original requirement of 10 Titan IVs had increased to firm orders for 41 vehicles by mid-1989. First launch took place from Cape Canaveral, Fla., in June 1989; six of the seven launches to date have been successful.

**Prime Contractor:** Martin Marietta Space Launch Systems.

**Power Plant:** first and second stages: Aerojet liquid hypergolic propellants; first stage 551,200 lb thrust; second stage 106,150 lb thrust; initially two United Technologies solid rocket boosters, each 1,394,000 lb thrust, later two Hercules solid rocket boosters, each 1,700,000 lb thrust.

**Guidance:** Delco inertial guidance system, to be replaced by Honeywell digital avionics system on 24th vehicle and later.

**Dimensions:** first and second stages: height 119 ft 2½ in, diameter 10 ft.

**Launch Weight:** approx 1.9 million lb.

#### Inertial Upper Stage (IUS)

Serving as an upper stage for the Titan IV for DoD, as well as with the shuttle for NASA, the highly reliable IUS was used for the first time in October 1982. Consisting of an aft skirt, an aft-stage solid rocket motor, an interstage, a forward-stage solid rocket motor, and an equipment support structure, it has the capability of boosting 5,200 lb into geosynchronous orbit when used on Titan IV.



Titan IV



Delta II

**Prime Contractor:** Boeing Aerospace Company.

**Power Plant:** aft-stage solid rocket motor 41,611 lb thrust, forward-stage solid rocket motor 17,629 lb thrust.

**Guidance:** inertial, plus star tracker.

**Dimensions:** length 17 ft, diameter 9 ft 2¼ in.

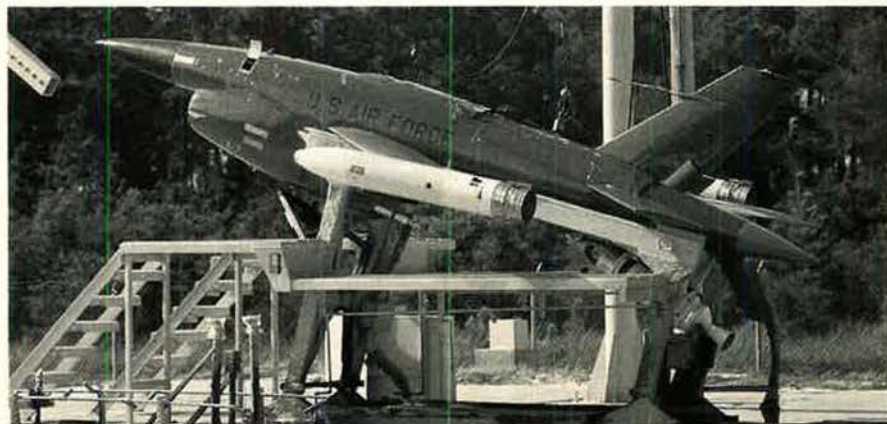
**Launch Weight:** 32,500 lb.

#### Delta II

Selected by the Air Force in 1987 to launch the Navstar GPS satellites, the Delta II is slightly larger than McDonnell Douglas's earlier Delta rocket in order to satisfy USAF's medium-payload requirement. The first launch took place in February 1989, and, to date, 22 operational GPS satellites have been launched successfully. The full Navstar constellation will consist of 24 operational satellites, providing US and allied forces with worldwide, three-dimensional position and velocity information.



MQM-107D Streaker (Guy Aceto)



BQM-34A Firebee (Guy Aceto)

Delta II is a three-stage booster surrounded by nine solid-propellant, graphite epoxy motors (GEMs). The GEMs were not available for the first nine GPS flights, which employed a modified version of the original Delta's Castor IV engine, the Castor IVA. Delta II differs from the earlier version in having a 12-foot stretch in the first-stage tanks and, from flight number 10, an increased expansion ratio on the first-stage engine.

**Prime Contractor:** McDonnell Douglas Aerospace Company.

**Power Plant:** first stage: Rocketdyne RS-27A liquid-propellant engine, 237,000 lb thrust; second stage: Aerojet IT1P liquid-propellant engine, 9,400 lb thrust; third stage: Morton Thiokol SGS II derivative, 15,400 lb thrust; strap-on GEM solid rocket motors, 143,235 lb thrust.

**Dimensions:** length 130 ft, diameter 8 ft; bulbous payload fairing, max diameter 10 ft.

**Liftoff Weight:** 509,000 lb.

**Performance:** 11,110 lb to 100 nm.

#### Pegasus

This three-stage, solid-propellant winged vehicle is air-launched from a B-52 and is designed for maximum operational flexibility in delivering 500–800-lb payloads to low-Earth orbit. Conceived in 1987, Pegasus was developed jointly by Orbital Sciences Corp. and Hercules Aerospace Co. as a private venture. The vehicle was under contract to the Defense Advanced Research Projects Agency for its initial two flights, the first of which took place in 1990 from Vandenberg AFB, Calif. In July 1991, it successfully placed seven minisatellites in orbit. Management of the Pegasus program has transferred to USAF. It will support the USAF space test program and the Ballistic Missile Defense Organization. (Data for basic Pegasus vehicle.)

**Prime Contractor:** Orbital Sciences Corporation and Hercules Aerospace Company.

**Power Plant:** three Hercules solid-propellant motors developing 109,400 lb, 27,600 lb, and 7,800 lb thrust, respectively.

**Guidance:** inertial guidance.

**Dimensions:** length 49 ft 0 in, wingspan 22 ft 0 in, diameter 4 ft 2 in.

**Launch Weight:** 42,000 lb.

#### Taurus

A more powerful version of the Pegasus space-launch vehicle has been developed, using an LGM-118 Peacekeeper missile first-stage addition and with the Pegasus wings removed. Taurus is ground-launched from regular launch complexes and will be used to test a quick-readiness, mobile launch facility. The first launch, on March 14, 1994, put two USAF and ARPA satellites into a 340-mile polar orbit.

## Aerial Targets and Decoys

#### MQM-107D Streaker

The Air Force originally procured the MQM-107A in 1975. The third-generation D model is now in use, with a fourth-generation E model being tested. It is a recoverable, variable-speed target drone, currently in use at Tyndall AFB, Fla., for research, development, test, and evaluation (RDT&E), instructor training, and the Weapon System Evaluation Program.

**Contractor:** Beech Aircraft Corporation.

**Power Plant:** one Teledyne CAE 373-8 engine; 960 lb thrust.

**Guidance and Control:** analog or digital, for both ground control and preprogrammed flight. High-g autopilot provisions.

**Dimensions:** length 18 ft 1 in, body diameter 1 ft 3 in, span 9 ft 10 in.

**Weight:** launch weight (incl booster) 1,090 lb.

**Performance:** operating speed 230–594 mph, operating height 50–40,000 ft, endurance 2 hr 18 min.

#### BQM-34A Firebee

More than 6,000 of these jet target vehicles have been delivered since initial development of the BQM-34A in the late 1950s. They are used to support weapon system and target RDT&E, quality assurance, training, and annual service practices by all three US services and by foreign governments.

New, reengineered BQM-34As are becoming USAF's standard subscale target drones. The updated General Electric J85-100 engine provides a thrust-to-weight ratio of one to one, enabling this version to offer higher climb rates and 6g maneuvering capability. A new micro-processor flight-control system provides a prelaunch and in-flight self-test capability. Since 1989, these tar-

gets have been used for weapon system evaluation at Tyndall AFB.

**Contractor:** Teledyne Ryan Aeronautical.

**Power Plant:** one General Electric J85-GE-100 turbojet.

**Guidance and Control:** remote control methods include 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 new Gulf Range Drone Control Upgrade System (GRDCUS), which allows multiple targets to be flown simultaneously.

**Dimensions:** length 22 ft 10 $\frac{1}{4}$  in, body diameter 3 ft 1 $\frac{1}{4}$  in, span 12 ft 10 $\frac{1}{4}$  in.

**Weight:** launch weight 2,500 lb.

**Performance:** max level speed at 6,500 ft 690 mph, operating height range 20 ft to more than 60,000 ft, max range 796 miles, endurance (typical configuration) 30 min.

#### BQM-74C

Built by Northrop Corp., BQM-74C target drones were used as decoys during the Persian Gulf War to draw the attention of Iraqi air defense radar, revealing locations of missile and gun sites.

#### QF-4

The QF-4 is replacing the QF-106 as a joint service full-scale aerial target (FSAT). Advantages of the QF-4 over the QF-106 are an improved flight-control system and greater payload. Approximately 300 F-4s will be converted to FSATs.

**Contractor:** Tracor Inc.

**Power Plant:** two Pratt & Whitney J79-GE-17 turbojets; each with approximately 17,000 lb thrust with afterburning.

**Guidance and Control:** remote control methods will include the GRDCUS, a multifunction command-and-control multilateration system, and the drone formation control system.

**Dimensions:** length 63 ft 0 in, height 16 ft 5 in, wingspan 38 ft 5 in.

**Weight:** mission operational weight 49,500 lb.

**Performance:** max speed Mach 2, service ceiling 55,000 ft, range (approx) 500 miles.

#### QF-106

The QF-106 replaced the QF-100 as USAF's FSAT. Advantages of the QF-106 over the QF-100 include higher supersonic speeds while under remote control and increased maneuverability. Approximately 194 F-106s were slated for conversion to FSATs. The type will be phased out in FY 1997.

**Contractor:** Honeywell Inc.

**Power Plant:** one Pratt & Whitney J75-P-17 turbojet; 24,500 lb thrust with afterburning.

**Guidance and Control:** remote control methods include the GRDCUS, a multifunction command-and-control digital multilateration system, and the Drone Tracking and Control System, a microwave command and guidance system.

**Dimensions:** length 70 ft 8 in, height 20 ft 3 in, wingspan 38 ft 5 in.

**Weight:** mission operational weight 40,500 lb.

**Performance:** max speed Mach 2, service ceiling 50-55,000 ft, range (approx) 400 miles.

## Satellite Systems

### Defense Support Program

Defense Support Program satellites, a key part of North America's early warning system, detect missile launches, space launches, and nuclear detonations. Operated by AFSPC, the satellites feed warning data to NORAD and US Space Command early warning centers at Cheyenne Mountain AFB, Colo.

The first launch of a DSP satellite took place in the early 1970s. Since that time, DSP satellites have provided an uninterrupted early warning capability to the United States. The system's capability was demonstrated during the Persian Gulf War when the satellites detected the launch of Iraqi Scud missiles and provided warning to civilian populations and coalition forces in Israel and Saudi Arabia.

**Prime Contractor:** TRW.

**Power Plant:** solar arrays generating 1,485 watts.

**Dimensions:** diameter 22 ft, height 32 ft 8 in, with solar paddles deployed.

**Weight:** 5,000 lb (approximate).

**Performance:** orbits at approximately 22,000 miles altitude; uses IR sensors to sense heat from missile and booster plumes against the Earth's background.

### Defense Meteorological Satellite Program

Defense Meteorological Satellite Program (DMSP) space vehicles have been collecting weather data for US



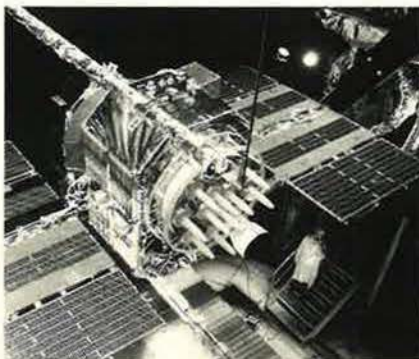
QF-4

military operations for some two decades. Two operational DMSP Block 5D-2 satellites orbit the Earth, using their primary sensor, the Operational Linescan System, to take visual and IR imagery of cloud cover. Military weather forecasters use this imagery to detect developing weather patterns anywhere in the world, helping to identify, locate, and determine the severity of thunderstorms, hurricanes, and typhoons.

DMSP satellites also have sensors that measure atmospheric moisture and temperature levels, X rays, and electrons that cause auroras. The satellites can locate and determine the intensity of auroras—electromagnetic phenomena that can interfere with radar operations and long-range communications. This information aids military commanders in making decisions. During the Persian Gulf War, DMSP satellites helped allied planners to provide efficient and safe air operations.



Defense Support Program



Navstar Global Positioning System

**Prime Contractor:** Martin Marietta.

**Power Plant:** solar arrays generating 1,000 watts.

**Dimensions:** height 11 ft 6 in, width 4 ft 9 in, length 19 ft 3 in.

**Weight:** 1,750 lb.

**Performance:** DMSP satellites orbit the Earth at about 500 miles altitude and scan an area 1,800 miles wide. Each system covers the Earth in about 12 hours.

### Defense Satellite Communications System

DSCS satellites are superhigh-frequency systems capable of providing worldwide secure voice and data transmission. They provide an important part of the comprehensive plan to meet military communications needs. The system is used for high-priority communication, such as the exchange of wartime information between defense officials and battlefield commanders. The military also uses the DSCS to transmit data on space operations and early warning to various systems and users.

The Air Force began launching the more advanced DSCS Phase II satellites in 1982. These have single, multiple-beam antennas that provide more flexible coverage than their predecessors. The single steerable dish antenna provides an increased power spot beam that can be tailored to suit the needs of user terminals of various sizes. Phase III satellites can resist jamming and are expected to operate twice as long as Phase IIs.

**Prime Contractor:** Phase II, TRW; Phase III, Martin Marietta.

**Power Plant:** Phase II: solar arrays generating 535 watts, decreasing to 358 watts after five years; Phase III: solar arrays generating 1,100 watts, decreasing to 837 watts after five years.

**Dimensions:** Phase II: cylindrical body 9 ft in diameter, 9 ft high (13 ft with antennas deployed); Phase III: rectangular body 6 ft x 6 ft x 7 ft; 38-foot span with solar arrays deployed.

**Weight:** Phase II 1,350 lb, Phase III 2,500 lb.

**Performance:** four Phase II and six Phase III DSCS satellites are currently in geosynchronous orbit.

### Navstar Global Positioning System

The Navstar GPS is a constellation of orbiting satellites providing navigation data to military and civilian users around the world. Expected to be fully operational this year, the constellation will comprise 24 satellites providing 24-hour navigation services. These include accurate, three-dimensional (latitude, longitude, and altitude) velocity and precise time, passive all-weather operations; continuous real-time information; support to an unlimited number of users and areas; and support to civilian users at a slightly less accurate level.

Also benefiting from the GPS are such functions as mapping, aerial refueling and rendezvous, geodetic surveys, and search-and-rescue operations. Such capabilities were put to the test during Operations Desert Shield and Desert Storm. Coalition troops relied heavily on the GPS to navigate the featureless Saudi Arabian desert. Forward air controllers, pilots, and tank drivers used the system.

**Prime Contractor:** Rockwell International Corporation.

**Power Plant:** solar arrays generating 700 watts.

**Dimensions:** width 5 ft, length 17 ft 6 in, including solar array.

**Weight:** 1,860 lb in orbit.

**Performance:** GPS satellites orbit the Earth every 12 hours 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. ■

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- Charles H. Church, Jr.**  
Lenexa, Kan.
- Earl D. Clark, Jr.**  
Shawnee Mission, Kan.
- M. Lee Cordell**  
Westchester, Ill.
- R. L. Devoucox**  
Portsmouth, N. H.
- Jon R. Donnelly**  
Richmond, Va.
- Russell E. Dougherty**  
Arlington, Va.
- George M. Douglas**  
Colorado Springs, Colo.
- Michael J. Dugan**  
New York, N. Y.
- Charles G. Durazo**  
McLean, Va.
- E. F. "Sandy" Faust**  
San Antonio, Tex.
- Joe Foss**  
Scottsdale, Ariz.
- Barry Goldwater**  
Scottsdale, Ariz.
- Jack B. Gross**  
Harrisburg, Pa.
- George D. Hardy**  
Springfield, Va.
- Alexander E. Harris**  
Little Rock, Ark.
- Martin H. Harris**  
Winter Park, Fla.
- Gerald V. Hasler**  
Albany, N. Y.
- H. B. Henderson**  
Ramona, Calif.
- John P. Henebry**  
Chicago, Ill.
- George R. Jernigan III**  
Columbia, S. C.
- Robert S. Johnson**  
Lake Wylie, S. C.
- David C. Jones**  
Arlington, Va.
- Arthur F. Kelly**  
Los Angeles, Calif.
- John E. Kittelson**  
Sioux Falls, S. D.
- Victor R. Kregel**  
Colorado Springs, Colo.
- Jan M. Laitos**  
Rapid City, S. D.
- Doyle E. Larson**  
Burnsville, Minn.
- Alwyn T. Lloyd**  
Seattle, Wash.
- Jerome P. Luby**  
Burke, Va.
- Frank M. Lugo**  
Mobile, Ala.
- Nathan H. Mazer**  
Roy, Utah
- William V. McBride**  
San Antonio, Tex.
- Robert N. McChesney**  
Barrington, N. H.
- Thomas J. McKee**  
Arlington, Va.
- Craig R. McKinley**  
Ponte Vedra Beach, Fla.
- Edward J. Monaghan**  
Anchorage, Alaska
- J. B. Montgomery**  
Los Angeles, Calif.
- Bryan L. Murphy, Jr.**  
Fort Worth, Tex.
- J. Gilbert Nettleton, Jr.**  
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McLean, Va.
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Williamsville, N. Y.
- Julian B. Rosenthal**  
Durham, N. C.
- Peter J. Schenk**  
Pinehurst, N. C.
- Walter E. Scott**  
Dixon, Calif.
- Joe L. Shosid**  
Fort Worth, Tex.
- James E. "Red" Smith**  
Princeton, N. C.
- William W. Spruance**  
Marathon, Fla.
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- Edward A. Stearn**  
Redlands, Calif.
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Fairborn, Ohio
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Beverly Hills, Calif.
- H. A. "Hal" Strack**  
Incline Village, Nev.
- Harold C. Stuart**  
Tulsa, Okla.
- James M. Trail**  
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- Marie M. Vanover**  
San Antonio, Tex.
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- Capt. Kathryn A. Day**  
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Chairman, Junior Officer  
Advisory Council  
Ramstein AB, Germany
- CMSgt. Gary L. Thomas**  
*(ex officio)*  
Chairman,  
Enlisted Council  
USAF Academy, Colo.
- Erica Richardson**  
*(ex officio)*  
National Commander  
Arnold Air Society  
Champaign, Ill.

## NATIONAL VICE PRESIDENTS

Information regarding AFA activity within a particular state may be obtained from the vice president of the region in which the state is located.



**Dr. Dan Callahan**  
100 Ridgcrest Pl.  
Warner Robins, GA 31088  
(912) 929-1485

**Southeast Region**  
Florida, Georgia, North Carolina, Puerto Rico, South Carolina



**Ed Kantor**  
Landstuhl EMS  
PSC 2, Box 6265  
APO AE 09012  
49-6371-14098

**European Region**



**Bob Cantu**  
334 Madrid  
Universal City, TX 78148  
(210) 652-4873

**Southwest Region**  
New Mexico, Oklahoma, Texas



**John Lee**  
P. O. Box 3759  
Salem, OR 97302  
(503) 581-3682

**Northwest Region**  
Alaska, Idaho, Montana, Oregon, Washington



**William D. Croom, Jr.**  
7220 Big Valley Ct.  
Colorado Springs, CO 80919  
(719) 550-3214

**Rocky Mountain Region**  
Colorado, Utah, Wyoming



**John W. Lynch**  
1940 W. Orangewood Ave., S-110  
Orange, CA 92668-2009  
(714) 639-8188

**Far West Region**  
Arizona, California, Guam, Hawaii, Nevada



**Joseph R. Falcone**  
14 High Ridge Rd.  
Rockville, CT 06066  
(203) 875-1068

**New England Region**  
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont



**Mary Anne Thompson**  
3146 Valentino Ct.  
Oakton, VA 22124  
(703) 734-6180

**Central East Region**  
Delaware, District of Columbia, Maryland, Virginia, West Virginia



**Samuel M. Gardner**  
1708 Prairie Park Ln.  
Garden City, KS 67846  
(316) 275-4555

**Midwest Region**  
Iowa, Kansas, Missouri, Nebraska



**Bud Walters**  
903 Dixie Dr.  
Blytheville, AR 72315  
(501) 763-1825

**South Central Region**  
Alabama, Arkansas, Louisiana, Mississippi, Tennessee



**Eugene Goldenberg**  
2345 Griffith St.  
Philadelphia, PA 19152  
(215) 332-4241

**Northeast Region**  
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**J. Robin Wohnsig**  
8288 131st St. W.  
Apple Valley, MN 55124  
(612) 726-6872

**North Central Region**  
Minnesota, North Dakota, South Dakota



**Harold F. Henneke**  
359 W. Edgewood Ave.  
Indianapolis, IN 46217  
(317) 786-5865

**Great Lakes Region**  
Illinois, Indiana, Kentucky, Michigan, Ohio, Wisconsin



# National Report

## AFA Takes Veterans' Case to Smithsonian

In a comprehensive special report, "The Smithsonian and the Enola Gay," released in March, AIR FORCE Magazine Editor in Chief John Correll detailed plans by the Smithsonian Institution's Air and Space Museum to create an exhibit that distorts the history of the use of the atomic bomb against the Japanese in World War II. [See AIR FORCE Magazine, April 1994, p. 24.]

For the past two years, Correll wrote, Air and Space Museum officials have been under fire from veterans groups who charge that the planned 1995 exhibition of the Enola Gay, the B-29 that dropped the first atomic bomb, is biased and unbalanced.

In a letter last fall to Dr. Martin Harwit, Director of the Air and Space Museum, AFA Executive Director Monroe Hatch, Jr., said the museum's plan "treats Japan and the United States as if their participation in the war were morally equivalent. If anything, incredibly, it gives the benefit of opinion to Japan, which was the aggressor."

After learning of the museum's plans, a group of B-29 veterans collected 8,000 signatures on a petition asking the Smithsonian to either display the Enola Gay aircraft properly or turn it over to a museum that will do so.

Unless changes are made, most Americans who view the Enola Gay exhibit will be treated to a rather curious interpretation of World War II by the Smithsonian's politically correct curators: "For most Americans, it was a war of vengeance. For most Japanese, it was a war to defend their unique culture against Western imperialism."

Correll's report has generated many letters, as well as radio, TV and print coverage of the issue. AFA will continue to press for more historical balance and objectivity in the planned 1995 exhibit.

## Let Congress Know Where You Stand

AFA is, above all, a grass roots organization. Our members' individual voices really do matter. When is the last time you communicated your views to your elected representatives?

The opportunity to communicate directly with our elected representatives in Congress is one of the great privileges of being an American citizen. Remarkably, few people take advantage of this opportunity. **Members of Congress want to hear from you!** Through your input, members of Congress form positions on important issues. Knowing "how the folks at home" feel on an issue is vital to every member of Congress.

Take the time to write when you have a suggestion, criticism or support to offer. Write when you need assistance from the staff in your member's office. Some tips on writing the letter may be helpful to you. First, the guidelines—keep it short; keep it simple; keep it to one page; keep it to one subject; and keep it personal. Be specific about what you want the member to do—don't just complain. If you

are writing to say you don't like something, offer an alternative. In most instances, you will receive a direct, personal response in which the member will answer your question and state his/her position on the issue you raised. Do not be abusive or use foul language—if you do, your letter will be thrown away and will not be answered.

Timing is everything! Watch the congressional calendar to know when your issue is scheduled for committee or floor action. Use a specific bill number if you know it. Congress receives most of its mail on Monday and Friday, so try to have your letter arrive in the middle of the week. There is no prescribed format for your letter. Be sure your full return address is on the envelope and on the letter. Be sure you spell the name of your member correctly. If you need any specifics, like the bill number, names, addresses, telephone and FAX numbers, AFA's National Defense Issues Department can help you.

Here is how you should address your congressmen:

### To a Senator:

The Honorable John Doe  
United States Senate  
Washington, D.C. 20510  
Dear Senator Doe,

### To a Representative:

The Honorable Joe Smith  
U.S. House of Representatives  
Washington, D.C. 20515  
Dear Mr/Mrs/Ms Smith,

## How are we doing?

*As a member of the Senate Armed Services Committee, I find the Air Force Association to be one of the most helpful organizations in Washington. The information I receive from AIR FORCE Magazine along with the assistance provided by the Air Force Association leaders and staff represent an invaluable asset in my effort to maintain a strong national defense. Keep up the good work.*

—Sen. Dirk Kempthorne (R-ID)



By Daniel M. Sheehan, Assistant Managing Editor

## Successful Steele Seminar

An impressive panel of policy-makers, military theorists, and operational commanders contributed to an outstanding educational forum staged by the **Donald W. Steele, Sr., Memorial (Va.) Chapter**. An all-day seminar, "Security Challenges and Opportunities in the Twenty-First Century," kicked off with the Army's Lt. Gen. William W. Hartzog, deputy commander in chief of US Atlantic Command, delivering the keynote address, which delineated the roles his newly revamped command would play in future regional conflicts.

The audience of chapter members, industry officials, and government administrators then attended a panel discussion, "Regional Trends for the Twenty-First Century," chaired by Deputy Under Secretary of the Air Force for International Affairs Bob Bauerlein. Gen. James P. McCarthy, USAF (Ret.), Olin Professor of National Security at the US Air Force Academy; David Chu, former assistant secretary of Defense for Program Analysis and Evaluation; and Senior Fellow Phebe Marr of the Institute for National Strategic Studies at the National Defense University rounded out the panel. The panel discussed possible scenarios for regional conflict in Europe, east Asia, and southwest Asia.

After a luncheon presentation by Assistant Secretary of Defense for Strategy, Requirements, and Resources Ted Warner, the afternoon session was given over to military planners and strategists, led by Maj. Gen. Richard C. Bethurem, USAF director of Plans. USAF Assistant Vice Chief of Staff Lt. Gen. Thomas G. McNerney, Deputy Chief of Naval Operations (Resources, Warfare Requirements, and Assessments) Vice Adm. Thomas J. Lopez, Army Assistant Deputy Chief of Staff for Operations and Plans for Joint Affairs Maj. Gen. John C. Ellerson, and Marine Corps Assistant Deputy Chief of Staff for Plans, Policies, and Operations Brig. Gen. Thomas L. Wilkerson discussed "Planning for Twenty-First Century Warfare" in a hard-hitting as-



*Panelists at the Steele Chapter's recent seminar discuss the challenges and opportunities facing the Defense Department in the twenty-first century. From left, Phebe Marr, David Chu, Gen. James P. McCarthy, USAF (Ret.), and Bob Bauerlein contributed to the successful seminar.*

essment that shed a great deal of light on what will be needed to defend US interests around the world in the coming decades.

Chapter President Rich Siner considered the seminar, which drew crowds of up to 250 people, a "smashing success" and expressed his thanks to all who helped the chapter mount this highly successful educational event, especially Seminar Committee Chair Col. Jim Moore. The seminar, one of a planned series, was held in association with the USAF deputy chief of staff for Plans and Operations.

## Chapter News

Trust the **Kitty Hawk (N. C.) Chapter** not to let the ninetieth anniversary of powered flight pass without a strong AFA contribution. Despite bitter cold, a crowd of 3,500 turned out at the Wright Brothers Memorial at Kitty Hawk, N. C., for an air show to commemorate the event. National Vice President (Southeast Region) Dr. Dan Callahan, National Director

James E. "Red" Smith, and North Carolina President Bill Michael witnessed the flight of vintage aircraft and modern USAF aircraft, including the F-117 and B-1, over the memorial. The Northern Nash High School AFJROTC presented the colors, and a strong contingent from the East Carolina University AFROTC was on hand. Rep. James L. Oberstar (D-Minn.) of the House Budget Committee and Rep. H. Martin Lancaster (D-N. C.) of the House Armed Services Committee lent a congressional presence.

Alan B. Shepard, Jr., the first American in space, was the honoree, and Chapter President Alton V. Jones marked the historic occasion by giving Mr. Shepard's sister, Polly Lovejoy, a flag that had flown over the memorial on December 17. Ethel Findley, president of the Women's Airforce Service Pilots, was similarly honored by Mr. Jones to commemorate the fiftieth anniversary of the WASPs.

Big Week (February 19-25, 1944) merits its own chapter in many histo-

*The Eglin (Fla.) Chapter joined the Fort Walton Beach Chamber of Commerce in a salute to astronaut Col. Richard Covey and his wife, Kathy (third and fourth from right). Flanking the Coveys are (from left) Marnie Tate, host committee chair; Loyal Weaver, president of the Air Force Enlisted Men's Widows and Dependents Home Foundation; Maj. Gen. Carl Franklin, Air Warfare Center commander; Bob O'Connor, chapter president; and Jeannie Rief, chamber president.*



ries of USAAF operations during World War II. An all-out assault on German aircraft production, Big Week saw 8,148 Allied sorties, during which almost 20,000 tons of bombs were dropped. The **Greater Seattle (Wash.) Chapter** observed the fiftieth anniversary of Big Week with a discussion of the future of USAF strategic bombing and trends in long-range airpower. Air Combat Command Vice Commander Lt. Gen. Thad A. Wolfe gave

the keynote address, "Rethinking Strategic Airpower." A former commander of the 509th Bomb Wing, General Wolfe is well qualified to assess the history and current direction of JSAF's long-range bomber force.

Assisted by former Chapter President Bill Dunne, Chapter President Fred Rosenfelder thanked General Wolfe with an Ira C. Eaker Fellowship, which represents a \$1,000 donation to AEF in the General's name.

In addition to collecting \$20,000 for the Air Force Memorial Fund [see "AFA/AEF Report," April 1994, p. 87], the **Central Florida Chapter** also recently awarded four AEF Jimmy Doolittle Fellowships. Chapter President Richard A. Ortega, ACC Commander Gen. John M. Loh, and Air Force Chief of Staff Gen. Merrill A. McPeak presented fellowships to John M. Williamson of Republic Aviation Corp., Sam F. Jacobellis of Rockwell International, Donald G. Sachs of the Boeing Co., and William C. Dietz of Lockheed Corp. Each fellowship represents a donation of \$1,000 to AEF.

The Central Florida Chapter also appreciates the role played by chaplains. At a recent chapter meeting, National President James M. McCoy recognized the service of chaplain Lt. Col. James S. Speese, USAF (Ret.), chapter (and state) chaplain, with the George Washington Honor Medal. Chaplain Speese has contributed inspirational messages to the chapter's newsletter and performed many patriotic services around the state.

**Gathering of Former Presidents**

Well over a century of AFA membership was represented by a single table at a recent luncheon at the Bel Air Country Club in California. Three former national presidents met to discuss old times and renew old friendships. Arthur F. Kelly (1952-53), Thos. F. Stack (1960-61), and John B. Mont-



*At AFA's annual Foreign Air Attachés Reception, National President James M. McCoy (right) and AEF President Thomas J. McKee (left) greet Maj. Gen. Olav F. Aamoth, defense and air attaché, Royal Norwegian Embassy. General Aamoth was one of twenty-five attachés who attended the reception.*

gomery (1962-63), all of whom now serve as national directors, enjoyed a long visit that brought back many vivid memories.

### Corrections

On p. 81 of the March 1994 "AFA/AEF Report," the rank of Gen. John W. Pauly, USAF (Ret.), was stated incorrectly. He retired as a four-star general.

In the April 1994 "AFA/AEF Report" (p. 87), the title of National President James M. McCoy was incorrectly stated.

We regret the errors.

### Have AFA/AEF News?

Contributions to "AFA/AEF Report" should be sent to Dave Noerr, AFA National Headquarters, 1501 Lee Highway, Arlington, VA 22209-1198. ■

## Coming Events

May 6-7, **Mississippi State Convention**, Biloxi, Miss.; May 6-7, **North Carolina State Convention**, Fayetteville, N. C.; May 7, **Massachusetts State Convention**, Boston, Mass.; May 13-14, **South Carolina State Convention**, Sumter, S. C.; May 13-14, **Tennessee State Convention**, Knoxville, Tenn.; May 20, **Maryland State Convention**, Andrews AFB, Md.; May 21, **Connecticut State Convention**, Rocky Hill, Conn.; June 10-12, **Arizona/Nevada State Convention**, Las Vegas, Nev.; June 10-12, **New York State Convention**, Cheektowaga, N. Y.; June 17-18, **Missouri State Convention**, Whiteman AFB, Mo.; June 24-26, **Alabama State Convention**, Huntsville, Ala.; June 24-26, **Ohio State Convention**, Newark, Ohio; July 8-9, **Virginia State Convention**, McLean, Va.; July 15-18, **Oregon State Convention**, Portland Ore.; July 15-18, **Pennsylvania State Convention**, Pittsburgh, Pa.; July 22-24, **Texas State Convention**, Fort Worth, Tex.; July 29-31, **Florida State Convention**, Melbourne, Fla.; August 5-6, **New Mexico State Convention**, Albuquerque, N. M.; August 6, **Montana State Convention**, Three Forks, Mont.; August 6-7, **Iowa State Convention**, Des Moines, Iowa; August 12-13, **Arkansas State Convention**, Hot Springs, Ark.; August 12-14, **California State Convention**, Vandenberg AFB, Calif.; August 19-21, **Kansas State Convention**, Wichita, Kan.; August 20, **Indiana State Convention**, Indianapolis, Ind.; September 12-14, **AFA National Convention and Aerospace Technology Exhibition**, Washington, D. C.

## Unit Reunions

### Fiftieth Anniversary of the United States Air Force

Seeking veterans/unit reunion groups and individuals interested in participating in USAF fiftieth-anniversary activities in Las Vegas, Nev., April 22-26, 1997. **Contact:** Jim McDonnell, Air Force Association, 1501 Lee Hwy., Arlington, VA 22209. Phone: (800) 727-3337.

#### Air Force Public Affairs Alumni Ass'n

The Air Force Public Affairs Alumni Association, including those who served in Air Force Public Affairs/Broadcasting Service, will hold a reunion June 10-11, 1994, at the Airport Hilton Hotel in San Antonio, Tex. **Contact:** John G. Terino, P. O. Box 540, Fairfax, VA 22030-0540.

#### Air Force Photo Mapping Ass'n

Air Force Photo Mapping personnel will hold a reunion September 14-18, 1994, at the Marriott Hotel Southeast in Denver, Colo. **Contact:** Arthur Olofson, 1428 S. Lansing, Aurora, CO 80012. Phone: (303) 755-9543.

#### Air Rescue Ass'n

The Air Rescue Association will hold a reunion September 7-11, 1994, in Portland, Ore. **Contact:** Roy E. Jacobsen, P. O. Box 14225, Scottsdale, AZ 85267-4225. Phone: (602) 948-6660.

#### Amarillo AFB Personnel

Military and civilian personnel who were stationed at Amarillo AFB, Tex., will hold a reunion May 20-21, 1994, in Amarillo. **Contact:** Robert P. Balliett, 6305 Stoneham Dr., Amarillo, TX 79109. Phone: (806) 352-8875 or (806) 355-0242.

#### B-58 Hustler Ass'n

Members of the B-58 Hustler Association will hold a reunion June 3-5, 1994, at the Green Oaks Inn in Fort Worth, Tex. **Contact:** John Yuill, P. O. Box 126158, Fort Worth, TX 76126. Phone: (817) 244-5005.

#### Bainbridge AB

Bainbridge AB/Southern Airways School alumni, personnel, students, and permanent party military personnel will hold a reunion September 2-4, 1994, in Bainbridge, Ga. **Contact:** Max E. Horn, 2114 High Rd., Tallahassee, FL 32303. Phone: (904) 385-4419.

#### Childress Army Airfield

Army Air Force Aviation Cadets who served at Childress AAF, Tex., will hold a fiftieth-anniversary reunion September 9-11, 1994, at the Red Lion Hotel in Colorado Springs, Colo. **Contact:** Anderson Chandler, P. O. Box 1737, Topeka, KS 66601-1737.

#### Meteorology Cadets

Members of Class 44-C, pre-Meteorology Cadets School, US Army Air Forces, will hold a reunion June 10-13, 1994, at Reed College in Portland, Ore. **Contact:** Harry Bernat, 7202 Cloverdale Dr., Oxon Hill, MD 20745. Phone: (301) 839-2693.

#### Pararescue Ass'n

The Pararescue Association will hold a reunion September 8-10, 1994, at the Sahara Hotel in Las Vegas, Nev. **Contact:** Bill Vargas, P. O. Box 13351, Albuquerque, NM 87192-3351.

#### Spectre Ass'n

Veterans and associates of AC-130 gunship operations will hold a reunion October 7-9, 1994, at Hurlburt Field, Fla. **Contact:** Spectre Association, P. O. Box 707, Mary Esther, FL 32569.

#### USAFSS/ESC

The Air Force Security Service/Electronic Security Command Association will hold a reunion September 29-October 1, 1994, at Kelly AFB, Tex. **Contact:** Dominick A. Cardonita, Air Intel-

ligence Agency, Office of Security Police, San Antonio, TX 78243-7036. Phone: (210) 977-2888.

#### 1st Fighter Group Ass'n

Veterans of the 1st Fighter Group will hold a reunion September 8-11, 1994, at the Antlers Doubletree Hotel in Colorado Springs, Colo. World War II and post-World War II veterans are welcome. **Contact:** Robin Hansen, 70 Leslie Rd., Waltham, MA 02154.

#### 8th Air Force Historical Society

The Pennsylvania Chapter of the 8th Air Force Historical Society will hold a reunion June 17-19, 1994, at the Sheraton Valley Forge Hotel in Valley Forge, Pa. **Contact:** Peter F. Ardizzi, 835 Saint Davids Ave., Warminster, PA 18974-2548.

#### 8th Tactical Fighter Wing

Members of the 8th Tactical Fighter Wing "Wolf Pack" will hold a reunion September 15-18, 1994, at the Ramada Beach Resort in Fort Walton Beach, Fla. **Contact:** Col. Bill Higginbotham, USAF (Ret.), P. O. Box 143, Shalimar, FL 32579. Phone: (904) 729-1130.

#### 15th Bomb Squadron

Veterans of the 15th Bomb Squadron (World War II) will hold a reunion September 8-11, 1994, in Colorado Springs, Colo. **Contact:** William C. Odell, 109 Anchoria Way, Colorado Springs, CO 80919. Phone: (719) 598-3715.

#### 28th Wing Ass'n

Veterans of the 28th Wing who served between 1947 and 1959 will hold a reunion September 15-19, 1994, in Rapid City, S. D. **Contact:** Don Strachan, P. O. Box 3092, Rapid City, SD 57709-3092. Phone: (605) 348-4573 or (605) 341-6090.

#### 33d Air Depot Group

Veterans of the 33d Air Depot Group will hold a reunion September 13-14, 1994, in Frankenmuth, Mich. **Contacts:** Herbert L. Cooper, 643 Reynosa Ct., Berea, OH 44017. Phone: (216) 234-9007. Robert Gocholl, 10280 Pendery Dr., Cincinnati, OH 45242. Phone: (513) 891-7742.

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## Unit Reunions

### 39th Troop Carrier Squadron

Veterans of the 39th Troop Carrier Squadron, 317th Troop Carrier Group (World War II), will hold a reunion September 22–25, 1994, in Dayton, Ohio. **Contact:** Max Archer, 3444 Columbia View Dr., The Dalles, OR 97058. Phone: (503) 298-1918.

### Class 43-K

Members of Class 43-K (Central Flying Training Command) will hold a reunion September 7–11, 1994, in Colorado Springs, Colo. **Contact:** Lt. Col. Harold A. Jacobs, USAF (Ret.), 17545 Drayton Hall Way, San Diego, CA 92128. Phone: (619) 485-5041.

### Class 44-G

Members of Pilot Class 44-G (Marianna, Fla.) will hold a reunion August 4–6, 1994, in Colorado Springs, Colo. **Contact:** Lt. Col. Charles L. Brown, USAF (Ret.), 3018 Shady Knoll Ln., Bedford, TX 76021-4120. Phone: (817) 498-7334.

### 48th Troop Carrier Squadron

Veterans of the 48th Troop Carrier Squadron, 313th Troop Carrier Group, will hold a reunion June 4–6, 1994, in Warner Robins, Ga. **Contact:** Robert H. Lynn, RR 6, Box 5768, Dawsonville, GA 30534-9806. Phone: (706) 265-4331.

### 79th Fighter Group Ass'n

Veterans of the 79th Fighter Group and assigned squadrons will hold a reunion September 11–14, 1994, at the Marriott Riverwalk Hotel in San Antonio, Tex. **Contact:** Edwin Newbould, 1206 S. E. 27th Terrace, Cape Coral, FL 33904. Phone: (813) 574-7098.

### 85th Bomb Squadron

Veterans of the 85th Bomb Squadron who served in Sculthorpe, England, between 1952 and 1962, will hold a reunion starting July 13, 1994, in Omaha, Neb. **Contact:** William R. Morris, 4924 Pinkney St., Omaha, NE 68104. Phone: (402) 455-8818.

### 93d Troop Carrier Squadron

Veterans of the 93d Troop Carrier Squadron, 439th Troop Carrier Group, will hold a reunion September 14–18, 1994, at the Holiday Inn Boeing Field in Seattle, Wash. **Contact:** Lt. Col. Thomas L. Morris, USAF (Ret.), 456 Saint George's Ct., Satellite Beach, FL 32937. Phone: (407) 773-6960.

### 99th Bomb Group

Veterans of the 99th Bomb Group will hold a reunion starting September 5, 1994, in Hampton, Va. **Contact:** Robert J. Bacher, 692 N. Abbe Rd., Elyria, OH 44035-3044. Phone: (216) 365-3032.

### 246th Signal Operations Co.

Veterans of the 246th Signal Operations Company (World War II) will hold a reunion August 4–6, 1994, in Johnson City, Tenn. **Contact:** Marie Huggins, 30031 S. W. 169th Ave., Homestead, FL 33030. Phone: (305) 247-0150.

### 305th Bomb Group

Veterans of the 305th Bomb Group, 8th Air Force, will hold a reunion September 21–24, 1994, in Kansas City, Mo. **Contact:** Ridgely D. Kemp, 572 Fairway Dr., Novato, CA 94949. Phone: (415) 883-5792.

### 308th Bomb Wing

Veterans of the 308th Bomb Wing and the 373d, 374th, 375th Bomb Squadrons, 308th Air Refueling Squadron, and maintenance squadrons who served 1952–59 at Hunter AFB, Ga., will hold a reunion June 9–11, 1994, in Dayton, Ohio. **Contact:** Les Clark, 8115 E. New Carlisle Rd., New Carlisle, OH 45334. Phone: (513) 845-8407.

### 312th Bomb Group

Veterans of the 312th Bomb Group "Roarin' 20s" who served in World War II will hold a reunion

September 22–25, 1994, at the Hilton Inn in Colorado Springs, Colo. **Contacts:** Miles Fraizer, 203 Kenilworth Ave., 2-G, Oak Park, IL 60302. Phone: (708) 848-3324. Paul M. Stichel, 1136 Gray Ave., Greenville, OH 45331. Phone: (513) 548-5767.

### 316th Troop Carrier Group

Veterans of the 316th Troop Carrier Group will hold a reunion September 8–11, 1994, in Washington, D. C. **Contact:** Mike Ingrisano, 1839 Rupert St., McLean, VA 22101-5434. Phone: (703) 356-5538.

### 325th Fighter Group

Veterans of the 325th Fighter Group "Checkertail Clan" (World War II) will hold a reunion July 21–24, 1994, at the Days Inn in Bloomington, Minn. **Contacts:** Dan Penrod, 69 Keswick Ave., Pittsburgh, PA 15202. Phone: (412) 766-6190. D. J. MacDonald, 50 Groveland Terrace, Minneapolis, MN 55403-1115. Phone: (612) 377-8420.

### 340th/341st Fighter Squadrons

Veterans of the 340th and 341st Fighter Squadrons, 348th Fighter Group, 5th Air Force (World War II), will hold a reunion September 22–25, 1994, in Overland Park, Kan. **Contacts:** Jack A. Quinlan, 3301 Van Buren, Topeka, KS 66611. Phone: (913) 267-0040 (340th contact). Tony Gibbons, 18 Burgundy Dr., Lake Saint Louis, MO 63367. Phone: (314) 625-3016.

### 344th Bomb Group Ass'n

Veterans of the 344th Bomb Group will hold a reunion September 20–22, 1994, in Shreveport, La. **Contact:** Jack A. Terrill, 372 Atlantic Ave., Shreveport, LA 71105. Phone: (318) 868-1377.

### 351st Bomb Group Ass'n

Veterans of the 351st Bomb Group will hold a reunion June 22–25, 1994, in Salt Lake City, Utah. **Contact:** Ted G. Mahas, 2122 E. Browning Ave., Salt Lake City, UT 84109. Phone: (801) 521-7533 (office) or (801) 581-0953 (home).

### 379th Bomb Group

Veterans of the 379th Bomb Group, which included the 524th, 525th, 526th, and 527th Bomb Squadrons, will hold a reunion September 7–11, 1994, in Nashville, Tenn. **Contact:** Frank L. Betz, 732 Emerald Dr., Lancaster, PA 17603.

### 398th Bomb Group

Veterans of the 398th Bomb Group (World War II) will hold a reunion September 21–24, 1994, in Tucson, Ariz. **Contact:** George R. Hilliard, 7841 Quartermaine Ave., Cincinnati, OH 45236-2313.

### 429th Bomb Squadron

Veterans of the 429th Bomb Squadron will hold a reunion September 8–11, 1994, at the Marriott Hotel in Albuquerque, N. M. **Contact:** Sam Pachanian, 8711 La Sala Del Sur N. E., Albuquerque, NM 87111. Phone: (505) 298-6184 or (505) 292-9177.

### 453d Bomb Squadron

Veterans of the 453d Bomb Squadron, 323d Bomb Group, 9th Air Force (World War II), will hold a reunion September 5–8, 1994, at the Tropicana Hotel in Las Vegas, Nev. **Contact:** C. V. Sochocki, 1314 N. Brookfield St., South Bend, IN 46628-3074. Phone: (219) 233-6044.

### 454th Bomb Group

Veterans of the 454th Bomb Group (World War II) will hold a reunion August 30–September 4, 1994, in New Orleans, La. **Contact:** Ralph Branstetter, P. O. Box 678, Wheat Ridge, CO 80034. Phone: (303) 422-6740.

### 455th Bomb Squadron Ass'n

Veterans of the 455th Bomb Squadron, 323d Bomb Group, 9th Air Force (World War II), will hold a reunion September 14–18, 1994, in Chey-

enne, Wyo. **Contact:** Bill Brier, 830 Pike St., Cheyenne, WY 82009. Phone: (307) 632-6575.

#### 459th Fighter Squadron

Veterans of the 459th Fighter Squadron will hold a reunion September 8-11, 1994, in Oklahoma City, Okla. **Contact:** Wayne Sneddon, P. O. Box 117, Pilot Hill, CA 95664.

#### 464th Bomb Group

Veterans of the 464th Bomb Group will hold a reunion September 22-25, 1994, at the Airport Hilton Hotel in Wichita, Kan. **Contact:** I. R. Mitchell, 230 S. Ashley Park, Wichita, KS 67209. Phone: (316) 263-3559.

#### 487th Bomb Group

Veterans of the 487th Bomb Group, 8th Air Force (World War II), will hold a reunion August 17-21, 1994, in San Antonio, Tex. **Contact:** Paul L. Biri, 7373 Jefferson Hwy., Apt. 48, New Orleans, LA 70123. Phone: (504) 737-1341.

#### 492d Bomb Group

Veterans of the 492d Bomb Group will hold a reunion in conjunction with the 2d Air Division Association May 28-31, 1994, at the Hyatt Hotel in Kansas City, Mo. **Contact:** Willis H. Beasley, 1525 S. Garfield St., Denver, CO 80210-3022. Phone: (303) 756-4766.

#### 509th Composite Group

Veterans of the 509th Composite Group will hold a reunion September 1-4, 1994, at the Fairmont Hotel in Chicago, Ill. **Contact:** Fred Olivi, 2535 W. 117th St., Chicago, IL 60655. Phone: (312) 881-0233.

#### 921st Military Airlift Group

Veterans of the 34th Aeromedical Evacuation Squadron, 921st Military Airlift Group, who served between 1968 and 1969 will hold a reunion June 3, 1994, at Lackland AFB, Tex. **Contact:** Carolyn Marshall, 433d Airlift Wing/CCP, 203 Galaxy Rd., Kelly AFB, TX 78241-5554. Phone: (210) 977-4331.

#### 3910th Bomb Group

Veterans of the 3910th Bomb Group, 7th Air Division, and the Army's 4th AAA stationed at RAF Stations Wyton, Upper Heyford, Mildenhall, and Lakenheath (1950-1953) will hold a reunion August 12-15, 1994, in Kansas City, Mo. **Contact:** Bill G. Parkhurst, P. O. Box 2881, Tulsa, OK 74101. Phone: (918) 446-6400.

#### 6166th Air Weather Recon Flight

Veterans of the 6166th Air Weather Reconnaissance Flight, 67th Tactical Reconnaissance Wing, who served in Korea 1950-53 will hold a reunion May 8-11, 1994, at the Holiday Inn in Pensacola Beach, Fla. **Contact:** CMSgt. Richard H. Langill, USAF (Ret.), P. O. Box 162, Plainfield, NH 03781-0162. Phone: (603) 675-6938.

#### 7330th Flying Training Wing

Veterans of the 7330th Flying Training Wing who served at Fürstenfeldbruck AB, Germany, will hold a reunion September 8-11, 1994, at the Embassy Suites Hotel in Colorado Springs, Colo. **Contact:** Father William L. Travers, American Embassy, Bonn, Germany, Box 270, APO AE 09080.

**Readers wishing to submit reunion notices to "Unit Reunions" should mail their 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.**

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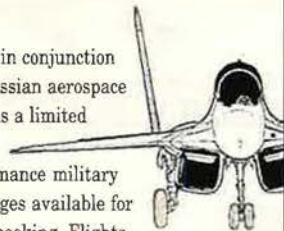
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## Bulletin Board

Seeking the whereabouts of **Wendy Sindelar**, from New York, who completed technical training at Keesler AFB, Miss., in late 1986. She was later stationed in the UK. **Contact:** SSgt. Tim Lindell, 488 IS, PSC 37, Box 2608, APO AE 09459.

Seeking a "Best FB-111 Mission" tab patch, worn in the 1974 SAC Bombing-Navigation Competition, and scarves and stickers from the 393d, 528th, 529th, and 715th Bomb Squadrons; 340th Bomb Group; 380th and 509th Bomb Wing; 4007th Combat Crew Training Squadron; and 530th CCTS/Strategic Bombing Training Squadron. Also seeking contact with **former FB-111 pilots and navigators** for FB-111 memorabilia. **Contact:** Curtis J. Lenz, 32 June St., Nashua, NH 03060-5345.

Seeking contact with former members of the **24th Support Squadron**, later known as the **24th Aerospace Defense Squadron**, on Johnston Island in the Pacific, 1967 to 1971. **Contact:** SMSgt. Eric G. Lemmon, USAF (Ret.), 4416 Titan Ave., Lompoc, CA, 93436-1027.

Seeking information on P-47 Thunderbolt pilot **Lt. John H. Wheeler**, of the 366th Fighter Squadron, who was killed in action in Orne, France, in July 1944. He may have been a member of the 358th Fighter Group. He was born in Springfield, Mass., and is buried in Normandy American Military Cemetery, St. Laurent-sur-Mer, France. **Contact:** Rudolph E. Atmus, P. O. Box 202, McDonough, GA 30253.

Seeking the whereabouts of **D. N. Hedged, John C. Gilliland, Joseph Malia, Lemuel R. Orr, Roy L. West, and Charles A. Wooten**, who parachuted from a B-25 that crash-landed near Rawlins, Wyo., on December 17, 1945. **Contact:** Frederick B. Turner, 711 Kingman Ave., Santa Monica, CA 90402.

Seeking contact with **Melissa Keller**, who was stationed with the 3411th Schoolhouse Squadron at Keesler AFB, Miss., from October 1980 to May 1981. **Contact:** Alan Martin, 20702 El Toro Rd. #288, Lake Forest, CA 92630.

Collector seeking **EF/FB-111-related patches, "zaps," scarves, and memorabilia**, especially from the 832d, 817th, and 45th Air Divisions; 481st Tactical Fighter Squadron; 530th Strategic Bombing Training Squadron, 4427th Tactical Fighter Training Squadron/Tactical Fighter Replacement Squadron, 4520th Combat Crew Training Wing, and 388th Electronic Combat Squadron. Also seeking an **FB-111A Swing-Wing Crow "Defendre" patch**. **Contact:** Robert E. Styger, 15 Genesee Ln., Willingboro, NJ 08046-3319.

Seeking contact with **1st Lt. Donald MacDonald**, copilot **Norman F. Massett**, bombardier **Thomas G. Ellison**, and navigator **Orlando Hamlin**, all from the World War II B-17E bomber *Scheherazade*. **Contact:** Ed Patterson, 5689 W. Tice Ct., Homosassa, FL 34446.

Seeking donations of **pilot training classbooks** from all classes and bases for the fiftieth anniversary of Air Education and Training Command. Collection will be maintained permanently in the command archives. **Contact:** Headquarters, AETC/HO, 100 H St., Suite 5, Randolph AB, TX 78150-4332.

Seeking squadron **patches, unofficial insignia, and foreign awards** made overseas, especially those that come with information about their owners. Also seeking information on the design and procurement of unofficial insignia worn during any conflict. **Contact:** Daniel J. Miller, 1055 W. Northwood, Caro, MI 48723.

Seeking information on **Major Obelensky**, who was stationed at Harrington, England, in August 1944. He flew a mission with the RAF to drop paratroopers into France to capture a bridge. **Contact:** CMSgt. William A. Hodgen, USAF (Ret.), 13035 Chimney Oak Dr., San Antonio, TX 78249.

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40-44	10.80	14.55	13.26	17.01
45-49	18.06	25.56	22.20	29.70
50-54	27.00	36.99	33.18	43.17
55-59	38.70	53.70	47.58	62.58
60-64	59.82	84.81	73.56	98.55
65-69	135.00	172.50	165.96	203.52
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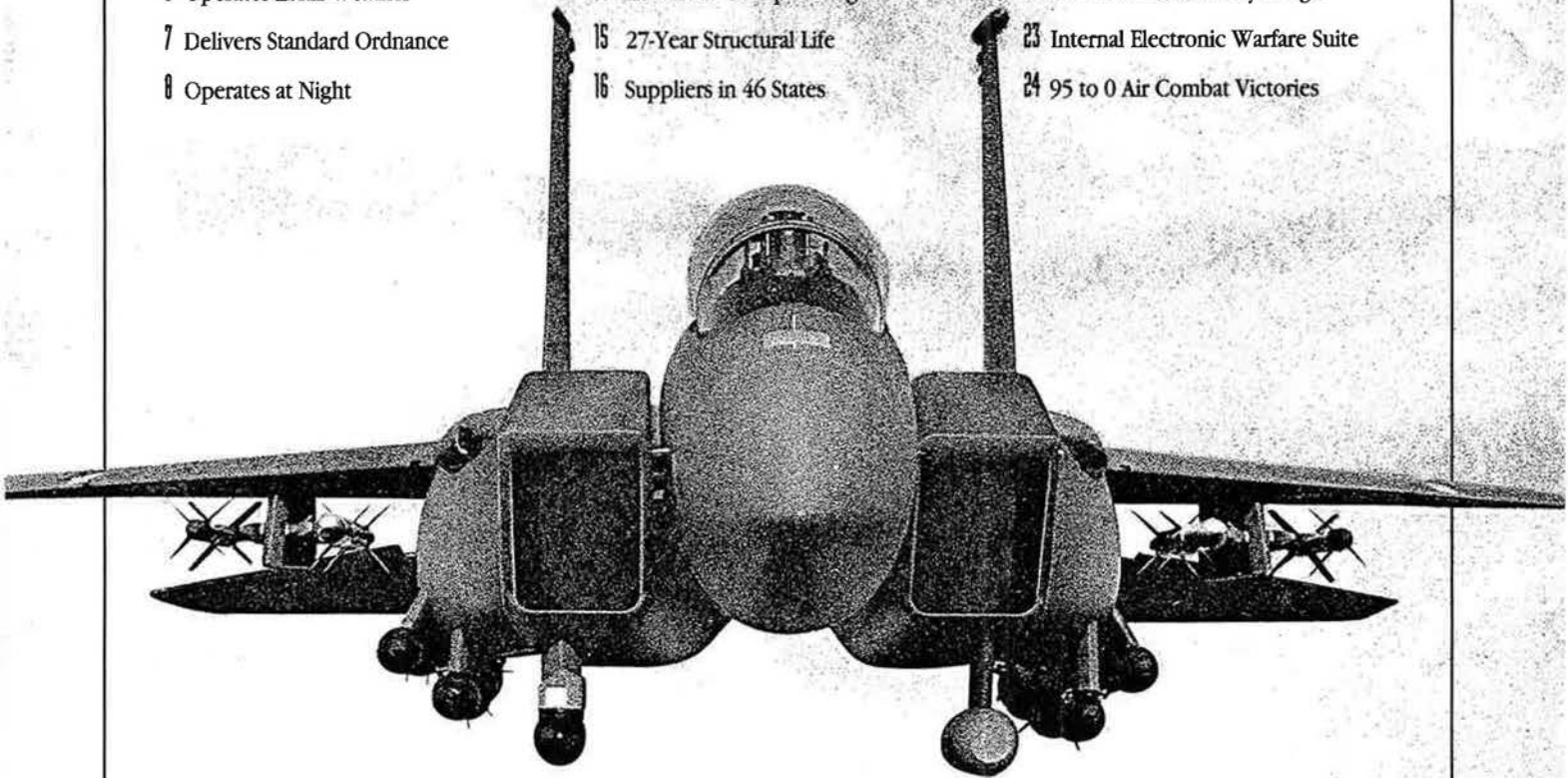
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