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May 2008, Vol. 91, No. 5

AIR FORCE MAGAZINE

JOURNAL OF THE AIR FORCE ASSOCIATION

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About the cover: A bald eagle photographed by Tom and Pat Leeson. "USAF Almanac 2008" starts on p. 34.

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Editorial

By Robert S. Dudney, Editor in Chief

Questions for the Candidates

At an April 9 Senate hearing, the Air Force warned that it faces a future shortage of some 800 fighters, the aircraft needed to ensure US air dominance. The public shrugged.

It is time to accept that the erosion of US airpower—and of the US military generally—doesn't move the people. A Gallup Poll says 74 percent of Americans think we spend either "too much" or the right amount on defense. It's no surprise, therefore, that military problems (except for the Iraq War) rarely intrude on the Presidential campaign. No candidate has made a special point of rebuilding our worn-out forces.

Such serene indifference has an expiration date. The next President, on Inauguration Day, will confront some nasty, complex, and unavoidable problems, as President Bush hands over a force pushed to near-collapse by underfunding and overuse.

With serious problems besetting the Air Force, the three candidates should be asked a few questions, if only to kick off a process of educating the public. Herewith are our offerings:

You may or may not be aware that the USAF fleet of fighters, bombers, airlifters, tankers, and other airplanes is the smallest and oldest in history. Over the past 23 years, it has shrunk 40 percent (down from 7,000 to 4,300 aircraft), yet average aircraft age has simultaneously soared from 13.6 years to 24 years because we didn't buy new ones. Are you concerned about relying on such a geriatric fleet? If so, what are you going to do about it?

Gen. John D. W. Corley, head of USAF's Air Combat Command, points out that an astounding 86 cents of every "modernization" dollar spent on these "legacy" airplanes goes to keep them safe and flyable, with only 14 cents of the dollar actually paying for increased capability. Does that seem wasteful to you?

USAF considers 2,250 fighters to be a rock-bottom requirement through 2025. Lt. Gen. Daniel J. Darnell, deputy chief of staff for operations, told Senators on April 9 that a gap of 800 fighters will open up between 2017 and 2024. The biggest cause is laggard production of the new F-35; at the currently planned rate of 48 per year, acquisition of all 1,763 fighters will take three decades. You have a choice of solutions: speed F-35 purchases, patch up old F-16s and A-10s to fill the gap, or live with the problem. Any of the three will cause pain. Which will it be?

Bush has begun expanding the Army and Marine Corps, tapping Air Force accounts to help pay for it. Do you support this? If "Yes," then tell us: What can be achieved with 92,000 more "boots on the ground" that is more important than assuring US air dominance?

The nation's military enters "a period of consequences."

In 2001, a Pentagon mobility study and subsequent analysis of alternatives found that the US needed a fleet of at least 222 C-17 airlifters. That was before the 9/11 attacks, the Global War on Terrorism, and the Afghanistan and Iraq wars, which expanded mobility needs again. Yet today, DOD proposes to shut down C-17 production at only 190 aircraft. What do you make of this decision?

Certain officials within the Office of the Secretary of Defense have cut nearly 200 fighters from USAF's F-22 program, leaving a mere 183. However, the Air Force says it needs a minimum of 381 Raptors to equip its 10 Air and Space Expeditionary Forces. This is the first new air superiority fighter to reach the Air Force in three decades. Pentagon chief Robert M. Gates admits he is now punting the next move to you. Do you, or do you not, support additional F-22 production?

If the answer is "Not," then you must know of some other means by which USAF can be sure of defeating increasingly powerful adversary fighters and air defense systems. What is it?

USAF was compelled to cut 60,000 airmen from its active force to find the money for weapon modernization (see above). Is it ever OK to force a service into such a trade-off?

Today's Pentagon leadership harbors the view that the United States does not now and will not anytime soon face a traditional "peer" or "near-peer" rival. Do you agree that neither China nor Russia fit that description? Also: This view serves as the basis of a reorientation of our forces away from high-performance fighters, warships, and other "conventional war" systems and toward light infantry and similar elements optimized to deal with "irregular" opponents. Do you believe it is more important to emphasize irregular combat over potential slugfests with major national military forces?

Speaking of preparations for irregular, Iraq-like operations: Can you see yourself taking America into another such war anytime soon?

The relative defense-spending burden on American taxpayers is at historically low levels—equivalent to about 3.4 percent of Gross Domestic Product (not counting the costs of wars in Iraq and Afghanistan, which have nothing to do with maintaining a strong military). Under Ronald Reagan, equipping, manning, and sustaining the force took six percent. Today's Chairman of the Joint Chiefs of Staff, Adm. Michael G. Mullen, calls for raising today's DOD budget modestly to the equivalent of four percent of GDP, or $600 billion a year. Do you believe that level is affordable?

Top Air Force leaders say it will take an additional $20 billion a year to fix the service's hardware woes. Do you believe *that* level is affordable?

Come to think of it, how do you define "affordable"? Will you apply the same standard to popular entitlement programs such as Social Security, Medicare, and Medicaid?

In September 1999, then-candidate George W. Bush delivered a major defense policy speech—his first—at the Citadel in South Carolina. In it, he laid out his goals for the armed forces. "Moments of national opportunity," he said, "are either seized or lost, and the consequences reach across decades." He titled the speech, "A Period of Consequences."

We now are entering this period of consequences, and things don't look good. The armed forces have gotten older, mostly smaller, and lacking in the resources needed for the long haul in a dangerous world.

The membership of the Air Force Association eagerly awaits word on how you plan to turn things around. ■

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Letters

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A Question of Influence

Robert S. Dudney's editorial *["Beyond the F-22 Problem," March, p. 2]* and Rebecca Grant's article *["Why Airmen Don't Command," March, p. 46]* lament the decline in Air Force political clout which they claim limits command opportunities for the service's most senior officers and constrains its acquisition programs. This seems wrong for two reasons. First the Air Force isn't that powerless, and, second, it has been the champion of the cause of its own limitation.

It should not be surprising that the ground combat services, the Army and the Marine Corps, fare relatively better when the nation is engaged in ground combat as it is in Iraq and Afghanistan than when it is not. This happened also during Korea and Vietnam. The budget share for at least the Army always fades when the wars are over. If the Air Force wants to know what it really feels like to be fourth in line most of the time, just consult with Army leaders who face constant poaching from the marines, the National Guard, and special operations. The nation's aerospace giants may be seeking some of the Army's business these days, but only after maxing out at the Air Force and Navy tables first. The Air Force surely isn't that unaware of the division in the R&D and procurement budgets.

The Air Force has been a champion of jointness, which helps stymie interservice rivalries and the opportunities for the Air Force to assert the Billy Mitchell thesis. In the supposedly bad old days before Goldwater-Nichols, the Air Force not only dreamed of but actually achieved the 50 percent mark as its budget share. With jointness comes the notion that marines should be in charge of strategic forces and naval officers in charge of ground combat. This is a brew of the Air Force's own making. Again, ask the Army about joint command billets.

But I do not worry much for the Air Force's future. When we lose our taste for counterinsurgency, which we surely will, the advantages of long-range strike and air attacks will again come to the fore.

Moreover, the combined force air component commander's post is likely to be the seat of power in future wars. Central control of fires is a conquering argument and one the Air Force successfully makes. How often is the air boss a naval officer or a soldier?

Harvey M. Sapolsky
Cambridge, Mass.

I found the article *["Why Airmen Don't Command," March, p. 46]* quite fascinating. After I finished it, I referred back to the editorial. Robert S. Dudney highlights the question of why the Pentagon doesn't take the Air Force seriously: "Why, on an issue of supreme importance to the Air Force, does the Pentagon find itself unable to agree with USAF's leadership?" I would suggest the answer to that question can be found in the conclusions drawn by Rebecca Grant in her article: "Get in the game."

SMSgt. Jim Gordon,
USAF (Ret.)
Laurel, Md.

In response to the article, I must say that once again Ms. Grant misses the point in her zealous promotion of USAF. If you start with Air Force doctrine, we ourselves hold that airpower must be commanded by airmen, and that the JFACC will usually be an Air Force officer, because we supply the preponderance of the air forces. To think, then, that the command of very "ground force heavy" commands like EUCOM and CENTCOM will frequently

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Letters

fall to anyone other than a ground combat commander is a bit naive. Secondly, if you examine the education and training of Air Force officers, we (understandably) promote "air mindedness," and the command and control of air and space assets. However, unless you deliberately educate and train our airmen in the command and control of ground forces (as part of a balanced joint education), you will not create a large pool of airmen who are prepared to lead ground-centric operations. Lastly, in the very same issue, on p. 54 *["DOD Senior Leadership"]*, anyone can see the results of how we do business. By my very simple count of the photographs there, a USAF officer commands three of the 10 combatant commands (TRANSCOM, STRATCOM, and NORTHCOM). The remaining commands score as Army, two; Marines, one; and Navy, four. Politics will always play a role (perhaps a rereading of Clausewitz is in order). But instead of blaming Machiavellian politics, as does Ms. Grant in her conclusion, we might profit more by re-examining how we develop leaders to be true joint warfighters.

Col. Thomas Huizenga
Bagram AB, Afghanistan

Rebecca Grant's article asked [an important] question. While her conclusions were certainly valid, I believe she may have missed a key factor in our modern Air Force. Unfortunately, USAF leadership is too focused on the instrument of airpower, the airplane, than the actual warrior's application of airpower. USAF generals for the most part are pilots and they grudgingly (if ever) remove themselves from their first love, the airplane. To become a general, these officers spend a monastic existence in the presence of their airplane and crew, assuming they are in a crewed aircraft. Many of these officers never experience any other life than that of an operations squadron, group, and then wing commander. Many never learn how to motivate their subordinates because as a rule, they are usually serving as highly paid technicians flying their airplanes.

If all line officers are considered "airmen" why do we segregate them as rated and nonrated? Why do we overlook officers who have mastered many key elements of airpower just because they can't fly an airplane? Why do we advance officers who have only mastered flying an airplane and haven't a clue where the gas, technicians, ammo, security, parts, infrastructure, or computer support come from? While I believe pilots can and should have key input to air operations, I cannot conceive of a single reason why other officers could not be in a leadership position soliciting that input.

If being a "good stick" was vital to knowing about airpower, Guilio Douhet, an artillery officer, was a dismal failure. His seminal book, *Command of the Air*, in 1921 should have been overlooked and never incorporated into the curriculum of the Air Corps Tactical School. Fortunately, our early airpower pioneers got their start as Army officers and then transitioned to aircraft—many had a distinct appreciation of the concerns, limitations, and unique characteristics of the Army. Perhaps this was the reason they didn't throw out Douhet's theories and built Eighth Air Force and orchestrated the strategic bombing campaign against Hitler's Germany.

Maybe we're grooming the wrong people for leadership? I deployed as ADVON for a hostile entry NEO and was also tasked with briefing the CONOPS to a unit assigned to provide CAS. I was wearing the uniform my CG—an Army two-star—sent me in: a sanitized flight suit with only rank on it. My briefing was well-received and the unit immediately went to work refining their task. I was welcomed into their squadron and given the combination to the cipher lock of their ops center. Four days later, the mission was scrubbed by the NCA and I reverted to wearing all prescribed badges and patches. I was no longer welcomed in that ops squadron because I was nonrated. Until they saw my lack of flight wings, they never questioned my briefing or competence.

I believe it's clear what is wanted in regional commands: a broad knowledge of military, social, and economic concepts; employment of a vast spectrum of military forces; an extensive knowledge of military theory (and not just airpower) and history (from both sides); a willingness to assemble your forces based on the situation at hand and resources available; and a warrior's heart. You can find a FedEx pilot with tons of hours, but does he have the other qualities?

Lt. Col. David J. Wallace,
USAF (Ret.)
Kokomo, Ind.

Rebecca Grant really makes the case for something I have argued for a number of years—joint promotion processes at the flag and general officer level.

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Nichols over two decades ago, the services have individually wrestled with how to meet their requirements for "jointness." While serving on the Joint Staff during Desert Shield/Desert Storm, I saw firsthand how difficult it was to conduct that campaign following the principles of jointness as directed by Goldwater-Nichols. We've come a long way since then and certainly the ability to fight jointly is much improved.

Another positive step towards truly institutionalizing jointness would be to create a promotion system for flag and general officers at the two-, three-, and four-star level. Officers can and should be selected for flag rank within their respective service, but beyond that, senior leadership needs to think and act with a more "purple" perspective. Though officers might be assigned to joint positions, my experience shows that when a policy issue needs to be addressed, the majority leans towards siding with the perspective of their respective service. Perhaps it's their cultural upbringing, but it could also be the knowledge that crossing their service could adversely affect their promotability within their service.

Promotion based upon a joint system, and conducted by a joint board, would work to eliminate that problem and ensure that all services have equal opportunity to command regional combatant commands based upon their joint qualifications vice a particular service affiliation.

Capt. Frank Roberts,
USN (Ret.)
Virginia Beach, Va.

As military personnel, we should all be concerned about the lack of procurement of documented USAF aircraft needs and the filling of high command positions by USAF personnel. The failure of qualified USAF officers to lead in the command positions such as CINCPAC has undoubtedly been a detriment to getting USAF Pacific aircraft requirements funded and also continues to degrade the Air Force's ability to compete weapon system requirements vs. other services.

As far as the CINCPAC position, the regrettable charade by certain Senate Armed Services Committee members definitely prevented a long needed Air Force commander to head up the CINCPAC position. In that position, the well-qualified USAF person could have highlighted Pacific Theater aircraft requirements and also the needs of the other services. Don't forget that the combined use of arms of our services did us well in Desert Storm, but we also have the reality that USAF flew some 80 percent of the key combat sorties vs. 20 percent for our US Navy/Marine brethren.

If and when we become engaged in a large crisis or conflict involving China and possibly Russia, we will need all our USAF documented aircraft requirements to carry out the commander's mission statement and to daily meet the air sortie requirements for the combat theaters.

Lt. Col. Sid Howard,
USAF (Ret.)
Oklahoma City

As usual, Rebecca Grant hit the nail on the head. I particularly appreciated her detailed review of the Senate Armed Services Committee hearing of Gen.

Gregory S. Martin's nomination to command US Pacific Command.

Regardless of anyone's personal politics, Senator McCain's intransigent pettiness cost the nation the capable, honorable service of General Martin when he subsequently withdrew his nomination and prematurely retired.

As a "disclaimer," I am not related to General Martin. It was my privilege to be the USAFE director of personnel (2000-01) when he was the commander, United States Air Forces in Europe.

Col. Frances C. Martin,
USAF (Ret.)
Interlachen, Fla.

Ms. Rebecca Grant does a major disservice to not only your readers but to the reality of the confrontation between Sen. John McCain and Gen. Gregory Martin on Oct. 6, 2004. Just five days prior to this confirmation hearing, Darleen Druyun had finally come clean regarding all of her lies and told her federal sentencing judge that she had steered lucrative Air Force contracts to Boeing for her and her family's financial gain in the form of jobs. On top of that, the Air Force leadership at that time had been doing its level best to stymie the efforts of Senator McCain in finding out what was happening regarding the KC-767 sweetheart deal with Boeing. Since General Martin had been over Druyun from July 1998 to January 2000 as the principal deputy, Office of the Assistant Secretary of the Air Force for Acquisition, Senator McCain rightfully took the opportunity to ask General Martin how Druyun's deceit/deception could have gone unnoticed by the Air Force leadership. What General Martin said in response was truly amazing: (1) He (Martin) was not an expert in contracting; (2) he (Martin) questioned if Druyun actually committed the crimes she stood accused of; and (3) he (Martin) had never seen Druyun act in an inappropriate manner while he worked with her. Perhaps General Martin was just incompetent in that acquisition job, but when he couldn't acknowledge Druyun's guilty plea in federal court nearly a week earlier, any rational observer would have questioned his ability to command.

I consider the whole Darleen Druyun

episode the greatest single blemish on the reputation of USAF since its founding in 1947. Yet revisionist commentators such as Ms. Grant are imparting a whole new spin on things (i.e., Senator McCain simply didn't want an Air Force general in command of the Pacific).

Ed Slana
Fairhope, Ala.

I read the subject article and I offer the following analysis from a retired enlisted perspective as to why our "leaders" don't command. In my 30 years in the Air Force (1976-2006), I had the rare privilege of working directly for general officers and working closely with several others. All were great men and managers, but not all of them great leaders. Let me explain. In the Air Force for many years, an officer who was considered "general officer material" was a pilot (there are several exceptions but they are not the norm) and more specifically a fighter pilot.

One has to ask how much leading a fighter pilot does in the cockpit as a young pilot. Not much is the only answer, and it shows as they matriculate up the ranks to a point where they finally begin to lead a large group of people, normally as a group/wing commander. They have honed their skills as managers of time, space, and of course money, but not people. This is where I believe they fall short on leadership. You don't lead things, you lead people, and it takes years of study and hands-on practice to become a great leader.

Change is needed; maybe the answer is a two track system—pilots forever and pilots to leaders. Until our Air Force gets this message, I don't think these "command" opportunities will become more plentiful. I thoroughly enjoyed being in the Air Force and I admire the men and women I worked for and always will, but change is needed.

CMSgt. D. B. Barton,
USAF (Ret.)
Montgomery, Ala.

I am constantly amazed that the Air Force thinks so highly of itself. To answer the question of why airmen don't command is very simple. The vast majority of airmen don't deserve to command at that level.

Until recent years, most airmen had seen very little actual combat, if any

at all. I consider combat being when you hear the bullets passing by your head, not shooting over the horizon at a target you never see. The Air Force doesn't teach officers to command at the level the article talks about. And, with the ingrained culture throughout the Air Force, the vast majority of airmen plan on getting out and retiring instead of planning on serving well beyond the traditional 20-year career. In other words, it's been my experience that most airmen lack the dedication to go all the way.

Quite simply, the Air Force needs to quit whining and crying and just grow up. The Air Force is over 60 years old now, and it's still looking for its identity.

I'm sorry if an airman has to go on convoy duty with the Army. I'm sorry if airmen have to suck it up and go out into the field with members of the other services. But when you raised your hand and took the pledge, you knew what you were getting into. The vacation is over, folks.

Joseph Carroll
Robins AFB, Ga.

Protracted Nuclear War

Actually, the notion of protracted nuclear war predates the Reagan Administration *["Protracted Nuclear War," March, p. 56]*. The Carter White House and Secretary of Defense Harold Brown conducted an extensive review of nuclear policy in 1977 to 1980.

Ambassador Leon Sloss was the author of the study that was ultimately sent to the White House. You will find many references to this study and the content of the resulting Presidential Directive 59 in the press archives of that time period.

The Reagan Administration adopted and later amplified this doctrine by including ballistic missile defense.

Col. J. E. Scholz,
USAF (Ret.)
Vienna, Va.

Ground Force Taskings

Otto Kreisher's article "The Ground Force Taskings Go On" in your March 2008 issue of *Air Force* Magazine *[p. 42]* brought back some very vivid memories of my 1965 tour in Vietnam.

In 1965, I was a C-47 and C-54 airborne radio operator, AFSC A29372, assigned to the 33rd Air Base Squadron, Tan Son Nhut AB, South Vietnam. As an NCO and an aircrew member, I was used to a certain way of life that normally included air-conditioned sleeping quarters and no additional duties.

One day after I had returned from an in-country C-47 supply mission, I was told to report to the squadron first sergeant. Upon reporting to our

first sergeant, I was informed that I would be "pulling guard duty" at the Caravel Hotel in downtown Saigon the very next day.

When I protested to our first sergeant that (1) I was an aircrew member and therefore shouldn't be performing guard duty except when it was to guard the aircraft I was flying on, and (2) the Army was responsible for the security of Saigon—not the Air Force—I was told to be at the squadron orderly room at 0600 the next day.

Upon arriving at the squadron orderly room the next day, I was issued an M-16 rifle and four clips of ammunition and then, together with about 10 other airmen and NCOs, I was driven to the Caravel Hotel in downtown Saigon.

My post was on the roof of the Caravel Hotel and I remained there, quite alone with no food or drink for the next eight hours, when I was relieved by another Air Force NCO. The only "enemy" that I encountered during my eight-hour shift were rather large Vietnamese rats running rampant on the roof of the hotel.

After performing this additional duty four times during a 60-day period, I was finally removed from the Caravel Hotel guard duty roster when I failed to report for my appointed guard duty shift. You see, the day before my shift I was sent TDY to Thailand on board a C-47 and our aircraft had a serious maintenance problem that required both the flight mechanic and me to remain with our aircraft for the next seven days.

Needless to say, I was never assigned to guard the Caravel Hotel again, nor was I assigned any other additional duties during the remainder of my tour in Vietnam.

At least someone in my chain of command recognized that taking an aircrew member out of his primary AFSC to perform guard duty in downtown Saigon, just was not the smart thing to do.

CMSgt. Ken Witkin,
USAF (Ret.)
Fort Washington, Md.

The Air Mail Fiasco

Note that in your article "The Air Mail Fiasco" in the March issue, there is an error on p. 65. In the middle column on that page, it states that Maj. Gen. Oscar Westover "died in a crash when trying to land an AT-17 in a crosswind in 1938."

In fact, Major General Westover was killed while piloting a Northrop A-17AS on Sept. 21, 1938 (as he was attempting to land at the Burbank, Calif., airfield). The Cessna AT-17 Bobcat, a twin-engined advanced trainer, first entered the Army Air Corps around 1940. So the AT-17 did not yet exist in 1938.

Lt. Col. Ed Sienkiewicz,
USAF (Ret.)
Robins AFB, Ga.

"The Air Mail Fiasco" story: Of the solutions the Air Corps looked to [in order to] gain "instrument flying" training, John Correll left out one of the more historical points of that story—the Air Corps' purchase of Edwin Link's Blue Box Trainers (simulator), Link's first military sale. Link continued to upgrade and enhance his trainer over the years, selling over 10,000 "Blue Boxes." Most WWII aviators trained in them—and we know the rest of the story.

Col. Tom Spada,
USAF (Ret.)
Charlotte, N.C.

A Study in Stripes

I enjoyed the article "A Study in Stripes" in the March issue *[p. 66]*. When I enlisted in the Air Force in January of 1951, the Air Force still used the Army rank structure. After basic training, I was a student and then an instructor in the Career Guidance School at Lowry Air Force Base. I was a one-striper (private first class), but then got promoted to corporal. That meant I could eat in the NCO Mess. I went to breakfast the day after getting the two stripes sewed on and the mess checker greeted me with, "Good morning, Corporal." George Patton was never prouder of a promotion. I was then sent to Long Beach Municipal Airport [Calif.] to work in the orderly room of a reserve training unit. I got promoted to a three-striper. I could answer the phone, "Orderly Room, Sergeant Edwards." Then the rank structure changed and I had to answer, "Orderly Room, Airman Edwards." I immediately applied for Officer Candidate School.

Col. Kenneth W. Edwards,
USAF (Ret.)
Corvallis, Ore.

The Force Was With Her

Congratulations are certainly in order for Jennifer Sinsel, on being chosen as AFA's National Teacher of the Year for 2007 *["The Force Was With Her," March, p. 71]*. I would like to point out that she is also a member of NASA's Network of Educator Astronaut Teachers (NEAT) as well. NEAT comprises 200 finalists for the 2003 educator astronaut class. Their mission is to target exactly what you mentioned in the article: a lack of interest in science as well as mathematics, technology, and engineering. All NEAT teachers are invited to NASA space centers each summer (since 2004) to participate in seminars and behind-the-scenes tours of NASA facilities. All of us work to bring wonder to science and build motivation for today's students to study these fields.

As local school districts continue to fight for funds in a time of increasing costs, it is extremely important for NASA to keep helping us by providing professional development and resources and materials.

Congratulations again to Jennifer and a big thank you to NASA for the NEAT Program.

SMSgt. Casey Teliczan,
USAF (Ret.)
Cedar Springs, Mich.

Classics

I reckon you'll get more than just this reference to your stating that the "max range" of the P-38 Lightning was "450 mi"—especially when the Yamamoto "raid" was 500 miles *["Airpower Classics: P-38," March, p. 80]*. We flew our F-5s 800 to 900 miles every day from San Savero, Italy, usually landing with a fair amount of gas remaining. We ran out of film before gas unless we got chased by the bad guys. The P-38 was the bird in which Charles Lindbergh refined the low RPM-full throttle cruise, which made fighter legs a lot longer with or without drop tanks. Your magazine gets better each year, and so does my memory of firing up sitting between those musical engines at age 20.

Col. David Winn,
USAF (Ret.)
Colorado Springs, Colo.

In many earlier publications, it always states that the Germans called the P-38 the "Fork-tailed Devil." I just want to report that the Germans I knew, and that included myself back in the early days, called it the "Doppelschwanz Jaeger" (double-tail fighter). Devil (Teufel) might have been used by the Japanese, but it is not a common word in German except for the religious connotations.

I was a young teenager at that time, riding my bicycle to school along a country road, dropping into the next ditch when I heard the very distinct noise of the Lightning's two engines. The GIs must have been bored at times because they had great fun using their Lightnings and their Mustangs in strafing lone bicycle or motorbike riders or single cows in fields. We were envious at times. I have flown other things since then, but I still wish I could have flown a P-38.

Hans J. Mueller
Caracas Venezuela

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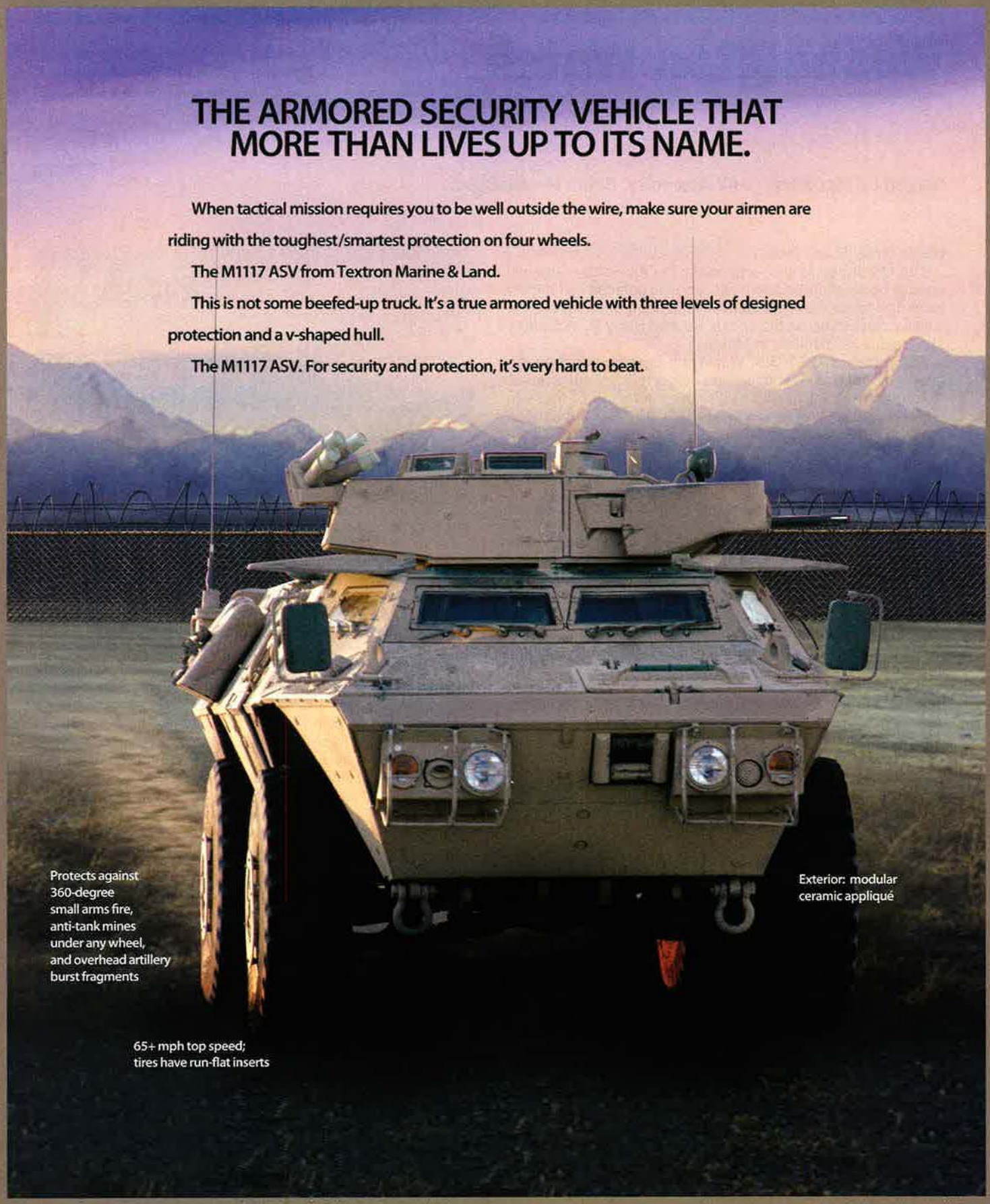

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Washington Watch

By John A. Tirpak, Executive Editor

Gigged by McCaffrey; UAV Absurdity; China Moves Out ....

Make Your Case Now

The US armed forces—especially the Air Force—urgently need to be reset and modernized, and the defense community must now make that case to political leaders who believe the military can be run on the cheap. So said Barry R. McCaffrey at a Capitol Hill seminar in March.

McCaffrey, a 1991 Gulf War Army division commander, later national drug war czar, and now a military commentator and consultant, said that it's "been a failure of those in uniform for the last seven years" that they've anticipated the outcome of a political debate about social programs versus discretionary spending, and given political leaders "the answer they'd like to hear" rather than an honest military assessment.

McCaffrey observed that former Defense Secretary Donald H. Rumsfeld told the uniformed leadership to expect "dramatically lower" budgets, and they in turn designed their forces "to live inside" expected funding. However, McCaffrey said it's "nonsense" that the nation can't afford the military it needs.

"I do not believe this country is an impoverished nation that can barely afford" the existing defense budget, he said. "I don't think this is a serious argument" when national leaders can quickly agree to send out $600 checks to individuals "to pay their cable TV bills," he asserted.

McCaffrey urged agency heads to "get an ethically sound defense argument, put it on a piece of paper, and submit it for consideration. Then let the political debate take place." He said if the case is made soundly enough, "the American people will ... respond to that argument."

Specifically, McCaffrey said it would probably take "5.2 percent of GNP for five years to get ourselves out of this mess we've put ourselves in" by constraining military spending too much for too long.

The Air Force, he said, is "grossly underfunded," chronically $18 billion to $20 billion short in meeting its annual recapitalization needs. That's "basically a month's burn rate" of the cost of the wars in Iraq and Afghanistan, he added. It is "completely outrageous" that the Air Force must accept a 98-year aircraft replacement cycle.

"To be blunt, the tool of choice to maintain the peace 20 years from now is the United States Air Force," McCaffrey asserted. "You've got to pay for it in advance, and it costs a lot of money."

The Air Force is being asked to make do with 183 F-22s, which McCaffrey called a gimmick, and not a credible plan for control of the air. The Raptor is "a prerequisite to us preserving our ability to act ... to guarantee that the Navy can operate, and guarantee that our C-17s can land." At that level, the Air Force can only actually use "90 or 100 F-22s," if 40 are in training, 20 are in the shop, and 20 more are being held out "to protect against another threat." What's left puts the F-22 in the category of "a special-purpose ... aircraft" rather than a front-line fighter. He thinks the Air Force ought to have at least 350 F-22s.

"The principle axiom of US military power is, don't ever get in a fair fight," McCaffrey observed. "You need to stay two generations or more ahead of your competition."

In any future conflict, "clearly, option No. 1 is airpower. It's not rolling around in the mud throwing hand grenades at somebody 20 feet away."

Photo by Jim Dunn

The F-22 is in danger of becoming **too** *special, says McCaffrey.*

McCaffrey said the country has "had it" with the wars in Southwest Asia, and is "going to tell us, 'Don't you do that again.'" However, there's the classic danger of shaping the force for the last war. He doesn't want the Army "trying to invent a force that could have gone into Iraq—minus the idiocies of Secretary Rumsfeld—and won." Air and naval power will be the principle guarantors of freedom of action and the tools of deterrence in the coming decades, he asserted.

The next President of the US must reset the military, "particularly if you don't want to fight. If you ... don't like having 34,000 killed and wounded, then you have to put a deterrence capability in place that's politically and militarily credible."

McCaffrey criticized Rumsfeld for making major strategic changes by executive fiat, with no national debate at all. He said Rumsfeld pulled American forces out of Western Europe, South Korea, Japan, and elsewhere, and moved them to bases in the heartland of the US, without then buying "the air and naval power to credibly project them back into their battle areas." He also faulted Congress for not stepping in as it was happening and demanding more explanations.

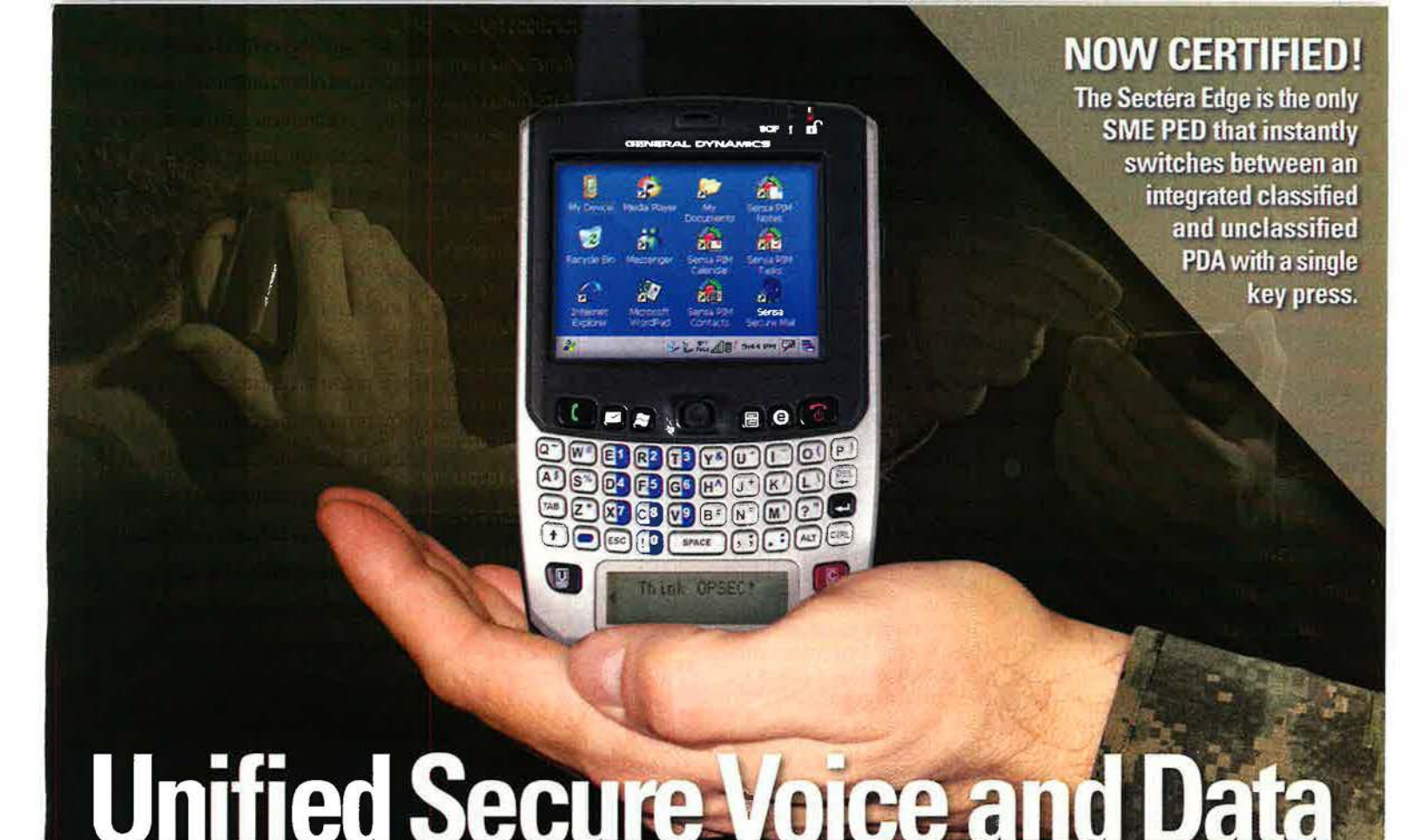
The situation now demands that the US buy 600 C-17s, a figure that McCaffrey said is not only realistic but necessary, given that the US is so dependent on air mobility to deploy forces quickly. The C-17, he said, is also not an Air Force or even a military asset but "national transportation capability," and one that will be essential in responding to any major humanitarian crisis at home or abroad. It's also a capability "you can't buy ... off the market."

The C-17 is especially important to the war in Afghanistan, especially if "Pakistan goes sour" and the US cannot depend on port facilities in that country.

Back in the late 1990s, when he was an Army general, McCaffrey said the senior uniformed leadership agreed to go to a "single fleet" of strategic airlifters—namely, the C-17. The C-5 is so old and unreliable, it should probably be relegated to use as "a flowerpot," he added.

The defense community "had better start talking" to the three

Continued on p. 16



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Continued from p. 14.

main Presidential candidates now if the defense funding crisis is to be addressed properly.

"Write your white paper right now; don't waste it on the last eight months of the [Bush] Administration," McCaffrey admonished, "and let's get out there and have a debate that doesn't fall back on '60s twaddle."

View From the Mud

Internal Pentagon slugfests over roles and missions are "asinine," given that service budget shares remain at about one-third each, despite several Quadrennial Defense Reviews, retired Army Gen. Barry McCaffrey said at a Capitol Hill symposium in March. What's needed is some common sense, he said.

Despite the zero-sum battle for dollars, the force has made huge strides in jointness over the last 20 years, McCaffrey said, and should do even better with some clear thinking.

For example, he said, it should be obvious who ought to be in charge of unmanned aerial vehicles.

"It is patently absurd to not see that airspace ought to be integrated in a joint manner. There ought to be a single agency doing this ... probably [the] Air Force," McCaffrey said. The Pentagon leadership last year rebuffed the Air Force's push to be made executive agent for UAVs flying above 3,500 feet. USAF argued that it could save money by reducing duplication of effort, get the most out of UAVs by putting them where they're needed most, and deconflicting the thousands of such vehicles in the battlespace with manned aircraft. The Army argued that its division commanders have to have their own UAVs, and clear airspace above their operating areas in which to fly them.

It is "completely stupid to block out huge pieces of airspace because [an infantry division commander] wants to fly a Predator overhead," McCaffrey said. "I do not understand why we cannot have a joint commander ... do that." He said the likely reason is decades of distrust of the Navy and Air Force among the ground services, going back to World War II, when they believed they'd been left uncovered by airpower.

He floated the idea that an Army or Marine division ought to be a joint command, "and the No. 2 guy ought to be an Air Force one-star" because of the hundreds of Air Force people embedded with a division—"inside it, never mind flying in support of it"—as the ground forces' connection to aircraft overhead.

McCaffrey said he's baffled as to why the Air Force's role in the two ongoing wars seems unsung. He noted that "a rifle platoon ... can get a B-1 bomber overhead in 20 minutes," and C-130s are precision-air-dropping supplies to units at "9,000 feet in the Hindu Kush, ... putting them inside the platoon perimeter."

China Rising

China continues to grow and modernize its military at a brisk and disturbing pace, and is taking steps to rapidly move beyond simply being a regional power, the Pentagon said in its most recent annual review of China's military capabilities and trends, released in March.

The review notes a continued spending spree by China on advanced new systems, both imported from abroad and developed indigenously, and the basing of an ever-growing force of aircraft and ballistic missiles on the coast of the Taiwan Strait. It marked a growing number of Chinese cyber intrusions into the defense networks of the US and other countries worldwide, possibly as practice runs in the event of armed conflict. China is also spending heavily on space systems and counterspace systems, all with an eye toward blunting those capabilities in which the US enjoys an edge.

At the same time, China is working hard to professionalize its military ranks, reducing numbers of troops somewhat but raising the quality of the people and systems it retains.

Although the US "welcomes the rise of a stable, peaceful, and prosperous China," that country is quickly shifting focus from fielding massive ground forces to being "capable of fighting and winning short-duration, high-intensity conflicts along its periphery against high-tech adversaries," according to the report. The Pentagon reiterated its 2006 Quadrennial Defense Review assertion that China has the "greatest potential to compete militarily with the United States."

The report specifically highlighted progress in Chinese missiles of every kind—"advanced cruise missiles, medium-range ballistic missiles, anti-ship ballistic missiles designed to strike ships at sea, including aircraft carriers"—and its test of direct-ascent anti-satellite weapons.

China's defense spending now dwarfs that of its neighbors, according to its own published figures and Pentagon estimates. By its own account, China upped its military spending by nearly 20 percent in 2007, and over the last 12 years, it has raised annual defense spending at roughly the same pace as its economy is growing.

The self-reported Chinese military budget for 2007 is about $46 billion; however, because it doesn't count whole categories of spending, such as research and development, and purchases of military hardware abroad, the figure under-reports the true scope of China's military outlays. The Pentagon pegs China's military budget for 2007 at between $97 billion and $139 billion—roughly double to triple what Russia or Japan spend on defense, and five to seven times India's outlay.

While China's defense spending is about a third that of the US—not counting military operations in Iraq or Afghanistan—due to a profound difference in the pay and benefits received by Chinese troops versus their US counterparts, the relative percentage of each country's budget that goes to buying capital equipment such as aircraft, tanks, and naval vessels is narrowing rapidly.

This year's report on China's military power, unveiled at a Pentagon press conference, is the first that represents the US government's "unified view," according to David Sedney, deputy assistant secretary of defense for East Asia. It collated the estimates of the State Department, intelligence community, National Security Council, and other agencies, along with that of the Defense Department, he said.

Sedney noted an acceleration in China's cyber intrusions in US and other nations' sensitive defense networks. It's not easy to know how much China may have seen and copied, or whether it corrupted some databases deliberately, Sedney said. Although Chinese hackers have not penetrated the most sensitive networks, "they gain an awful lot" by rooting around in unclassified areas where there is useful "scientific and technological material," such as in contracting databases. The Pentagon is constantly reviewing what should be classified and more vigorously protected, he said.

The China report notes some small decreases in certain types of hardware in the Chinese inventory, but David Helvey, the Pentagon's director of China, Taiwan, and Mongolia affairs, said this is indicative of the modernization effort.

"I would ... point out that as China's military forces improve, in terms of the quality of their equipment, you'll also see the retirement of older platforms and airframes." This is a clear indication of "a military that is undergoing a comprehensive transformation."

Sedney reiterated an oft-stated demand that China provide more "transparency" in its defense planning and spending, saying that unless China's military aims and capabilities are made clear, other countries will have to hedge their military posture relative to that of China. ■

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Air Force World

By **Michael Sirak,** Senior Editor, with **Marc Schanz,** Associate Editor

F-16 Crash Claims Pilot

Second Lt. David J. Mitchell, 26, of Amherst, Ohio, died March 14 when the F-16 he was piloting crashed during a training mission in a remote area three miles south of Alamo Lake, Ariz. His body was found in a ravine near the aircraft wreckage.

Mitchell, from the Ohio Air National Guard's 180th Fighter Wing in Toledo, was assigned to the 62nd Fighter Squadron at Luke AFB, Ariz., since November 2007 as a student pilot. He had a total of 237 flying hours, with about 26 in the F-16. A safety and accident investigation was ongoing as of late March.

Airman Killed in Helicopter Crash

SSgt. Christopher S. Frost, 24, of Waukesha, Wis., was killed March 3 in the crash of an Iraqi Army Mi-17 helicopter near Bayji, Iraq, during a dust storm. The crash also claimed the lives of seven members of the Iraqi Air Force who were onboard.

Frost, a six-year Air Force veteran, was a public affairs specialist who had deployed in September 2007 to the Multinational Security Transition Command-Iraq from the 377th Air Base Wing at Kirtland AFB, N.M.

Debris To Fall Soon

The US military believes that all debris created in space from February's successful destruction of a nonfunctioning, deorbiting intelligence satellite will re-enter the atmosphere and burn up by around early June, Air Force Gen. Kevin P. Chilton, commander of US Strategic Command, said March 4.

Chilton said this assessment was "more optimistic" than earlier predictions that indicated that it might take "six months to a year" for all remnants of the school bus-sized satellite to come down to Earth.

US defense officials stated that the pulverizing collision Feb. 20 between the doomed satellite and a modified ship-launched anti-missile missile outside of

CV-22s May Deploy to Combat This Year

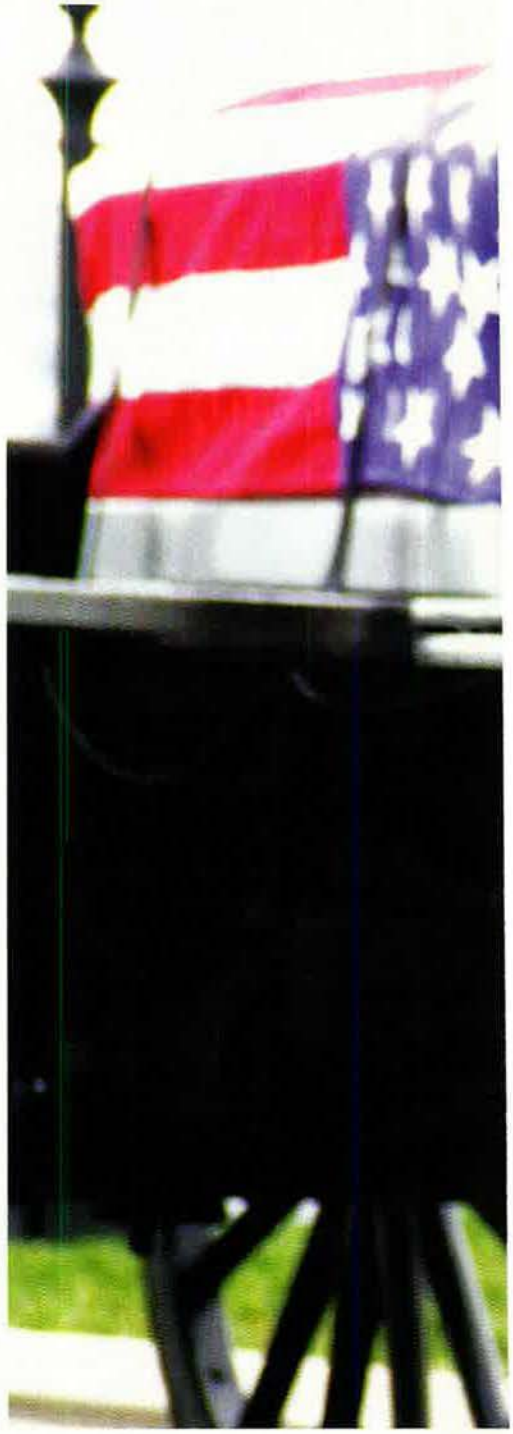
The Air Force said in March it is considering sending the CV-22 Osprey tilt-rotor aircraft on its first combat deployment later this year. The "potential first deployment" is possible "in the fall of 2008" after the conclusion of the flying phase of initial operational test and evaluation in June, Lt. Gen. Daniel J. Darnell, deputy chief of staff for air, space, and information operations, plans and requirements, told a House oversight panel March 11.

Air Force Special Operations Command is buying 50 CV-22s to replace the command's aged MH-53 Pave Low helicopters, all of which will be retired by October. While USAF expects to reach initial operational capability with the CV-22 in Fiscal 2009, deploying them to combat before IOC would avoid a capability gap between the formal combat-ready date and the MH-53 phaseout, service officials have said.

AFSOC had nine CV-22s in its possession as of March, including four primary mission aircraft, one test asset, and four being used for training pilots. Deploying the CV-22s before formal IOC "presents challenges," Marine Corps Col. Matt Mulhern, Osprey program director with Naval Air Systems Command, said March 18. "We have very limited numbers of CVs out there, so we are sharing them between test and training," he said.

Mulhern said CV-22s that would deploy are expected to possess the interim forward-firing gun system that his office is pursuing for the Osprey fleet until a more refined follow-on system is introduced. The interim gun features a GAU-17/A that fires a 7.62 mm round, he said.

The Air Force expects to have all 50 of AFSOC's CV-22s in the fleet by 2017, but AFSOC and US Special Operations Command would like to get them earlier. "There are opportunities in the production line to accelerate that, and so we are seeking some funding in order to do that," Adm. Eric T. Olson, SOCOM commander, told the Senate Armed Services Committee March 4. The current delivery rate is "too slow," he said.



USAF photo by TSgt. Scott T. Sturkol

the atmosphere over the Pacific Ocean left debris in the lower echelons of space no larger than the size of a football.

Nuclear Rotation Eyed for B-52s

Gen. T. Michael Moseley, Air Force Chief of Staff, said March 12 he expects Air Combat Command to soon begin rotating B-52 squadrons between their nuclear and conventional roles.

Testifying before the Senate Appropriations subcommittee, Moseley said one squadron would rotate for six months or a year at a time into the nuclear mission, while two other B-52 squadrons would perform in the conventional role, since the Air Force still needs the ability to deploy to the Pacific or the Middle East quickly.

The move is one of many that USAF has instituted or plans to do to improve safety and oversight of the nation's nuclear weapons after the errant transfer of six nuclear warheads on a B-52 flight from North Dakota to Louisiana in August 2007. Moseley acknowledged that the new plan could require that USAF maintain a total aircraft inventory of 76 B-52s vice the 56 that are currently budgeted. ACC and the Air Staff hadn't yet determined the final number, he said.

B-1B Flies With Synthetic Fuel Mix

An Air Force B-1B bomber from the 9th Bomb Squadron at Dyess AFB, Tex., on March 19 became the first aircraft

04.09.2008

As two family members grieve, a caisson bearing the flag-draped coffin of Air Force Maj. Robert Francis Woods proceeds toward his grave site at Arlington National Cemetery, Va. Woods died June 26, 1968 when his O-2A Skymaster crashed in a remote mountainous area of what was then North Vietnam. US officials in November announced identification of his remains.

Boeing Protests KC-X Award, Northrop Calls it "Fair"

Boeing lodged a formal protest March 11 to the Government Accountability Office over the Air Force's Feb. 29 award to Northrop Grumman of the multibillion-dollar KC-X tanker contract. The Chicago-based company alleged that USAF's evaluation process—which judged the Northrop Grumman KC-30 to be clearly superior to Boeing's KC-767—was "seriously flawed and resulted in the selection of the wrong airplane."

Meanwhile Northrop Grumman Chairman and CEO Ronald Sugar said March 13 the Air Force's evaluation was fair and called on lawmakers to let the GAO process play out and then allow the KC-45A program to move forward. "To do anything different," he cautioned, "frankly, would undermine the integrity of the overall procurement process." The GAO had 100 days from the receipt of the protest to rule. The Air Force issued a stop-work order to Northrop Grumman after the protest.

Boeing said March 11 that while the Air Force did start out trying to run a "fair, open, and transparent competition," the process developed what Mark McGraw, Boeing vice president for tankers, called "irregularities." The competition was close, and the many accommodations made to keep Northrop Grumman's larger KC-30 from being disqualified added up to a narrow win for it, he said.

The KC-30, which USAF now designates KC-45A, is based on European Airbus' A330 commercial aircraft. Some lawmakers also questioned the decision since, at first glance, they said it appeared to represent a setback for American manufacturing to the benefit of European Airbus and its parent company EADS.

"This is not a done deal," Rep. John P. Murtha (D.-Pa.), chairman of the House Appropriations defense subcommittee, told reporters March 5 after holding a hearing on the tanker award. Instead he said his committee would scrutinize the award to ensure it best promotes national security. "All this committee has to do is stop the money and this program's not going to go forward," he said during the hearing.

Sue C. Payton, USAF's acquisition executive, refuted any alleged unfairness and lack of transparency in the evaluation process. "To put it very succinctly, we did an awful lot more in this particular source selection than in any other source selection to be open, transparent, and fair to the offerors," she told a Senate oversight panel March 12.

to fly at supersonic speeds burning the synthetic fuel blend that USAF wants its entire inventory cleared to use by early 2011.

The B-1B conducted the four-and-a-half hour flight over White Sands Missile Range, N.M., with all four of its General Electric F101-GE-102 turbofan engines burning the fuel mix of 50 percent traditional JP-8 aviation fuel and 50 percent synthetic kerosene derived from natural gas under a method called the Fischer-Tropsch process.

The bomber aircrew performed a full complement of operational maneuvers, including both low speed and supersonic flight, USAF said. Initial postflight comments from the crew indicated they observed no anomalies and encountered no problems.

Fallen Airman Honored at Eggers

The US military March 2 dedicated a building at Camp Eggers in Afghanistan to Air Force MSgt. Randy Gillespie, who died July 9, 2007 in Herat, Afghanistan, from small-arms-fire inflicted wounds. Gillespie House, as it is now known, will serve as joint service living quarters.

Gillespie, 44 at the time of his death, was deployed from Luke AFB, Ariz., to help mentor soldiers of the Afghan National Army. Earlier, two roads, one at Luke and one at Bagram AB, Afghanistan, were dedicated in his name.

CSAF Favors GDP Standard

Tying the annual defense budget to four percent of the nation's gross domestic product makes sense and it appears to be an opportune time to take up the issue at a national level, Gen. T. Michael Moseley, Air Force Chief of Staff, said Feb. 28.

Doing so would ease the services' existing shortfalls—USAF says, for example, it is running $20 billion short each year—and allow each military branch to plan more efficiently and effectively over the long term, he told defense reporters. This is more difficult to do under the current system of using emergency supplemental wartime appropriations to address pressing shortfalls.

"What some of us have been saying is why don't we look at something that is about four percent as a floor and try to get the supplemental business into the baseline budget," Moseley said. In rough numbers, increasing the defense budget to four percent of GDP would bring in an extra $80 billion to $100 billion annually over current levels, he said.

Modernize or Suffer, General Warns

The Air Force is at a critical point in maintaining air, space, and cyberspace dominance and must field new aircraft

USAF photo by SSgt. Jeremy T. Lock

Up and Away: *Combat controllers with Air Force Special Operations Command give a C-130 takeoff clearance and act as air traffic controllers during an Operation Enduring Freedom mission to establish and assess a desert airfield.*

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Senior Staff Changes

NOMINATIONS: To be General: Stephen R. **Lorenz. To be Lieutenant General:** Dana T. **Atkins,** Allen G. **Peck,** Vern M. **Findley II,** John T. **Sheridan.**

CHANGES: Maj. Gen. Robert R. **Allardice,** from Cmdr., Coalition AF Transition Team, Multinational Security Transition Command-Iraq, ACC, Baghdad, Iraq, to Dir., Strategy, P&P, CENTCOM, MacDill AFB, Fla. ... Brig. Gen. C.D. **Alston,** from Dir., Space & Nuclear Ops., Dep. C/S, Ops., P&R, USAF, Pentagon, to Dir., Nuclear Ops., P&R, Dep. C/S, Ops., P&R, USAF, Pentagon ... Lt. Gen. (sel.) Dana T. **Atkins,** from Spec. Asst. to the Cmdr., PACAF, Hickam AFB, Hawaii, to Cmdr., 11th AF, Elmendorf AFB, Alaska ... Brig. Gen. (sel.) Norman J. **Brozenick Jr.,** from Dep. Dir., Studies & Analyses, Assessments, & Lessons Learned, USAF, Pentagon, to Asst. Commanding Gen. Jt. Spec. Ops. Command, SOCOM, Ft. Bragg, N.C. ... Brig. Gen. Michael W. **Callan,** from Cmdr., 23rd AF, SOCOM, Hurlburt Field, Fla. to Vice Cmdr., 17th AF, USAFE, Sembach AB, Germany ... Brig. Gen. Richard T. **Devereaux,** from Cmdr., 82nd Tng. Wg., AETC, Sheppard AFB, Tex., to Dep. Dir., Air, Space, & Info., AMC, Scott AFB, Ill. ... Brig. Gen. Eric E. **Fiel,** from Dep. Commanding Gen., Jt. Spec. Ops. Command, SOCOM, Ft. Bragg, N.C., to Dir., Center for Force Structure, Rqmts., Resources, & Strat. Assessments, SOCOM, MacDill AFB, Fla. ... Lt. Gen. (sel.) Vern M. **Findley II,** from Dir., Strategy, Plans & Policy, CENTCOM, MacDill AFB, Fla., to Vice Cmdr., AMC, Scott AFB, Ill. ... Maj. Gen. Maurice H. **Forsyth,** from Dep. Combined Forces Air Component Cmdr., CENTCOM, Al Udeid AB, Qatar, to Commandant, AWC, AETC, Maxwell AFB, Ala. ... Brig. Gen. Byron C. **Hepburn,** from Command Surgeon, AMC, Scott AFB, Ill., to Cmdr., AF Medical Spt. Agency, Bolling AFB, D.C. ... Brig. Gen. Frank J. **Kisner,** from Dir., Center for Force Structure, Rqmts., Resources, & Strat. Assessments, SOCOM, MacDill AFB, Fla., to Cmdr., Spec. Ops. Command Europe, EUCOM, Stuttgart-Vaihingen, Germany ... Maj. Gen. Ronald R. **Ladnier,** from Cmdr., Tanker Airlift Control Ctr., AMC, Scott AFB, Ill., to Cmdr., 17th AF, USAFE, and Air Component Cmdr. to AFRICOM, Sembach AB, Germany ... Gen. (sel.) Stephen R. **Lorenz,** from Cmdr., AU, AETC, Maxwell AFB, Ala., to Cmdr., AETC, Randolph AFB, Tex. ... Brig. Gen. Otis G. **Mannon,** from Dep. Dir., Spec. Ops., Joint Staff, Pentagon, to Cmdr., 82nd Tng. Wg., AETC, Sheppard AFB, Tex ... Brig. Gen. Susan K. **Mashiko,** from Cmdr., Mil. Satellite Comm. Systems Wg., AFSPC, Los Angeles AFB, Calif., to Vice Cmdr., SMC, AFSPC, Los Angeles AFB, Calif. ... Maj. Gen. Stephen J. **Miller,** from Commandant, AWC, AETC, Maxwell AFB, Ala., to Cmdr., AF Doctrine Dev. & Education Center, AETC, Maxwell AFB, Ala. ... Brig. Gen. Ellen M. **Pawlikowski,** from Vice Cmdr., SMC, AFSPC, Los Angeles AFB, Calif., to Dep. Dir., NRO, Chantilly, Va. ... Lt. Gen. (sel.) Allen G. **Peck,** from Cmdr., AF Doctrine Dev. & Education Center, AETC, Maxwell AFB, Ala., to Cmdr., AU, AETC, Maxwell AFB, Ala. ... Brig. Gen. Douglas J. **Robb,** from Cmdr., 81st Medical Group, AETC, Keesler AFB, Miss., to Command Surgeon, AMC, Scott AFB, Ill. ... Maj. Gen. Winfield W. **Scott III,** from Spec. Asst. to the Cmdr., AMC, Scott AFB, Ill., to Cmdr., 18th AF, AMC, Scott AFB, Ill. ... Lt. Gen. (sel.) John T. **Sheridan,** from Dep. Dir., NRO, Chantilly, Va., to Cmdr., SMC, AFSPC, Los Angeles AFB, Calif. ... Maj. Gen. (sel.) Mark S. **Solo,** from Dep. Dir., Air, Space, & Info. Ops., AMC, Scott AFB, Ill., to Cmdr., Tanker Airlift Control Ctr., AMC, Scott AFB, Ill. ... Brig. Gen. Alfred J. **Stewart,** from Cmdr., 21st Expeditionary Mobility Task Force, AMC, McGuire AFB, N.J., to Cmdr., AF Recruiting Service, AETC, Randolph AFB, Tex. ... Brig. Gen. Suzanne M. **Vautrinot,** from Cmdr., AF Recruiting Service, AETC, Randolph AFB, Tex., to Dep. Cmdr., Jt. Functional Component Command-Network Warfare, STRATCOM, Ft. Meade. Md. ... Brig. Gen. (sel.) Daniel O. **Wyman,** from Command Surgeon, PACAF, Hickam AFB, Hawaii, to Cmdr., 81st Medical Group, AETC, Keesler AFB, Miss.

SENIOR EXECUTIVE SERVICE RETIREMENTS: Donald L. **Cazel II,** Kathryn M. **Halvorson.**

SES CHANGES: Ricky L. **Peters,** to Dir., P&P, AF Research Lab., AFMC, Wright-Patterson AFB, Ohio ... Sharon K. **Puschmann,** to Asst. Auditor General, Acq. & Log. Audits, AF Audit Agency, Wright-Patterson AFB, Ohio ... Patsy J. **Reeves,** to Dir., Contracting, ASC, AFMC, Wright-Patterson AFB, Ohio ... John W. **Steenbock,** to Dep. Dir., Manpower, Personnel, & Svcs., AFMC, Wright-Patterson AFB, Ohio ... Thomas S. **Wells,** to Dir., 711th Human Performance Wg., AF Research Lab, AFMC, Wright-Patterson AFB, Ohio. ▪

risk being outclassed in a future conflict and becoming irrelevant, said Gen. Bruce Carlson, commander of Air Force Materiel Command, Feb. 27.

"Soon we could be flying against aircraft and air defense systems that our older aircraft were not intended to fly against," Carlson said during a visit to Air University at Maxwell AFB, Ala. "And if we don't have the freedom to operate in hostile territories, we risk fighting the next conflict on our home territory."

Carlson said the almost constant state of war for more than 17 years has taken its toll on the Air Force. For example, required maintenance on the F-15 has skyrocketed from 600 hours to 700 hours more than official estimates, he said. "We're getting into unknown territory because we've been flying airframes longer than expected," he said. "We didn't build these aircraft to last this long."

Senators Seek Empowered Guard

Sen. Patrick Leahy (D-Vt.) and Sen. Christopher Bond (R-Mo.), co-chairmen of the National Guard Caucus, announced new legislation in mid-March to "empower the Guard for its modern-day missions." Together with Rep. Thomas Davis (R-Va.) and Rep. Gene Taylor (D-Miss.), they introduced S 2760 and HR 5603, two identical follow-on National Guard Empowerment bills that, according to Leahy's statement, would "obligate the Department of Defense to pay greater attention to the mission of homeland defense and to further empower the National Guard to carry out its missions in support of civil authorities at home."

Their initiative builds on the earlier Guard Empowerment bill. That effort led to language in the Fiscal 2008 defense authorization act that elevated the head of the National Guard Bureau to four-star status. Now they also want to try again to secure a seat for the NGB chief on the Joint Chiefs of Staff.

Schwartz Stands By C-17 Ceiling

A fleet of 205 C-17s and 111 modernized C-5s appears to be the right mix of strategic airlift, even with the growth of the Army and Marine Corps and factoring in recent changes to the Pentagon's upgrade plans for the C-5, Air Force Gen. Norton A. Schwartz, commander of US Transportation Command, told a Senate oversight panel March 12.

The Pentagon leadership, in February, restructured C-5 modernization by opting to upgrade the engines on only 52 of USAF's 111 C-5s, vice all of them, although they will all still receive new avionics. Despite this, Schwartz said he stands by the recommendation he made in November 2007 that called for the 205-111 mix and

USAF photo by Brad White

Wheels Up: *An A-10 from the 75th Fighter Squadron, Moody AFB, Ga., rests on the runway at Edwards AFB, Calif., after a March 25 emergency landing. The Warthog crash-landed with its landing gear in the up position after the pilot declared an in-flight emergency during a Green Flag sortie. The pilot was uninjured.*

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Chilton Reaffirms Need for RRW

Although world dynamics have shifted abruptly since the end of the Cold War, the need for nuclear weapons remains indefinitely, Air Force Gen. Kevin P. Chilton, commander of US Strategic Command, said March 4.

"I believe we are going to need a nuclear deterrent in this country for the remainder of this century," he told defense reporters in Washington, D.C. Indeed, as long as there are nations with enough nuclear weapons to destroy the United States, "we will have to deter those types of countries," he said.

Because of this, it is all the more critical to develop and field a new nuclear warhead design called the Reliable Replacement Warhead, along with a flexible support infrastructure for production and maintenance of the weapons, Chilton said.

The US is committed with Russia to reducing its operational nuclear forces to between 1,700 and 2,200 warheads in 2012. There is talk of going beyond that in a new round of arms reduction talks.

With RRW and the new infrastructure, there is "an opportunity not only perhaps to lower the deployed warheads, but certainly to lower the number of warheads that we have on the shelf," the general said. This would be possible since there would be more confidence in the reliability and maintainability of the RRW compared to existing designs, especially in the absence of detonation tests, he said. Further, the responsive infrastructure would hedge against strategic uncertainty, Chilton said.

The modern RRW design would also have safety and security features to thwart terrorists from being able to use it if they somehow acquired one, he said.

Congress has been wary of the Administration's plans with RRW and has allowed development to proceed only at a deliberately slow pace. Chilton said the time is now to act on this issue one way or the other. "This is not something we can continue either not to talk about or push down the road to future generations," he said.

keeping the C-17 production line open for the time being as a hedge in case the C-5 upgrade work should falter.

Another reason Schwartz said he cautions against more than 205 C-17s is the need to maintain a healthy balance between the nation's organic airlift and the ancillary capabilities provided by the Civil Reserve Air Fleet. "I caution about overbuilding the organic fleet," he said.

GPS Satellite Launched

The Air Force and its industry partners successfully launched a modernized Global Positioning System Block IIR satellite into space March 15 from Cape Canaveral AFS, Fla., aboard a United Launch Alliance Delta II rocket. The satellite, designated GPS IIR-19M, is the sixth of eight modernized GPS IIR spacecraft that Lockheed Martin built and subsequently upgraded to provide increased signal power, accuracy, and resistance to jamming.

The mission was the third consecutive successful launch of a GPS IIR-M satellite since October 2007. The remaining two Block IIR-M satellites are scheduled to go into orbit in 2008.

Two days prior, the Air Force launched a classified National Reconnaissance Office intelligence satellite into orbit from Vandenberg AFB, Calif., aboard a ULA Atlas V booster. The mission was the first Atlas V launch from Vandenberg.

B-1B Accident on Guam

A B-1B bomber was damaged March 7 during a ground mishap at Andersen AFB, Guam, but there were no injuries, according to Air Combat Command. The B-1B had stopped on the island while transiting home to Ellsworth AFB, S.D., from the Singapore Air Show.

The bomber had taken off from Andersen for home, but soon returned after the aircrew declared an in-flight emergency. Upon landing, the aircraft taxied to the designated spot off the runway to be met by emergency response vehicles. The aircraft stopped there, but then unexpectedly rolled into two emergency vehicles, causing the damage. An investigation was ongoing as of late March.

The incident was the second involving a bomber at Guam in a two-week period. On Feb. 23, a B-2A stealth bomber crashed after takeoff from Andersen.

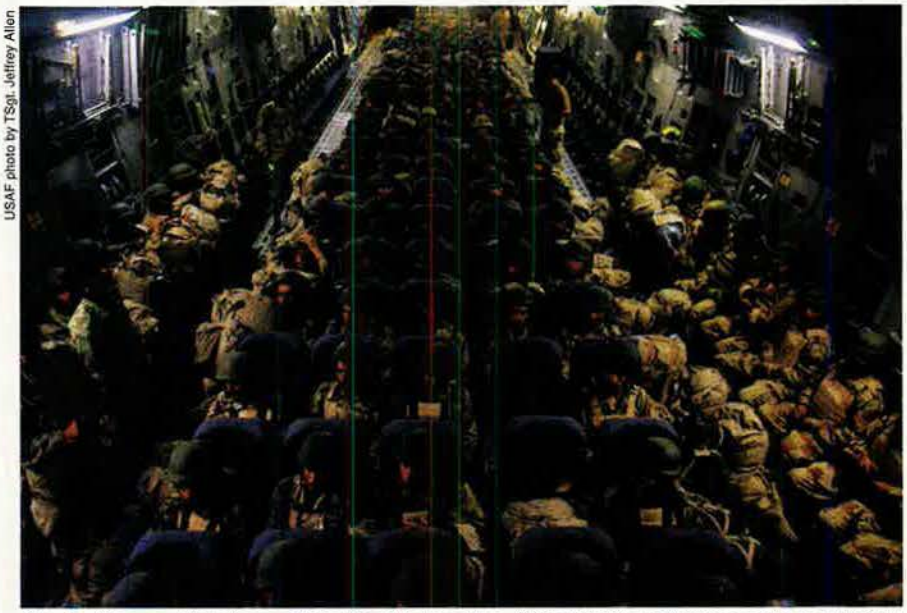
Services Reaffirm C-27 Commitment

Gen. T. Michael Moseley, Air Force Chief of Staff, signed a letter Feb. 27 with Army Chief of Staff Gen. George W. Casey Jr. that reiterates both services' commitment to the C-27 transport aircraft program "on the current fielding timeline and in accordance with the current beddown plan."

The existing plan has been to buy 78 C-27s, including 24 for the Air Force. But speaking to defense reporters the next day, Moseley said he anticipates that the joint number will grow to "about 125 airplanes." Air National Guard and even active duty units may fly USAF's inventory of them, he said. Air Force Special Operations Command is also exploring a gunship variant.

First Air Force Reserve Space Wing

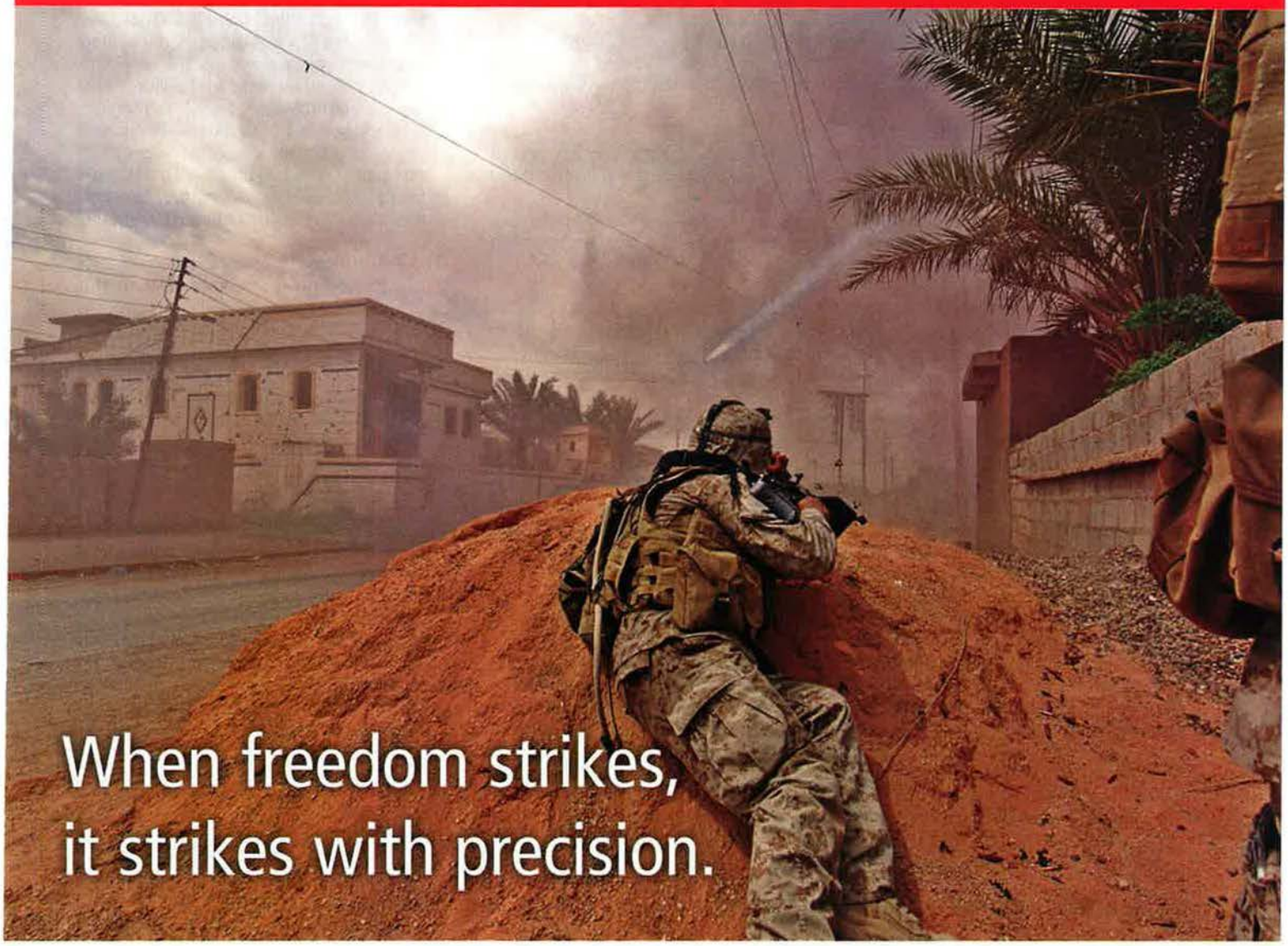
The Air Force activated the 310th Space Wing, the first Air Force Reserve space wing, March 7 at Schriever AFB, Colo. At the time of the standup, the unit, previously known as the 310th Space Group, had about 600 reservists in 16 subordinate units at Schriever,



USAF photo by TSgt. Jeffrey Allen

***On to Basra:** Members of the Iraqi Army fill a USAF C-17 as it transports them from New al Muthana Air Base to Basra. The troops were supporting operations against militias in the Basra area.*

Air Warfare Systems



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The War on Terrorism

Operation Iraqi Freedom—Iraq

Casualties

By April 18, a total of 4,039 Americans had died in Operation Iraqi Freedom. The total includes 4,028 troops and 11 Department of Defense civilians. Of these deaths, 3,295 were killed in action with the enemy while 744 died in noncombat incidents.

There have been 29,780 troops wounded in action during Operation Iraqi Freedom. This number includes 16,483 who were wounded and returned to duty within 72 hours and 13,297 who were unable to return to duty quickly.

B-1 Destroys Torture Compound

A B-1B Lancer bomber destroyed an al Qaeda torture compound and prison in Zenbaraniyah, Iraq, on March 10. It dropped six GBU-38s in a coordinated strike with Multinational Force-Iraq and Iraqi forces.

The town, south of Baghdad, had been an al Qaeda hotbed until local militias began combating the terrorist influence. The B-1B strike removed the last remnants of al Qaeda from the area, said MNF-I officials.

Iraqi Air Force Building More Capability

The Iraqi Air Force is making significant progress in its goal to support Iraq's armed forces in a counterinsurgency fight, and will be fielding new offensive capabilities in the next few years to fill the roles currently performed by coalition aircraft.

Maj. Gen. Robert R. Allardice, commander of the Coalition Air Force Transition Team, told reporters March 17 that the 360 airmen under his command have been working with Iraqis to expand and build up the country's meager air assets.

In March 2007, when Allardice arrived in Iraq, the IAF featured only about 700 personnel and 28 aircraft ready to fly. By the end of 2007, with the help of the CAFTT, the IAF flew about 300 sorties a week and boasted a force of 1,350 personnel with an additional 450 students in training, he said.

As the IAF grows, the force is taking on more missions that coalition air assets have been performing, including combat support in countering terrorists. Training capacity for Iraqi pilots and maintainers is expanding.

The aircraft inventory is also growing, with the IAF expected to have about 100 operational aircraft by the end of 2008, Allardice said. About half that force will be helicopters, such as UH-1 Hueys and Mi-17 utility helicopters.

Most of the IAF's offensive capabilities are built around their rotary aircraft, using forward-firing rocket pods. But its three C-130s are also in high demand for battlefield mobility, as are its smaller Cessna 208 Caravans for missions such as surveillance and reconnaissance.

IAF helicopters are already performing medical evacuation missions on the battlefield. In 2009, the Iraqis plan to procure a dedicated counterinsurgency aircraft that will directly support Iraqi troops in the field.

Operation Enduring Freedom—Afghanistan

Casualties

By April 12, a total of 488 Americans had died in Operation Enduring Freedom. The total includes 487 troops and one Department of Defense civilian. Of these deaths, 293 were killed in action with the enemy while 195 died in noncombat incidents.

There have been 1,928 troops wounded in action during OEF. This number includes 751 who were wounded and returned to duty within 72 hours and 1,177 who were unable to return to duty quickly.

C-130 Crews Set New Airdrop Record

The aircrews of the 774th Air Expeditionary Squadron at Bagram AB, Afghanistan, set a new airdrop record in February when the unit delivered about one million pounds of cargo, including humanitarian aid to villages and supplies to forward bases in the country.

The mark was a 40 percent increase from January operations and broke the previous airlift record set in September 2007. Supporting the 774th AES were the Army's 11th Quartermaster Rigger Detachment and Combined Joint Special Operations Task Force riggers.

Buckley, and Peterson AFBs, Colo., and Vandenberg AFB, Calif., supporting Air Force Space Command, Air Combat Command, Air Force Cyber Command, and the Department of Commerce. The wing is expected to grow to more than 800 personnel.

New Protest Filed Over KC-135

Alabama Aircraft Industries Inc. filed a new legal protest against the Air Force March 12 concerning a $1.1 billion maintenance contract for the KC-135 tanker. AAII lodged the complaint—its second since September 2007 in the ongoing dispute—based on the belief that USAF failed to comply with an earlier Government Accountability Office ruling in the company's favor.

AAII (formerly Pemco Aviation) lost out to Boeing last September in the original competition, but won a protest with GAO last December over how the Air Force evaluated the risk in Boeing's proposal. USAF agreed to go back and re-evaluate, but after doing so, it concluded in early March that Boeing deserved the contract. GAO had 100 days to rule after receipt of the complaint.

Renuart Says ONE Is Essential

Modernizing the sensor systems that monitor the national airspace remains the No. 1 unfunded requirement of US Northern Command, Gen. Victor E. Renuart Jr., who heads the command as well as NORAD, told the Senate Armed Services Committee March 6. Until that occurs, Operation Noble Eagle remains essential for the foreseeable future, he said.

"The systems that we use to identify traffic in our national aerospace are aging," Renuart told the panel. "We are working on some advanced technologies to allow us to perform that via broader means." But in the meanwhile, "the ability to put eyes and, if you will, radars on an air threat is critical to us," he said of the fighters and airborne surveillance platforms that patrol US skies as part of ONE.

He also said ONE aircraft have "a key role to play" in monitoring for "low observable and cruise missiles." So for the future, he said, "I see that role continuing. I see it to be vital to our national defense. And I would continue to recommend to the Secretary that we keep that force available to us."

B-52s Flex Muscles in Pacific

Four B-52 bombers made history March 6 when they simultaneously hit mock targets at four separate training ranges spread out across an 11,200-square-mile perimeter during an exercise from Andersen AFB, Guam. Called Quad Lightning, the mission was

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the first-ever of its kind in the Pacific since USAF has maintained a continuous bomber presence on the island to dissuade aggression in the region.

"Flying four sorties to different regions of the area of responsibility with simultaneous times over target demonstrates our capability to strike anytime and anywhere, with overwhelming firepower," said Lt. Col. Patrick Matthews, commander of the 96th Expeditionary Bomb Squadron. The B-52s arrived in late February at Andersen, replacing B-2As that had been there since late October 2007.

World War II Airman Identified

The Department of Defense announced March 10 that it had identified the remains of Aviation Cadet Ernest G. Munn, an airman missing since the crash of an AT-7 trainer aircraft during a Nov. 18, 1942 navigator training flight out of Mather Field, Calif. Munn, of St. Clairsville, Ohio, was one of four men aboard the AT-7.

Hikers found wreckage of the AT-7 in 1947 on Darwin Glacier in the Sierra Nevada mountain range, but it was not until 2005 that frozen human remains were found that were subsequently identified by the Joint POW/MIA Accounting Command as Cadet Leo M. Mustonen of the ill-fated flight. Hikers in 2007 found more remains near the 2005 site that JPAC researchers identified as belonging to Munn.

First UAV Unit Ready to Test

The Air Force stood up the 556th Test and Evaluation Squadron, its first operational test squadron for unmanned aircraft systems, during a ceremony March 5 at Creech AFB, Nev., its home. The new unit will support UAV operations worldwide, through force development evaluations, the development of training, tactics, and procedures, systems expertise, and fulfilling urgent need requests from commanders in theater.

As of mid-March, the 556th TES already had three new MQ-1 Predator UAVs in its inventory and anticipated receiving a fourth by the end of the year. It is scheduled to receive four MQ-9 Reaper UAVs, larger cousins to the Predator, in 2010.

Guard Needs Modern Aircraft, Too

Air National Guard boss Lt. Gen. Craig R. McKinley told a House oversight panel Feb. 28 that the Air Guard's "biggest problem" is recapitalizing the fleet, just as it is for the active force. However, McKinley declared that apart from the need just to build new airplanes, "we've got to look at how to do that in proportion so that active, Guard, and Reserve get those airplanes."

When asked by Rep. Norman Dicks (D-Wash.) how many new airplanes the Air Guard would get out of the Air Force's Fiscal 2009 budget request, McKinley replied, "We won't get any new aircraft." But the ANG is receiving some new MQ-1 Predator unmanned aerial vehicles in Fiscal 2008, he noted.

SOCOM Eyes Minigunship

US Special Operations Command is interested in a minigunship based on the C-27 airframe, Navy Adm. Eric T. Olson, head of the command, told the Senate Armed Services Committee March 4.

SOCOM has notional plans to replace Air Force Special Operations Command's current AC-130 gunships, but since a successor platform isn't anticipated until before the middle of next decade, it wants to pursue the "prototype development" of a "Gunship Light" concept built around the smaller C-27 airframe, Olson said.

The Air Force's unfunded requirements list for Fiscal 2009 includes a $74.8 million request for two C-27s for this purpose. The AC-27 would carry a 30 mm gun, USAF officials have said.

New Bomber in 2018 Can Be Done

Skeptics of the Air Force's assertion that it can field an impressive new long-range bomber in 2018 are misinformed, Gen. T. Michael Moseley, Chief of Staff, said Feb. 28.

"The ability to field a system by 2018, if you integrate existing technologies, is doable," Moseley said during a meeting with defense writers in Washington, D.C. "Those that say the technologies don't exist likely don't understand flying machines and building flying machines."

Moseley said the Air Force has been clear with industry that it wants them to utilize existing engines, sensors, weapons, weapons bays, etc., and integrate them into a platform that provides the range, payload, and persistence that USAF wants.

Study Finds Military Pay Competitive

The Pentagon's commission reviewing military compensation believes that current military pay is competitive with the civilian sector, agreeing with a Congressional Budget Office report issued in the summer of 2007.

Like CBO, the February 2008 10th Quadrennial Review of Military Compensation report recommends that comparisons should include more than the standard Regular Military Compensation (basic pay, housing and subsistence allowances, and federal tax breaks).

The Pentagon commission recommends including RMC, health care, retirement, and state and local tax advantages, or what's called Military Annual Compensation, as the basis for future comparisons. Without it, says the QRMC report, the result is "an incomplete analysis that substantially understates the value" of the military compensation package.

With it, says QRMC, the military can show that it provides a "more generous" package relative to civilian compensation. According to the report, using MAC, the average enlisted member earned about $10,600 more in 2006 than a civilian counterpart; a typical officer received $17,800 more. ■

Cyber Command Details Emerge, but Hq. Date Slips

Air Force Cyber Command will have a numbered air force designated 24th Air Force, four wings, and more than 65 squadrons collectively, including units from the Air National Guard and Air Force Reserve Command, USAF announced March 14.

Two of the wings will be new: the 450th Electronic Warfare Wing and the 689th Cyberspace Wing. They will be located on an interim basis at Lackland AFB, Tex., and Scott AFB, Ill., respectively. They will join the 688th Information Operations Wing (formerly the Air Force Information Operations Center) and the 67th Network Warfare Wing, both at Lackland.

USAF says it remains on track to declare the command ready for initial operations on Oct. 1, despite the fact that no permanent headquarters location will be assigned by then. The announcement of AFCYBER headquarters was expected prior to initial operational capability, but the final decision is no longer expected before late 2009.

The Air Force isn't saying specifically which sites it is considering. Alabama, Arkansas, California, Colorado, Louisiana, Massachusetts, Mississippi, Missouri, Nebraska, New Jersey, New Mexico, Ohio, Texas, Utah, and Virginia have expressed interest in hosting AFCYBER headquarters or some associated unit in their states.

News Notes

■ The Air Force said in early March it delivered the 2,000th mine-resistant ambush protected vehicle to the US Central Command area of responsibility, exceeding the Pentagon's delivery goals. The MRAPs are flown to the theater via C-5s, C-17s, or Russian-built An-124s from Charleston AFB, S.C.

■ SrA. Shane Reid received the Airman's Medal on March 18 at his deployed location with the 379th Air Expeditionary Wing in Southwest Asia. Reid helped rescue an elderly couple trapped in a burning vehicle in late 2006 in Orlando, Fla.

■ The Senate in March confirmed the promotion of Lt. Gen. Stephen R. Lorenz to the grade of general to take command of Air Education and Training Command at Randolph AFB, Tex. He succeeds Gen. William R. Looney III, who has led AETC since June 2005 and is retiring after 36 years of service.

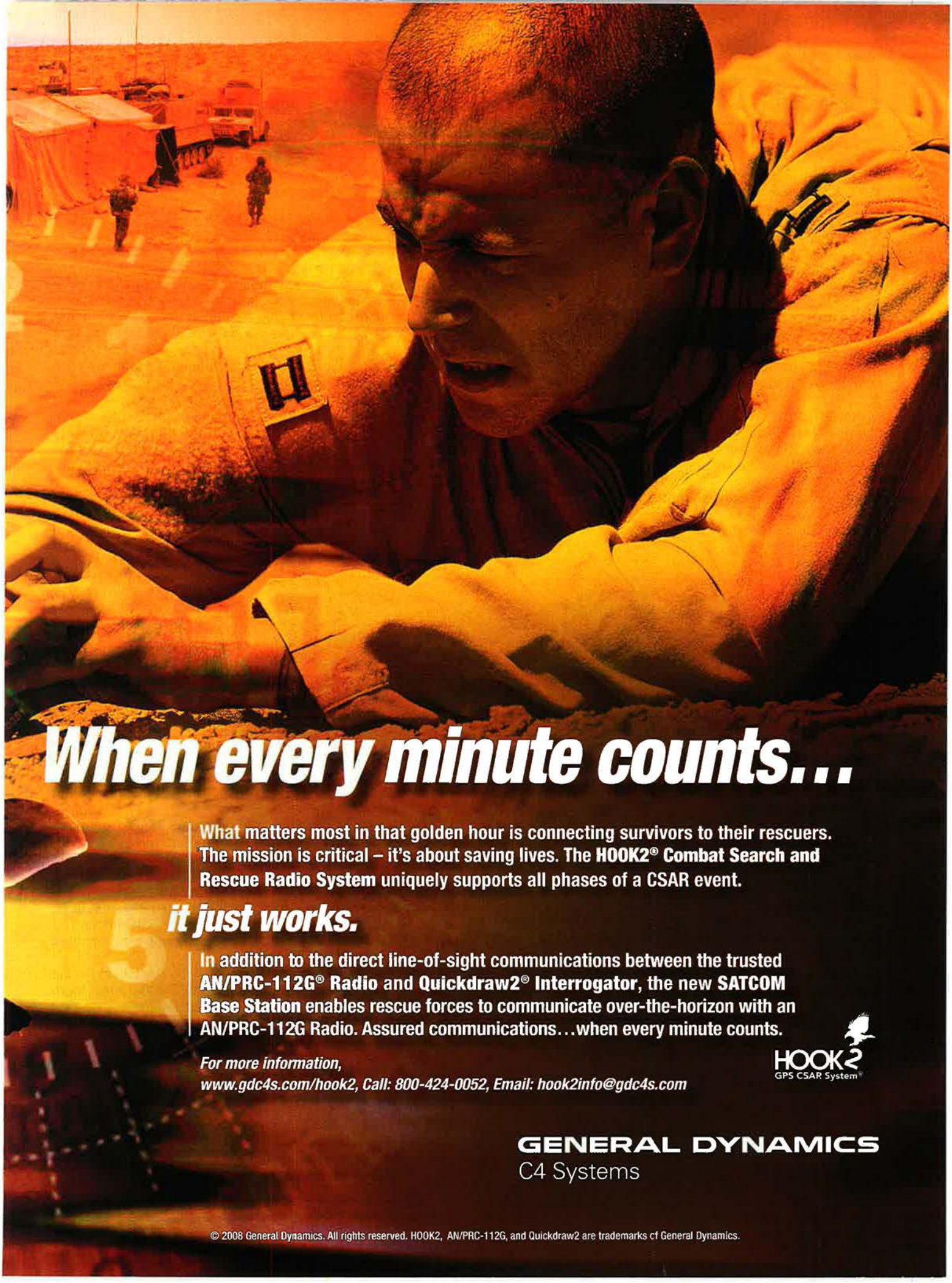
■ An RC-135 Rivet Joint electronic surveillance aircraft surpassed 50,000 flight hours during a mission March 12 in Southwest Asia for Operation Enduring Freedom. The aircraft, in service since 1962, is the first Rivet Joint and the first C-135 airframe, in general, to reach this milestone, USAF said.

■ The first F-35 test aircraft, AA-1, successfully completed its first airborne refueling tests March 12, said prime contractor Lockheed Martin. The airplane completed multiple tanker engagements with a specially instrumented KC-135 tanker near the company's assembly plant in Fort Worth, Tex.

■ A 22-pound BDU-33 nonexplosive dummy bomb inadvertently fell March 13 from an F-16 fighter from the Oklahoma Air National Guard's 138th Fighter Wing, hitting an apartment complex in Tulsa, but injuring no one. The F-16 was en route to a range in Kansas to practice bombing runs.

■ The Air Force Academy celebrated the 50th anniversary of its astronautics department, the world's oldest, on March 7. Air Force Secretary Michael W. Wynne said the department has "launched the careers of countless space pioneers and helped establish America's asymmetric space dominance."

■ The Department of Defense presented the 2007 Modeling and Simulation Award March 11 to the Air Force's Distributed Mission Operations Center at Kirtland AFB, N.M. The center won for Virtual Flag, the distributed, joint virtual training exercises that it runs four times a year. ■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Issue Brief

By Adam J. Hebert, Executive Editor

End Strength Bipolarity

Does the Air Force want to shrink to an active duty end strength of 316,000 airmen, or does it actually want to expand to 330,000 troops?

The answer is: Yes.

In Feb. 27 testimony before a House committee, Secretary of the Air Force Michael W. Wynne said, "I must stand by the 316,000" figure in USAF's budget request. A few minutes later, he declared, "We really would prefer to hedge our bet at 330,000."

At which point Chairman Ike Skelton (D-Mo.) sighed, "I kind of feel like Mark Twain, [who once said], 'The more is explained to me, the more I don't understand it.'"

He's not alone. We know that USAF today has 329,000 airmen. Whether that end strength is going up or down, though, is a topic snarled in the arcana of federal budgets and Pentagon politics.

Wynne himself is not confused. Far from it. He is simply trapped by what he officially must say.

Where did 316,000 come from? At the end of 2004, USAF had 376,600 actives. Service leaders, desperately seeking funds to support recapitalization, laid plans to cut 60,000 airmen, leaving 316,600. The last increment of 13,000 airmen was to go in 2009.

Illustration by W.C. Pope

Since then, however, demands have held steady in all areas and actually increased in some. Even with reorganizations, AFSO 21 process improvements, base closures, and other efficiencies, a force of 316,600 airmen is too small.

Therefore, USAF's top officials no longer endorse the planned personnel cuts. The problem is that the service continues to be bound to the Bush Administration's budget, which uses the 316,000-troop target. "I must support the President's budget as it was submitted," Wynne said, adding that, in his "personal opinion," it would be better to halt the cutting and instead boost the number of airmen. Similarly, Gen. T. Michael Moseley, Chief of Staff, testified that "this is an affordability issue," and "while we support the President's budget, we're working hard inside those fiscal limits."

Even as USAF defended the President's budget, it sent to Congress an "unfunded requirements" list containing a request for $385 million in 2009 to expand active duty manpower to 330,000 airmen.

A recent USAF report to Congress noted that 316,600 airmen would leave the service staffed at only 96 percent of requirements in 2009 and at an average of 95 percent through 2015.

This shortfall was calculated using sophisticated manpower tools to determine the number of airmen needed. The shortfall will have a "significant impact" on USAF's ability to perform its missions and will create "critical" capabilities gaps, the report states.

Increasing operating tempo could cause large numbers of airmen to start "voting with their feet" and exiting the service *en masse*. An immediate combat concern centers on a looming shortfall of roughly 5,300 airmen in the aircraft maintenance and munitions career fields. The units dependent on these front-line airmen, critical to generating Air Force combat power, have traditionally been fully staffed. The requirement for maintenance and munitions personnel is increasing because old aircraft are flying and breaking more.

The cuts were also planned under the assumption that USAF's ground force taskings would end, but the Air Force now has 6,200 airmen performing land force jobs.

Because of the President's budget topline, the need to prop up modernization and recapitalization accounts, and various Congressional restrictions on retiring old aircraft, the Air Force cannot find the money to solve its manpower problem on its own. Maintaining end strength within the existing budget would require USAF to close 15 major bases—an idea that is obviously a nonstarter. The problem will only grow worse. The budget asserts that end strength will remain at 316,600 for years to come, but the need will continue to grow—from 330,200 airmen in 2009 to 335,700 airmen in 2015.

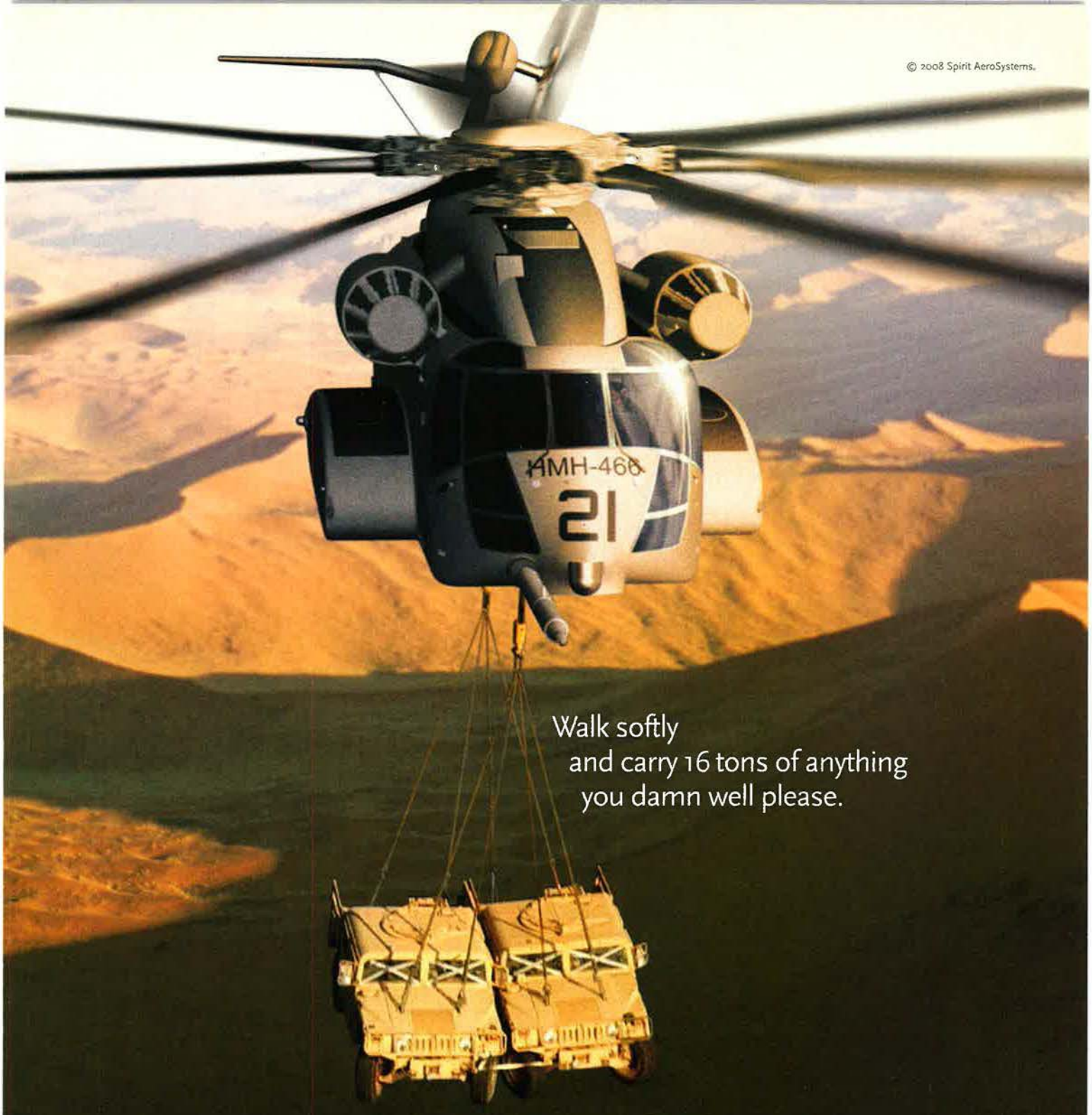
Why? The missions keep expanding. US Africa Command and its air component will need airmen, as will Cyber Command. The Air Force will add four wings of Predator and Reaper unmanned vehicles and a new Global Hawk reconnaissance UAV wing.

Also on the horizon is the CSAR-X rescue helicopter fleet, which will add a net of 40 aircraft to the CSAR inventory. The F-35 fleet is similarly forecast to be larger than the combined F-16 and A-10 fleets it replaces.

The Army and Marine Corps, meanwhile, are moving in the opposite direction, adding a combined 92,000 troops. More soldiers and marines will require battlefield airmen to travel with them, and Air Force lift to move them. USAF is building a battlefield airman wing to support a larger Army.

All told, USAF's report finds a shortfall of nearly $12 billion in personnel accounts through 2015. Unless additional airmen can be brought into the mix, and soon, the manpower shortfall will continue to grow—with resulting damage to combat power and national security. ■

More information: http://www.airforce-magazine.com/DocumentFile/personnel/Pages/ReviewofAirForceEndStrength.aspx



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USAF Alma

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About the Almanac

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

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

—THE EDITORS

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Edited by Tamar A. Mehuron, Associate Editor

The Air Force in Facts and Figures

2008 USAF Almanac

Structure of the Force

How the Air Force Is Organized

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

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

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

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

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

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

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

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

Air and Space Expeditionary Force

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

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

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

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

The Nation's Air Arm and Its Early Leaders

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

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

[a]The Army Air Corps became a subordinate element of the Army Air Forces June 20, 1941. Since the Army Air Corps had been established by statute in 1926, its disestablishment required an Act of Congress, which did not take place until 1947. Between March 9, 1942, and Sept. 18, 1947, the Army Air Corps continued to exist as a combatant arm, and personnel of the Army Air Forces were still assigned to the Army Air Corps.

USAF Leaders Through the Years

Secretaries of the Air Force

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

USAF Vice Chiefs of Staff

Gen. Hoyt S. Vandenberg	Oct. 10, 1947	April 28, 1948
Gen. Muir S. Fairchild	May 27, 1948	March 17, 1950
Lt. Gen. Lauris Norstad (acting)	May 22, 1950	Oct. 9, 1950
Gen. Nathan F. Twining	Oct. 10, 1950	June 29, 1953
Gen. Thomas D. White	June 30, 1953	June 30, 1957
Gen. Curtis E. LeMay	July 1, 1957	June 30, 1961
Gen. Frederic H. Smith Jr.	July 1, 1961	June 30, 1962
Gen. Willliam F. McKee	July 1, 1962	July 31, 1964
Gen. John P. McConnell	Aug. 1, 1964	Jan. 31, 1965
Gen. William H. Blanchard	Feb. 19, 1965	May 31, 1966
Lt. Gen. Hewitt T. Wheless (acting)	June 13, 1966	July 31, 1966
Gen. Bruce K. Holloway	Aug. 1, 1966	July 31, 1968
Gen. John D. Ryan	Aug. 1, 1968	July 31, 1969
Gen. John C. Meyer	Aug. 1, 1969	April 30, 1972
Gen. Horace M. Wade	May 1, 1972	Oct. 31, 1973
Gen. Richard H. Ellis	Nov. 1, 1973	Aug. 18, 1975
Gen. William V. McBride	Sept. 1, 1975	March 31, 1978
Gen. Lew Allen Jr.	April 1, 1978	June 30, 1978
Gen. James A. Hill	July 1, 1978	Feb. 29, 1980
Gen. Robert C. Mathis	March 1, 1980	May 31, 1982
Gen. Jerome F. O'Malley	June 1, 1982	Oct. 5, 1983
Gen. Lawrence A. Skantze	Oct. 6, 1983	July 31, 1984
Gen. Larry D. Welch	Aug. 1, 1984	July 31, 1985
Gen. John L. Piotrowski	Aug. 1, 1985	Jan. 31, 1987
Gen. Monroe W. Hatch Jr.	Feb. 1, 1987	May 24, 1990
Gen. John Michael Loh	May 25, 1990	March 25, 1991
Gen. Michael P.C. Carns	May 16, 1991	July 28, 1994
Gen. Thomas S. Moorman Jr.	July 29, 1994	July 11, 1997
Gen. Ralph E. Eberhart	July 11, 1997	May 26, 1999
Gen. Lester L. Lyles	May 27, 1999	April 17, 2000
Gen. John W. Handy	April 17, 2000	Nov. 5, 2001
Gen. Robert H. Foglesong	Nov. 5, 2001	Aug. 11, 2003
Gen. T. Michael Moseley	Aug. 12, 2003	Sept. 2, 2005
Gen. John D.W. Corley	Sept. 2, 2005	Sept. 17, 2007
Gen. Duncan J. McNabb	Sept. 17, 2007	

USAF Chiefs of Staff

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

Chief Master Sergeants of the Air Force

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

Air Combat Command

Gen. John Michael Loh	June 1, 1992	June 22, 1995
Gen. Joseph W. Ralston	June 23, 1995	Feb. 27, 1996
Lt. Gen. Brett M. Dula (acting)	Feb. 28, 1996	April 4, 1996
Gen. Richard E. Hawley	April 5, 1996	June 11, 1999
Gen. Ralph E. Eberhart	June 11, 1999	Feb. 8, 2000
Gen. John P. Jumper	Feb. 8, 2000	Sept. 6, 2001
Lt. Gen. Donald G. Cook (acting)	Sept. 6, 2001	Nov. 14, 2001
Gen. Hal M. Hornburg	Nov. 14, 2001	Nov. 17, 2004
Lt. Gen. Bruce A. Wright (acting)	Nov. 17, 2004	Feb. 6, 2005
Lt. Gen. William M. Fraser III (acting)	Feb. 6, 2005	May 26, 2005
Gen. Ronald E. Keys	May 26, 2005	Oct. 2, 2007
Gen. John D.W. Corley	Oct. 2, 2007	

Air (Aerospace) Defense Command

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

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

Air Education and Training Command

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

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

Air Force Communications Command

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

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

Air Force Intelligence Command

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

See Electronic Security Command.

Air Force Logistics Command

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

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

Air Force Materiel Command

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

34 WORLD GOVERNMENTS.
ONE CHOSEN LEADER.

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Air Force Reserve Command

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

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

Air Force Space Command

Gen. James V. Hartinger	Sept. 1, 1982	July 30, 1984
Gen. Robert T. Herres	July 30, 1984	Oct. 1, 1986
Maj. Gen. Maurice C. Padden	Oct. 1, 1986	Oct. 29, 1987
Lt. Gen. Donald J. Kutyna	Oct. 29, 1987	March 29, 1990
Lt. Gen. Thomas S. Moorman Jr.	March 29, 1990	March 23, 1992
Gen. Donald J. Kutyna	March 23, 1992	June 30, 1992
Gen. Charles A. Horner	June 30, 1992	Sept. 13, 1994
Gen. Joseph W. Ashy	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes III	Aug. 26, 1996	Aug. 14, 1998
Gen. Richard B. Myers	Aug. 14, 1998	Feb. 22, 2000
Gen. Ralph E. Eberhart	Feb. 22, 2000	April 19, 2002
Gen. Lance W. Lord	April 19, 2002	April 1, 2006
Lt. Gen. Frank G. Klotz (acting)	April 1, 2006	June 26, 2006
Gen. Kevin P. Chilton	June 26, 2006	Oct. 3, 2007
Lt. Gen. Michael A. Hamel	Oct. 3, 2007	Oct. 12, 2007
Gen. C. Robert Kehler	Oct. 12, 2007	

Air Force Special Operations Command

Maj. Gen. Thomas E. Eggers	May 22, 1990	June 30, 1991
Maj. Gen. Bruce L. Fister	June 30, 1991	July 22, 1994
Maj. Gen. James L. Hobson Jr.	July 22, 1994	July 9, 1997
Maj. Gen. Charles R. Holland	July 9, 1997	Aug. 5, 1999
Lt. Gen. Maxwell C. Bailey	Aug. 5, 1999	Jan. 16, 2002
Lt. Gen. Paul V. Hester	Jan. 16, 2002	July 1, 2004
Lt. Gen. Michael W. Wooley	July 1, 2004	Nov. 27, 2007
Lt. Gen. Donald C. Wurster	Nov. 27, 2007	

Air Force Systems Command

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

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

Air Mobility Command

Gen. Hansford T. Johnson	June 1, 1992	Aug. 22, 1992
Gen. Ronald R. Fogleman	Aug. 23, 1992	Oct. 17, 1994
Gen. Robert L. Rutherford	Oct. 18, 1994	July 15, 1996
Gen. Walter Kross	July 15, 1996	Aug. 3, 1998
Gen. Charles T. Robertson Jr.	Aug. 3, 1998	Nov. 5, 2001
Gen. John W. Handy	Nov. 5, 2001	Sept. 7, 2005
Lt. Gen. Christopher A. Kelly (acting)	Sept. 7, 2005	Oct. 14, 2005
Gen. Duncan J. McNabb	Oct. 14, 2005	Sept. 7, 2007
Gen. Arthur J. Lichte	Sept. 7, 2007	

Air National Guard

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

Air Proving Ground Command

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

Designated a center December 1957.

Air University

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

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

US Southern Command

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

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

US Space Command

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

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

US Special Operations Command

Gen. James J. Lindsay, USA	April 16, 1987	June 27, 1990
Gen. Carl W. Stiner, USA	June 27, 1990	May 20, 1993
Gen. Wayne A. Downing, USA	May 20, 1993	Feb. 29, 1996
Gen. Henry H. Shelton, USA	Feb. 29, 1996	Sept. 25, 1997
Gen. Peter J. Schoomaker, USA	Nov. 5, 1997	Oct. 27, 2000
Gen. Charles R. Holland, USAF	Oct. 27, 2000	Sept. 2, 2003
Gen. Bryan D. Brown, USA	Sept. 2, 2003	July 9, 2007
Adm. Eric T. Olson, USN	July 9, 2007	

US Strategic Command

Gen. G. Lee Butler, USAF	June 1, 1992	Feb. 13, 1994
Adm. Henry G. Chiles Jr., USN Gen.	Feb. 14, 1994	Feb. 21, 1996
Gen. Eugene E. Habiger, USAF	Feb. 22, 1996	June 25, 1998
Adm. Richard W. Mies, USN	June 26, 1998	Nov. 30, 2001
Adm. James O. Ellis Jr., USN	Nov. 30, 2001	July 9, 2004
Gen. James E. Cartwright, USMC	July 9, 2004	Aug. 10, 2007
Lt. Gen. C. Robert Kehler, USAF (acting)	Aug. 10, 2007	Oct. 3, 2007
Gen. Kevin P. Chilton, USAF	Oct. 3, 2007	

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

US Transportation Command

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

NORAD Leaders Through the Years

North American Aerospace Defense Command

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

People

2008 USAF Almanac

USAF Total Force

(As of Sept. 30, 2007)

	FY02	FY03	FY04	FY05	FY06	FY07	FY08
Air Force active duty							
Officers	72,032	73,758	74,109	73,252	70,539	65,722	64,949
Enlisted	292,061	297,219	298,314	276,117	273,990	263,372	259,651
Cadets	4,158	4,085	4,193	4,327	4,424	4,401	4,000
Total Air Force active duty	**368,251**	**375,062**	**376,616**	**353,696**	**348,953**	**333,495**	**328,600**
Career re-enlistments (second term)	34,093	31,026	27,266	23,338	22,431	23,602	18,154
Rate	88%*	90%*	91%	84%	89%	85%	93%
First-term re-enlistments	10,666	8,232	9,232	10,128	11,192	12,099	13,214
Rate	72%*	61%*	63%	54%	56%	55%	59%
Civilian personnel							
Direct hire (excluding technicians)	123,439	122,419	124,959	125,809	130,572	121,124	129,381
ANG technicians	21,246	20,718	22,416	22,322	21,997	22,724	22,903
AFRC technicians	8,825	8,159	9,204	9,445	9,435	9,172	9,999
Indirect hire—foreign nationals	6,296	6,410	6,146	6,589	6,935	6,496	6,617
Total civilian personnel	**159,806**	**157,706**	**162,725**	**164,165**	**168,939**	**159,516**	**168,900**
Guard and Reserve							
Air National Guard, Selected Reserve	112,075	108,137	106,715	106,430	105,660	106,256	106,700
AFRC, Selected Reserve	76,632	74,754	75,322	75,802	74,075	71,146	67,500
AFRC, Individual Ready Reserve	41,095	36,665	37,015	48,750	44,904	45,469	49,997
Total Ready Reserve	**229,802**	**219,556**	**219,052**	**230,982**	**224,639**	**222,871**	**224,197**
Standby	17,430	17,587	17,340	15,241	10,932	10,675	10,179
Total Guard and Reserve	**247,232**	**237,143**	**236,392**	**246,223**	**235,571**	**233,546**	**234,376**

FYs 2002-07 are actual figures; FY 2008 is an estimate. *Stop-Loss imposed in FY02 and FY03.

Armed Forces Manpower Trends, End Strength in Thousands

(As of Sept. 30, 2007)

	FY02	FY03	FY04	FY05	FY06	FY07	FY08
Active duty military							
Air Force	368	375	377	354	349	334	329
Army	487	499	500	493	505	522	525
Marine Corps	174	178	178	180	180	187	189
Navy	383	382	373	363	350	338	328
Total	**1,412**	**1,434**	**1,428**	**1,390**	**1,384**	**1,381**	**1,371**
Selected Guard and Reserve							
Air National Guard	112	108	107	106	106	106	107
AFRC	77	75	75	76	74	71	68
Army National Guard	351	351	343	333	346	353	351
Army Reserve	207	212	204	189	190	190	198
Marine Corps Reserve	40	41	40	40	40	39	40
Naval Reserve	88	88	83	76	71	70	68
Total	**875**	**875**	**852**	**820**	**827**	**829**	**832**
Direct-hire civilian (full-time equivalents)							
Air Force	154	149	154	155	158	156	160
Army	231	226	209	221	220	220	222
Navy/Marine Corps	185	182	183	179	178	176	180
Defense agencies	101	86	105	108	104	105	109
Total	**671**	**643**	**651**	**663**	**660**	**657**	**671**

FY08 numbers are estimates.

USAF Educational Levels

(As of Sept. 30, 2007)

	Number	Percent
Enlisted		
High school	12,541	4.8
Some college (< 2 years)	189,982	72.1
AA/AS degree or equivalent hours	45,752	17.4
Bachelor's degree	13,106	5.0
Master's degree	1,969	0.7
Professional or doctoral degree	22	0.0
Total	**263,372**	**100**
Officers		
Bachelor's degree	32,467	49.4
Master's degree	26,289	40.0
Doctoral degree	854	1.3
Professional degree	6,112	9.3
Total	**65,722**	**100**

Does not include cadets.

USAF Marital Status

(As of Sept. 30, 2007)

Total percent married	60.6
Percent of enlisted	57.7
Percent of officers	72.0
Number of USAF couples	19,357
Number married to members of other services	1,374

Air Force Personnel Strength

(As of Sept. 30, 2007)

Year	Strength	Year	Strength	Year	Strength
1907	3	1941	152,125	1975	612,551
1908	13	1942	764,415	1976	585,207
1909	27	1943	2,197,114	1977	570,479
1910	11	1944	2,372,292	1978	569,491
1911	23	1945	2,282,259	1979	559,450
1912	51	1946	455,515	1980	557,969
1913	114	1947	305,827	1981	570,302
1914	122	1948	387,730	1982	582,845
1915	208	1949	419,347	1983	592,044
1916	311	1950	411,277	1984	597,125
1917	1,218	1951	788,381	1985	601,515
1918	195,023	1952	973,474	1986	608,199
1919	25,603	1953	977,593	1987	607,035
1920	9,050	1954	947,918	1988	576,446
1921	11,649	1955	959,946	1989	570,880
1922	9,642	1956	909,958	1990	535,233
1923	9,441	1957	919,835	1991	510,432
1924	10,547	1958	871,156	1992	470,315
1925	9,670	1959	840,028	1993	444,351
1926	9,674	1960	814,213	1994	426,327
1927	10,078	1961	820,490	1995	400,409
1928	10,549	1962	883,330	1996	389,001
1929	12,131	1963	868,644	1997	377,385
1930	13,531	1964	855,802	1998	367,470
1931	14,780	1965	823,633	1999	360,590
1932	15,028	1966	886,350	2000	355,654
1933	15,099	1967	897,426	2001	353,571
1934	15,861	1968	904,759	2002	368,251
1935	16,247	1969	862,062	2003	375,062
1936	17,233	1970	791,078	2004	376,616
1937	19,147	1971	755,107	2005	353,696
1938	21,089	1972	725,635	2006	348,953
1939	23,455	1973	690,999	2007	333,495
1940	51,165	1974	643,795	2008	328,600

2008 number is an estimate.

Active Duty Force Demographics

(As of Sept. 30, 2007)

Rank	Men	Women	Total
Officers			
General	14	0	14
Lieutenant General	31	1	32
Major General	94	3	97
Brigadier General	126	17	143
Colonel	2,991	415	3,406
Lieutenant Colonel	8,639	1,301	9,940
Major	12,464	2,374	14,838
Captain	18,053	4,530	22,583
First Lieutenant	5,952	1,704	7,656
Second Lieutenant	5,523	1,490	7,013
Total	**53,887**	**11,835**	**65,722**
Enlisted			
Chief Master Sergeant of the Air Force	1	0	1
Chief Master Sergeant	2,406	303	2,709
Senior Master Sergeant	4,589	604	5,193
Master Sergeant	22,872	3,466	26,338
Technical Sergeant	35,672	7,803	43,475
Staff Sergeant	53,812	15,439	69,251
Sergeant/Senior Airman	41,938	11,264	53,202
Airman First Class	36,521	10,224	46,745
Airman	4,961	1,404	6,365
Airman Basic	8,005	2,088	10,093
Total	**210,777**	**52,595**	**263,372**
Academy Cadets	3,579	822	4,401
Total personnel	**268,243**	**65,252**	**333,495**

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

The Civilian Force

(As of Sept. 30, 2007)

Payband	NSPS[a]	Grade	General Schedule/ Other	Wage Grade	Wage Grade Leader	Wage Grade Supervisor
1	3,957	1	2	1	0	0
2	29,912	2	28	98	4	14
3	3,334	3	281	218	5	16
4	26	4	1,690	107	3	25
		5	5,408	639	16	53
		6	3,447	969	28	77
		7	6,971	1,234	39	120
		8	1,201	2,437	124	199
		9	8,659	2,564	253	725
		10	519	12,990	925	1,047
		11	11,277	3,223	226	438
		12	10,127	1,550	98	208
		13	3,945	248	23	153
		14	974	34	1	174
		15	313	2	1	91
		16	0	0	0	52
		17	0	0	0	33
		18	0	0	0	14
		ST[b]	0			
		SES[c]	277			
		Other	68			
Total	**37,229**	**Total**	**55,187**	**26,314**	**1,746**	**3,439**

Air Force Civilian Personnel

	Average Age	Average Length of Service
General Schedule	**47**	**16.3**
NSPS	**47**	**16.2**
Wage System	**44**	**14.1**
Wage System Leader	**49**	**19.9**
Wage System Supervisor	**49**	**22.2**

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

Does not include 2,467 personnel in demonstration projects.

[a]National Security Personnel System.

[b]Scientific and Technical.

[c]Senior Executive Service.

USAF Personnel Strength by Commands, FOAs, and DRUs

(As of Sept. 30, 2007)

	Military	Civilian	Total
Major Commands			
Air Combat Command (ACC)	83,631	10,394	94,025
Air Education and Training Command (AETC)	60,550	14,341	74,891
Air Force Materiel Command (AFMC)	19,069	56,804	75,873
Air Force Reserve Command (AFRC)	317	13,220	13,537
Air Force Space Command (AFSPC)	18,147	6,667	24,814
Air Force Special Operations Command (AFSOC)	9,718	881	10,559
Air Mobility Command (AMC)	45,143	8,364	53,507
Pacific Air Forces (PACAF)	30,324	7,842	38,166
United States Air Forces in Europe (USAFE)	25,851	5,418	31,269
Total Major Commands	**292,750**	**123,931**	**416,681**
Field Operating Agencies (FOAs)			
Air Force Agency for Modeling and Simulation	16	13	29
Air Force Audit Agency	0	747	747
Air Force Center for Environmental Excellence	32	382	414
Air Force Civil Engineer Support Agency	93	114	207
Air Force Communications Agency	0	303	303
Air Force Cost Analysis Agency	20	56	76
Air Force Financial Services Center	105	3	108
Air Force Flight Standards Agency	132	26	158
Air Force Frequency Management Agency	8	21	29
Air Force Global Cyberspace Integration Center	187	62	249
Air Force Historical Research Agency	0	36	36
Air Force Inspection Agency	89	25	114
Air Force Intelligence Analysis Agency	89	34	123
Air Force Legal Operations Agency	496	141	637
Air Force Logistics Management Agency	36	17	53
Air Force Manpower Agency	165	248	413
Air Force Medical Operations Agency	97	87	184
Air Force Medical Support Agency	167	84	251
Air Force News Agency	298	93	391
AFNWCA*	9	15	24
Air Force Office of Special Investigations	1,529	666	2,195
Air Force Operations Group	60	0	60
Air Force Personnel Center	881	945	1,826
Air Force Personnel Operations Agency	18	79	97
Air Force Petroleum Agency	34	0	34
Air Force Real Property Agency	0	120	120
Air Force Review Boards Agency	7	43	50
Air Force Safety Center	57	48	105
Air Force Security Forces Center	362	26	388
Air Force Services Agency	71	179	250
Air Force Technical Applications Center	525	0	525
Air Force Weather Agency	1,158	171	1,329
Air National Guard Readiness Center	115	464	579
Total FOAs	**6,856**	**5,248**	**12,104**
Direct Reporting Units (DRUs)			
Air Force District of Washington	4,113	1,346	5,459
Air Force Operational Test and Evaluation Center	480	184	664
United States Air Force Academy (excluding cadets)	2,199	1,285	3,484
Total DRUs	**6,792**	**2,815**	**9,607**
Other			
Other active duty	22,696	27,522	50,218
USAFA cadets	4,401	0	4,401
Total Other	**27,097**	**27,522**	**54,619**
Total Strength	**333,495**	**159,516**	**493,011**

*AFNWCA is Air Force Nuclear Weapons & Counterproliferation Agency.

USAF Personnel by Geographic Area

(As of Sept. 30, 2007)

Total military personnel	**333,495**
US territory and special locations	**273,735**
Total in foreign countries	**59,760**
Western and Southern Europe	**31,161**
Germany	14,583
UK	8,952
Italy	4,083
Turkey	1,503
Spain	298
All other countries	1,742
East Asia and Pacific	**21,001**
Japan/Okinawa	12,818
South Korea	8,048
All other countries	135
Africa, Near East, South Asia	**540**
Saudi Arabia	69
Kuwait	46
Egypt	31
All other countries	394
Western hemisphere	**364**
Canada	84
Panama	1
All other countries	279
Other areas	**6,694**

Specialties in the Enlisted Force

(As of Sept. 30, 2007)

Code	Career Field	Assigned	Percent
1A	Aircrew Operations	9,578	3.6
1C	Command Control Systems Operations	10,598	4.0
1N	Intelligence	11,707	4.4
1S	Safety	363	0.1
1T	Aircrew Protection	2,615	1.0
1W	Weather	2,369	0.9
2A	Manned Aerospace Maintenance	54,748	20.8
2E	Communications-Electronics Systems	11,313	4.3
2F	Fuels	3,900	1.5
2G	Logistics Plans	791	0.3
2M	Missile & Space Systems Maintenance	2,030	0.8
2P	Precision Measurement	798	0.3
2R	Maintenance Management Systems	1,431	0.5
2S	Supply	7,712	2.9
2T	Transportation & Vehicle Maintenance	12,444	4.7
2W	Munitions & Weapons	14,964	5.7
3A	Information Management	8,524	3.2
3C	Communications-Computer Systems	11,290	4.3
3E	Civil Engineering	15,870	6.0
3H	Historian	11	0.0
3M	Morale, Welfare, Recreation, & Services	4,416	1.7
3N	Public Affairs	1,637	0.6
3P	Security Forces	24,363	9.3
3S	Mission Support	7,923	3.0
3V	Visual Information	863	0.3
4A-V	Medical	19,096	7.3
4Y	Dental	2,467	0.9
5J	Paralegal	977	0.4
5R	Chapel Services Support	450	0.2
6C	Contracting	1,193	0.5
6F	Financial	2,519	1.0
7S	Special Investigation	957	0.4
8	Special Duty Identifiers	6,513	2.5
9	Reporting Identifiers	6,942	2.6
	Unassigned	0	0.0
	Total	**263,372**	**100**

Percentages have been rounded.

Specialties in the Officer Force

(As of Sept. 30, 2007)

Code	Utilization Field Title	Assigned	Percent
XO	Commander & Director	1,303	2.0
11	Pilot	11,917	18.1
12	Navigator	3,468	5.3
13	Space, Missile, Command & Control	4,780	7.3
14	Intelligence	2,759	4.2
15	Weather	611	0.9
16	Operations Support	1,169	1.8
21	Aircraft Maintenance and Munitions	3,415	5.2
31	Security Forces	672	1.0
32	Civil Engineering	1,223	1.9
33	Communications-Computer Systems	3,305	5.0
34	MWR & Services	382	0.6
35	Public Affairs	292	0.4
37	Manpower & Personnel	1,460	2.2
4X	Medical	10,743	16.3
51	Law	1,215	1.8
52	Chaplain	556	0.8
61	Scientific/Research	851	1.3
62	Developmental Engineering	2,623	4.0
63	Acquisition	2,291	3.5
64	Contracting	813	1.2
65	Financial	717	1.1
71	Special Investigations	337	0.5
8X	Special Duty Identifiers	1,225	1.9
9X	Reporting Identifiers	6,043	9.2
	Other	1,552	2.4
	Total	**65,722**	**100**

Total does not include 4,401 cadets. Percentages have been rounded.

USAF photo by MSgt. Al Gerloff

SSgt. Leslie Poling guards a C-130 Hercules and crew at Kirkuk AB, Iraq. Poling is assigned to the 386th Expeditionary Security Forces Squadron.

Budgets

2008 USAF Almanac

Terms Explained

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

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

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

Air Force Budget—A 10-Year Perspective

(Budget authority in millions of current and constant FY09 dollars; excludes costs of the Global War on Terror.)

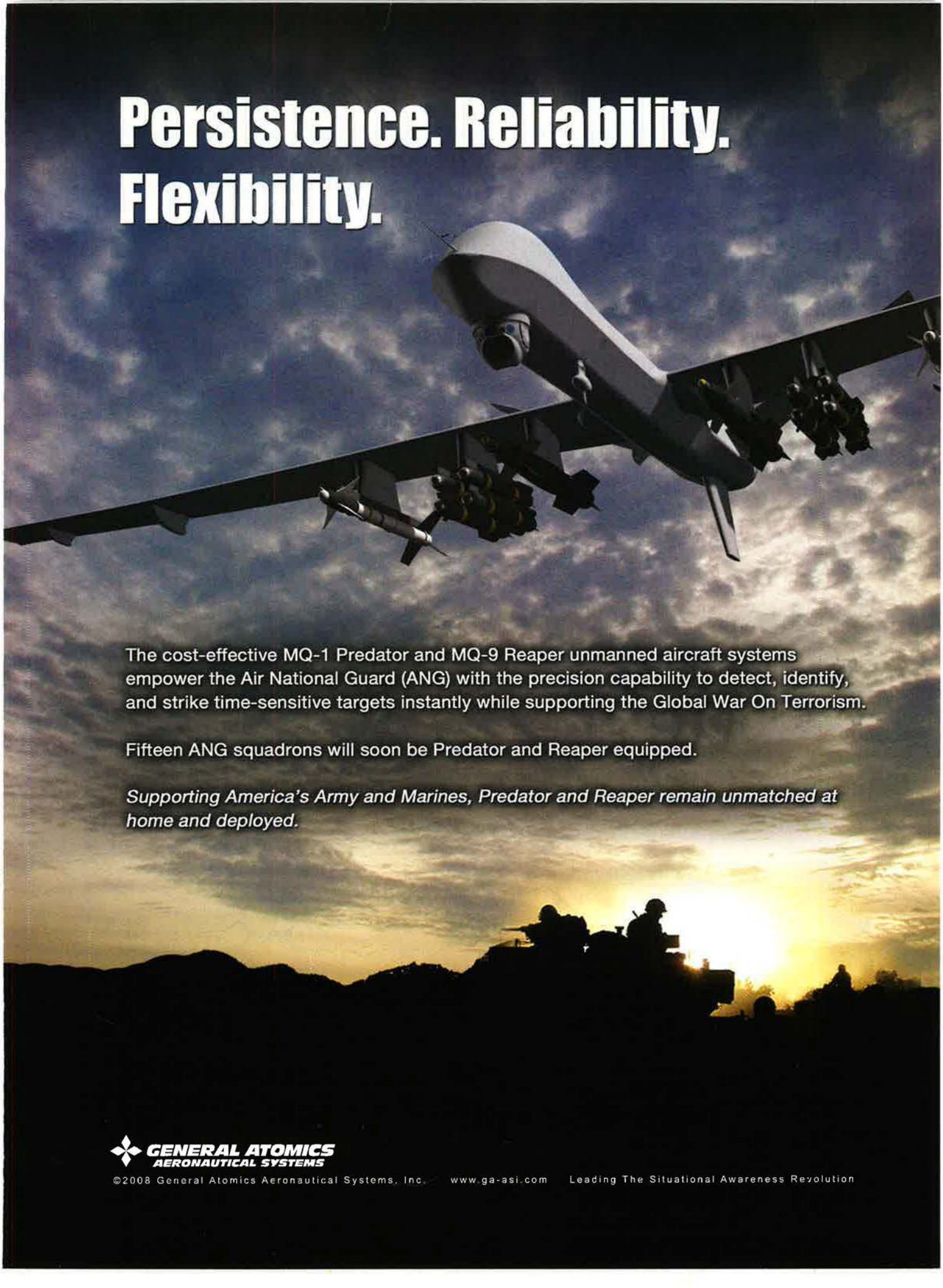
Current dollars	**FY99**	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**	**FY06**	**FY07**	**FY08**
Military personnel	$19,357	$20,217	$20,956	$24,751	$28,732	$29,681	$30,344	$31,398	$29,967	$30,789
Operation & maintenance	27,107	27,254	29,328	34,364	43,254	39,252	39,752	46,709	41,024	40,713
Procurement	18,434	18,755	22,054	23,229	31,380	32,460	35,117	35,989	35,326	32,892
RDT&E	13,807	14,511	14,297	14,519	18,825	20,290	20,551	22,220	24,328	26,052
Military construction	862	1,174	1,410	1,806	1,634	1,831	1,499	2,183	1,765	2,789
Family housing	1,082	1,158	1,084	1,374	1,536	1,441	1,680	2,086	1,777	1,001
Rev. & mgmt. funds	1,510	434	515	292	31	690	-667	1,252	44	60
Trust & receipts	-246	-453	-95	-108	-147	-110	-359	-180	-133	0
Total	**$81,913**	**$83,050**	**$89,549**	**$100,227**	**$125,245**	**$125,535**	**$127,918**	**$141,657**	**$134,098**	**$134,297**
Constant FY09 dollars										
Military personnel	$25,362	$25,617	$25,830	$30,028	$34,074	$34,274	$33,887	$33,977	$31,545	$31,497
Operation & maintenance	35,516	34,534	36,150	41,690	51,296	45,326	44,394	50,546	43,185	41,649
Procurement	24,152	23,765	27,184	28,181	37,214	37,483	39,218	38,945	37,187	33,649
RDT&E	18,090	18,387	17,623	17,614	22,325	23,430	22,951	24,045	25,609	26,651
Military construction	1,129	1,488	1,738	2,191	1,938	2,114	1,674	2,362	1,858	2,853
Family housing	1,418	1,467	1,336	1,667	1,822	1,664	1,876	2,257	1,871	1,024
Rev. & mgmt. funds	1,978	550	635	354	37	797	-745	1,355	46	62
Trust & receipts	-322	-574	-117	-131	-174	-127	-401	-195	-140	0
Total	**$107,322**	**$105,234**	**$110,379**	**$121,595**	**$143,530**	**$144,960**	**$142,855**	**$153,293**	**$141,161**	**$137,386**
Percentage real growth										
Military personnel	-0.9	1.0	0.8	16.2	13.5	0.6	-1.1	0.3	-7.2	-0.2
Operation & maintenance	5.4	-2.8	4.7	15.3	23.0	-11.6	-2.1	13.9	-14.6	-3.6
Procurement	18.2	-1.6	14.4	3.7	32.1	0.7	4.6	-0.7	-4.5	-9.5
RDT&E	-5.3	1.6	-4.2	0.0	26.7	4.9	-2.0	4.8	6.5	4.1
Military construction	-45.1	31.7	16.8	26.1	-11.6	9.1	-20.8	41.1	-21.4	53.6
Family housing	-5.0	3.5	-8.9	24.8	9.3	-8.7	12.8	20.3	-17.1	-45.3
Total	**5.1**	**-1.9**	**4.9**	**10.2**	**22.2**	**-2.4**	**-1.5**	**7.3**	**-7.9**	**-2.7**

Numbers do not add due to rounding.

Air Force Major Force Programs

(Total obligation authority in billions of constant FY09 dollars)

	FY99	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**	**FY06**	**FY07**	**FY08**
Forces										
Strategic Forces	$5.5	$5.1	$4.8	$5.6	$6.2	$6.4	$4.5	$6.2	$5.8	$5.7
General-Purpose Forces	23.5	24.1	27.4	32.4	41.7	37.9	56.7	39.9	36.8	38.7
Airlift Forces	13.5	13.2	12.8	14.8	17.9	15.7	13.5	18.1	16.5	13.5
Guard and Reserve Forces	10.0	10.0	10.5	10.9	11.7	12.2	12.4	13.4	13.3	13.7
Special Operations Forces	0.5	0.5	0.5	0.6	0.6	0.7	0.0	0.6	0.7	0.9
Total	**$52.9**	**$52.8**	**$56.0**	**$64.3**	**$78.3**	**$72.9**	**$87.2**	**$78.2**	**$73.2**	**$72.5**
Support										
Intelligence & Communications	$25.2	$24.3	$26.4	$27.8	$36.2	$36.8	$36.4	$41.1	$39.2	$40.3
Research & Development	9.3	9.6	8.8	8.4	10.3	11.3	9.5	10.7	10.7	10.1
Central Supply & Maintenance	5.5	5.7	6.0	6.1	7.1	6.4	5.1	5.6	5.2	5.7
Training, Medical, & Personnel	10.7	10.9	11.2	12.5	14.0	14.2	6.4	13.6	12.3	11.6
Administration & Other	2.0	2.0	2.1	2.2	2.6	2.9	2.3	2.8	2.2	2.4
Total	**$52.8**	**$52.6**	**$54.5**	**$56.9**	**$70.1**	**$71.6**	**$59.7**	**$73.9**	**$69.6**	**$70.1**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Defense Budget Authority

($ billions)

	2007	2008	Planned 2009	2010	2011	2012	2013
No War Costs, Current dollars	$433.1	$479.5	$515.4	$523.5	$529.5	$538.4	$548.5
No War Costs, Constant FY 2009 dollars	$455.9	$490.5	$515.4	$511.5	$505.9	$503.1	$501.3
With War Costs, Current dollars	$597.1	$669.5	$585.4	$523.5	$529.5	$538.4	$548.5
With War Costs, Constant FY 2009 dollars	$628.5	$684.9	$585.4	$511.5	$505.9	$503.1	$501.3

Defense Outlays

($ billions)

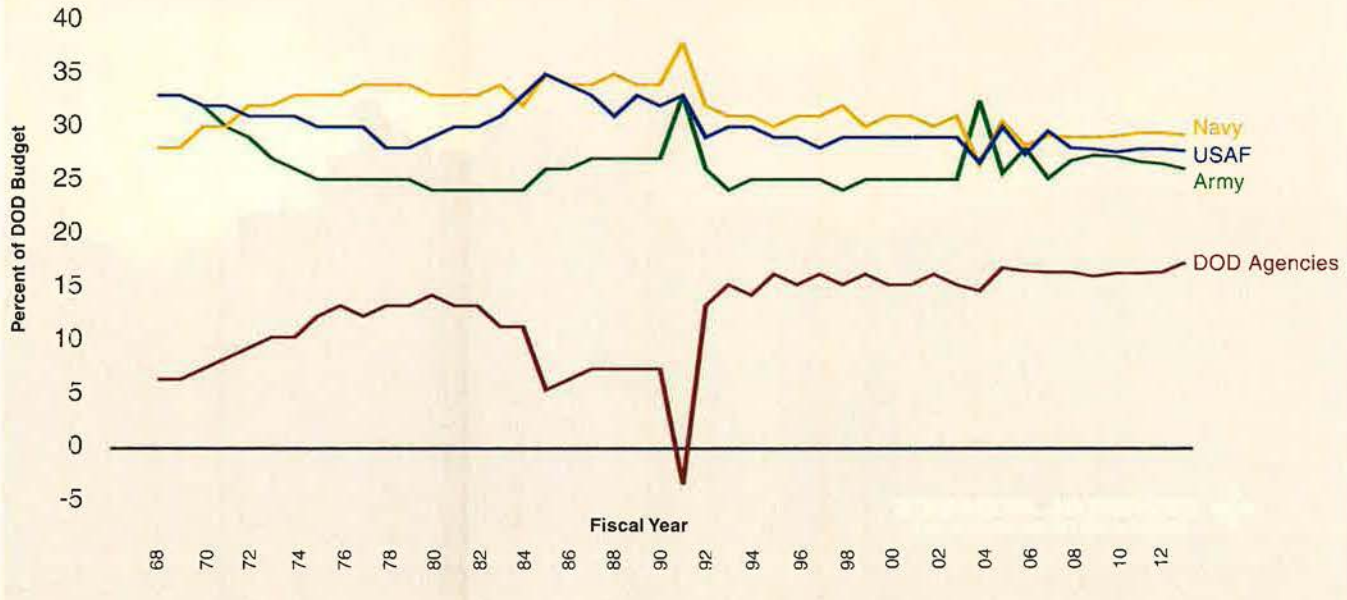
	2007	2008	Planned 2009	2010	2011	2012	2013
With War Costs, Current dollars	$529.8	$583.0	$651.1	$511.1	$524.6	$524.7	$542.1
With War Costs, Constant FY 2009 dollars	$557.7	$596.4	$651.1	$499.3	$501.3	$490.3	$495.4

Service Shares

(Budget authority in billions of constant FY 2009 dollars)

Dollars	**2007**	**2008**	**2009**	**Planned 2010**	**2011**	**2012**	**2013**
Air Force	$135.1	$137.4	$143.9	$141.1	$140.9	$140.4	$139.1
Army	114.2	131.4	140.7	138.9	135.0	133.4	130.3
Navy/Marine Corps	132.7	142.3	149.3	149.1	148.9	147.7	146.4
Defense agencies	73.8	79.5	81.6	82.3	81.2	81.7	85.5
Total	**$455.9**	**$490.5**	**$515.4**	**$511.5**	**$505.9**	**$503.1**	**$501.3**
Percentages							
Air Force	29.6%	28.0%	27.9%	27.6%	27.9%	27.9%	27.7%
Army	25.1%	26.8%	27.3%	27.2%	26.7%	26.5%	26.0%
Navy	29.1%	29.0%	29.0%	29.1%	29.4%	29.4%	29.2%
Defense agencies	16.2%	16.2%	15.8%	16.1%	16.1%	16.2%	17.1%

Service Shares



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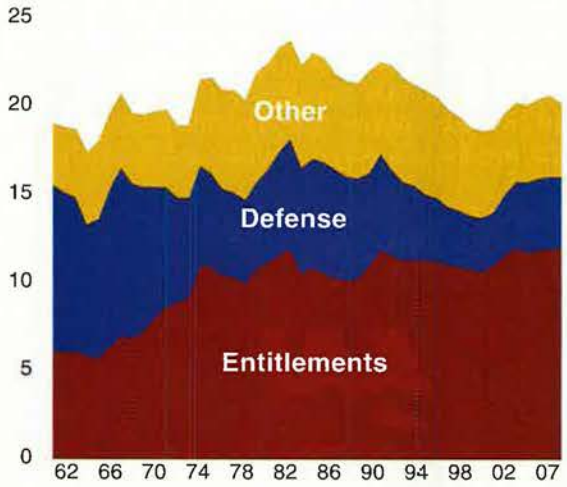
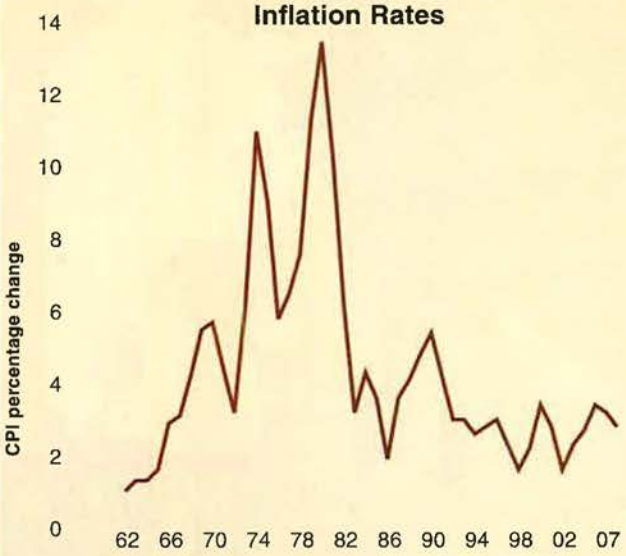
Federal Budget Outlay Categories

Percentages of GDP

Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	18.8	1.0	6.1	9.3
1963	18.6	0.7	6.0	9.0
1964	18.5	1.0	6.1	8.6
1965	17.2	0.2	5.8	7.4
1966	17.8	0.4	5.7	7.8
1967	19.4	1.6	6.3	8.9
1968	20.5	3.2	6.9	9.5
1969	19.4	0.1	6.8	8.7
1970	19.3	0.9	7.2	8.1
1971	19.5	2.4	8.0	7.3
1972	19.6	2.2	8.6	6.7
1973	18.7	1.2	8.8	5.9
1974	18.7	0.5	9.1	5.6
1975	21.3	3.5	10.9	5.6
1976	21.4	4.0	10.9	5.2
1977	20.7	2.5	10.3	4.9
1978	20.7	2.5	10.3	4.7
1979	20.1	1.6	9.9	4.7
1980	21.7	2.7	10.7	4.9
1981	22.2	2.4	11.1	5.2
1982	23.1	3.7	11.5	5.8
1983	23.5	6.0	11.9	6.1
1984	22.1	4.8	10.5	5.9
1985	22.8	5.3	10.8	6.1
1986	22.5	5.4	10.5	6.2
1987	21.6	3.6	10.2	6.1
1988	21.2	3.8	10.1	5.8
1989	21.2	3.8	10.2	5.6
1990	21.8	4.8	10.9	5.2
1991	22.3	5.4	11.8	5.4
1992	22.1	5.5	11.5	4.8
1993	21.4	4.6	11.2	4.4
1994	21.0	3.7	11.3	4.1
1995	20.7	3.1	11.2	3.7
1996	20.3	2.3	11.2	3.5
1997	19.6	1.3	10.9	3.3
1998	19.2	0.3	10.9	3.1
1999	18.6	0.0	10.7	3.0
2000	18.4	0.9	10.6	3.0
2001	18.5	0.3	10.9	3.0
2002	19.4	3.1	11.5	3.4
2003	20.0	5.0	11.9	3.7
2004	19.9	4.9	11.7	3.9
2005	20.2	4.0	11.8	4.0
2006	20.4	3.3	11.9	4.0
2007	20.0	2.5	11.9	4.0



Inflation Rates



CPI=Consumer Price Index

Year	% change
1962	1.0
1963	1.3
1964	1.3
1965	1.6
1966	2.9
1967	3.1
1968	4.2
1969	5.5
1970	5.7
1971	4.4
1972	3.2
1973	6.2
1974	11.0
1975	9.1
1976	5.8
1977	6.5
1978	7.6
1979	11.3
1980	13.5
1981	10.3
1982	6.2
1983	3.2
1984	4.3
1985	3.6
1986	1.9
1987	3.6
1988	4.1
1989	4.8
1990	5.4
1991	4.2
1992	3.0
1993	3.0
1994	2.6
1995	2.8
1996	3.0
1997	2.3
1998	1.6
1999	2.2
2000	3.4
2001	2.8
2002	1.6
2003	2.3
2004	2.7
2005	3.4
2006	3.2
2007	2.8

Monthly Military Basic Rates of Pay in Dollars

(Effective Jan. 1, 2008)

Commissioned Officers

Pay Grade	Years of Service														
	<2	2	3	4	6	8	10	12	14	16	18	20	22	24	26
O-10[a]												14,069	14,138	14,432	14,944
O-9[a]												12,305	12,482	12,738	13,185
O-8[a]	8,707	8,992	9,181	9,234	9,470	9,865	9,956	10,331	10,438	10,761	11,228	11,659	11,946		
O-7[a]	7,235	7,571	7,726	7,850	8,074	8,294	8,550	8,805	9,061	9,865	10,543				10,597
O-6	5,363	5,891	6,277	6,277	6,301	6,572	6,607	6,607	6,983	7,646	8,036	8,426	8,647	8,871	9,307
O-5	4,470	5,036	5,384	5,450	5,667	5,798	6,084	6,293	6,564	6,980	7,177	7,373	7,594		
O-4	3,857	4,465	4,763	4,829	5,106	5,402	5,771	6,059	6,259	6,373	6,440				
O-3	3,391	3,844	4,149	4,524	4,740	4,978	5,132	5,385	5,517						
O-2	2,930	3,337	3,843	3,973	4,055										
O-1	2,543	2,647	3,200												
O-3E[b]				4,524	4,740	4,978	5,132	5,385	5,599	5,721	5,888				
O-2E[b]				3,973	4,055	4,184	4,402	4,570	4,696						
O-1E[b]				3,200	3,417	3,543	3,673	3,800	3,973						

Enlisted Members

E-9							4,234	4,330	4,451	4,593	4,736	4,966	5,161	5,366	5,678
E-8						3,466	3,619	3,714	3,828	3,951	4,173	4,286	4,478	4,584	4,846
E-7	2,409	2,630	2,730	2,864	2,968	3,147	3,247	3,427	3,575	3,677	3,785	3,827	3,968	4,043	4,330
E-6	2,084	2,293	2,394	2,492	2,595	2,826	2,916	3,090	3,143	3,182	3,227				
E-5	1,910	2,037	2,135	2,237	2,393	2,558	2,692	2,709							
E-4	1,751	1,840	1,940	2,038	2,125										
E-3	1,580	1,680	1,781												
E-2	1,503														
E-1 4 mos.+	1,340														
E-1<4 mos.	1,240														

Amounts have been rounded to the nearest dollar.
[a]Basic pay for pay grades O-7 through O-10 is limited to $14,349.90. Basic pay for O-6 and below is limited to $11,633.40.
[b]Applicable to O-1 to O-3 with at least four years and one day of active duty or more than 1,460 points as an enlisted member.
While serving as Chairman of the Joint Chiefs of Staff or Chief of Staff of the Air Force, basic pay is $18,511.20.
For the Chief Master Sergeant of the Air Force, basic pay is $6,841.80.

Aviation Career Incentive Pay

(Effective Jan. 1, 2008)

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

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

Hazardous Duty Pay

(Effective Jan. 1, 2008)

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

Annual Pay for Federal Civilians

(Effective Jan. 1, 2008)

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	$17,046	$17,615	$18,182	$18,746	$19,313	$19,646	$20,206	$20,771	$20,793	$21,324
GS-2	19,165	19,621	20,255	20,793	21,025	21,643	22,261	22,879	23,497	24,115
GS-3	20,911	21,608	22,305	23,002	23,699	24,396	25,093	25,790	26,487	27,184
GS-4	23,475	24,258	25,041	25,824	26,607	27,390	28,173	28,956	29,739	30,522
GS-5	26,264	27,139	28,014	28,889	29,764	30,639	31,514	32,389	33,264	34,139
GS-6	29,276	30,252	31,228	32,204	33,180	34,156	35,132	36,108	37,084	38,060
GS-7	32,534	33,618	34,702	35,786	36,870	37,954	39,038	40,122	41,206	42,290
GS-8	36,030	37,231	38,432	39,633	40,834	42,035	43,236	44,437	45,638	46,839
GS-9	39,795	41,122	42,449	43,776	45,103	46,430	47,757	49,084	50,411	51,738
GS-10	43,824	45,285	46,746	48,207	49,668	51,129	52,590	54,051	55,512	56,973
GS-11	48,148	49,753	51,358	52,963	54,568	56,173	57,778	59,383	60,988	62,593
GS-12	57,709	59,633	61,557	63,481	65,405	67,329	69,253	71,177	73,101	75,025
GS-13	68,625	70,913	73,201	75,489	77,777	80,065	82,353	84,641	86,929	89,217
GS-14	81,093	83,796	86,499	89,202	91,905	94,608	97,311	100,014	102,717	105,420
GS-15	95,390	98,570	101,750	104,930	108,110	111,290	114,470	117,650	120,830	124,010

Senior Executive Service

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

SES Pay System Structure	Minimum	Maximum
Certified SES performance appraisal system	$114,468	$172,200
Noncertified SES performance appraisal system	$114,468	$158,500

Housing Allowance

(Effective Jan. 1, 2008)

Pay Grade	With Dependents	Without Dependents
O-10	$1,587.30	$1,290.30
O-9	1,587.30	1,290.30
O-8	1,587.30	1,290.30
O-7	1,587.30	1,290.30
O-6	1,428.90	1,183.20
O-5	1,377.30	1,139.40
O-4	1,214.10	1,055.70
O-3	1,004.70	846.60
O-2	857.10	670.80
O-1	767.40	565.50
O-3E	1,079.70	913.80
O-2E	974.10	776.70
O-1E	900.60	668.40
E-9	1,031.10	782.10
E-8	951.30	718.20
E-7	882.90	613.20
E-6	815.70	555.00
E-5	733.80	512.10
E-4	637.80	445.20
E-3	593.40	436.80
E-2	565.50	354.60
E-1	565.50	316.80

Subsistence Allowance

(Effective Jan. 1, 2008)

Officers	$202.76/month
Enlisted Members	$294.43/month

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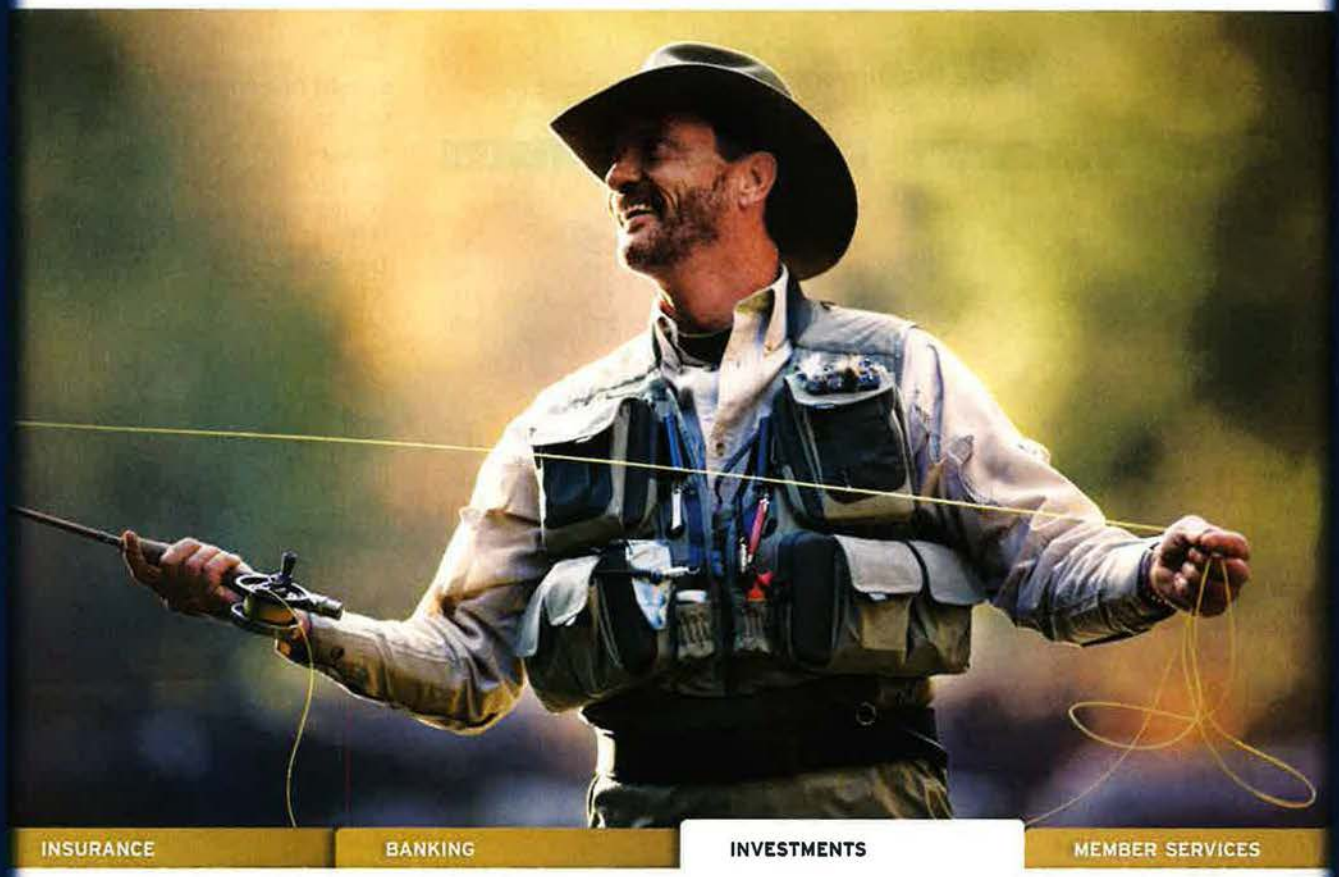

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Total active inventory (TAI): aircraft assigned to operating forces for mission, training, test, or maintenance. Includes primary, backup, and attrition reserve aircraft.
Primary aircraft inventory (PAI): aircraft assigned to meet primary aircraft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

Active Duty Inventory

(As of Sept. 30, 2007)

Type	TAI	PAI
Bomber		
B-1	67	51
B-2	21	16
B-52	85	54
Total	**173**	**121**
Fighter/Attack		
A-10	125	113
OA-10A	71	54
F-15A-D	292	246
F-15E	223	189
F-16	700	588
F-22A	97	85
F-117	44	28
Total	**1,552**	**1,303**
Helicopter		
HH-60	68	53
UH-1	92	53
Total	**160**	**106**
Reconnaissance/BM/C3I		
E-3	32	27
E-4	4	3
EC-130	14	10
MQ-1	131	111
MQ-9	13	0
NC-135	1	0
OC-135	2	2
RC-135	22	17
RQ-4	12	9
U-2	33	29
WC-135	2	1
Total	**266**	**209**
Special Ops Forces		
AC-130	25	19
CV-22	7	0
MC-130	46	40
MH-53	22	19
Total	**100**	**78**

Type	TAI	PAI
Tanker		
HC-130	19	19
KC-10	59	54
KC-135	199	176
Total	**277**	**249**
Trainer		
T-1	179	141
T-6	320	203
T-37	87	87
T-38	462	381
T-41	4	4
T-43	8	7
T-51	3	3
TC-135	3	2
Glider	42	26
UV-18	3	2
Total	**1,111**	**856**
Transport		
C-5	33	33
C-12	28	27
C-17	153	111
C-20	10	10
C-21	38	32
C-32	4	4
C-37	9	6
C-40	4	1
C-130	173	156
VC-25	2	2
Total	**454**	**382**
Total Active	**4,093**	**3,304**

Air National Guard Inventory

(As of Sept. 30, 2007)

Type	TAI	PAI
Fighter/Attack		
A-10	78	78
OA-10A	28	18
F-15A-D	145	91
F-16	495	422
Total	**746**	**609**
Helicopter		
HH-60	18	15
Reconnaissance/BM/C3I		
E-8	18	12
EC-130	7	3
WC-130	3	0
Total	**28**	**15**
Special Ops Forces		
MC-130	4	4
Tanker		
HC-130	9	7
KC-135	226	172
Total	**235**	**179**
Transport		
C-5	30	27
C-17	8	8
C-21	19	2
C-26	11	0
C-32	2	0
C-38	2	2
C-40	3	0
C-130	173	165
LC-130	10	10
Total	**258**	**214**
Total ANG	**1,289**	**1,036**

Air Force Reserve Command Inventory

(As of Sept. 30, 2007)

Type	TAI	PAI
Bomber		
B-52	9	8
Fighter/Attack		
A-10	44	38
OA-10A	7	3
F-16	53	48
Total	**104**	**89**
Helicopter		
HH-60	15	13
Reconnaissance/ BM/C3I		
WC-130	17	10
Special Ops Forces		
MC-130	14	8
Tanker		
HC-130	5	5
KC-135	80	72
Total	**85**	**77**
Transport		
C-5	45	40
C-9	3	3
C-17	8	8
C-40	2	0
C-130	94	92
Total	**152**	**143**
Total AFRC	**396**	**348**

Total Number of USAF Aircraft in Service Over Time

(As of Sept. 30, 2007)

Type of aircraft	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Bomber	181	183	173	172	173	172	173
Fighter/attack	1,619	1,631	1,628	1,627	1,622	1,619	1,552
Helicopter	126	126	129	160	169	160	160
Reconnaissance/BM/C3I	140	143	135	132	134	137	266
Special Ops Forces	107	102	101	99	98	103	100
Tanker	330	322	325	301	285	278	277
Trainer	1,289	1,342	1,308	1,277	1,267	1,284	1,111
Transport	546	538	529	516	525	529	454
Total active duty	**4,338**	**4,387**	**4,328**	**4,284**	**4,273**	**4,282**	**4,093**
Air National Guard	1,361	1,350	1,312	1,326	1,313	1,321	1,289
AFRC	445	446	433	408	400	410	396
Total active duty, ANG, and AFRC	**6,144**	**6,183**	**6,073**	**6,018**	**5,986**	**6,013**	**5,778**
Total aircraft, including foreign-government-owned	6,245	6,286	6,167	6,107	6,057	6,072	5,811

Age of the Active Duty Fleet

(As of Sept. 30, 2007)

	Age in Years										
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24+	Total	Average
A-10								11	185	196	25.8
B-1B							66	1		67	20.1
B-2				7	10	3	1			21	13.1
B-52									85	85	45.8
C-5							26	5	2	33	20.9
C-10						1	11	30	17	59	22.7
C-12							4	8	16	28	27.3
C-17	35	42	33	20	19	4				153	6.6
C-20				1	1		8			10	18.7
C-21								38		38	22.7
C-25						2				2	16.9
C-32			2	2						4	9.0
C-37		3	6							9	6.7
C-40	2	2								4	3.6
C-130	10	1	1		15	20	16	5	209	277	33.0
C-135									229	229	45.6
CV-22	7									7	1.1
E-3								3	29	32	27.8
E-4									4	4	33.3
F-15C-D						1	66	84	141	292	23.9
F-15E		10	16		35	114	48			223	15.5
F-16	1	13	16	19	178	301	90	81	1	700	16.3
F-22	74	22	1							97	2.1
F-117						5	12	20	7	44	21.5
H-1									92	92	36.4
H-53									22	22	36.7
H-60			5	1	5	38	10	1	8	68	17.4
Q-1	131									131	1.5
Q-4	9	3								12	2.0
Q-9	9	4								13	2.0
T-1				57	101	21				179	12.9
T-6	161	125	34							320	3.2
T-37									87	87	42.7
T-38									462	462	40.2
T-41									4	4	38.1
T-43									8	8	33.4
T-51	3									3	2.1
U-2						1	8	12	12	33	24.2
UV-18				1					2	3	23.5
Glider		40	1		1					42	5.2
Total	**442**	**265**	**115**	**108**	**365**	**511**	**366**	**299**	**1,622**	**4,093**	**23.1**
Percent	11%	7%	3%	3%	9%	13%	9%	7%	40%		

Age of the Air National Guard Fleet

(As of Sept. 30, 2007)

	Age in Years										
	0-3	**3-6**	**6-9**	**9-12**	**12-15**	**15-18**	**18-21**	**21-24**	**24+**	**Total**	**Average**
A-10								1	105	106	26.8
C-5									30	30	35.7
C-17		8								8	3.5
C-21							2	17		19	22.5
C-26					9	2				11	13.3
C-32		2								2	4.2
C-38				2						2	9.5
C-40		3								3	4.3
C-130	7	10	14	22	34	33	11	25	50	206	19.2
C-135									226	226	47.1
E-8	1	5	7	4		1				18	7.5
F-15A-D								7	138	145	27.9
F-16				3	25	68	289	110		495	19.2
H-60					7		11			18	16.8
Total	**8**	**28**	**21**	**31**	**75**	**104**	**313**	**160**	**549**	**1,289**	**25.7**
Percent	1%	2%	2%	2%	6%	8%	24%	12%	43%		

Age of the Air Force Reserve Command Fleet

(As of Sept. 30, 2007)

	Age in Years										
	0-3	**3-6**	**6-9**	**9-12**	**12-15**	**15-18**	**18-21**	**21-24**	**24+**	**Total**	**Average**
A-10								1	50	51	27.0
B-52									9	9	45.5
C-5							15	1	29	45	30.2
C-9									3	3	32.5
C-17	8									8	1.9
C-40	2									2	0.4
C-130	7	7	4	6	18	12	24	8	44	130	22.0
C-135									80	80	46.3
F-16						1	50	2		53	19.8
H-60						15				15	16.7
Total	**17**	**7**	**4**	**6**	**18**	**28**	**89**	**12**	**215**	**396**	**28.1**
Percent	4%	2%	1%	2%	5%	7%	22%	3%	54%		

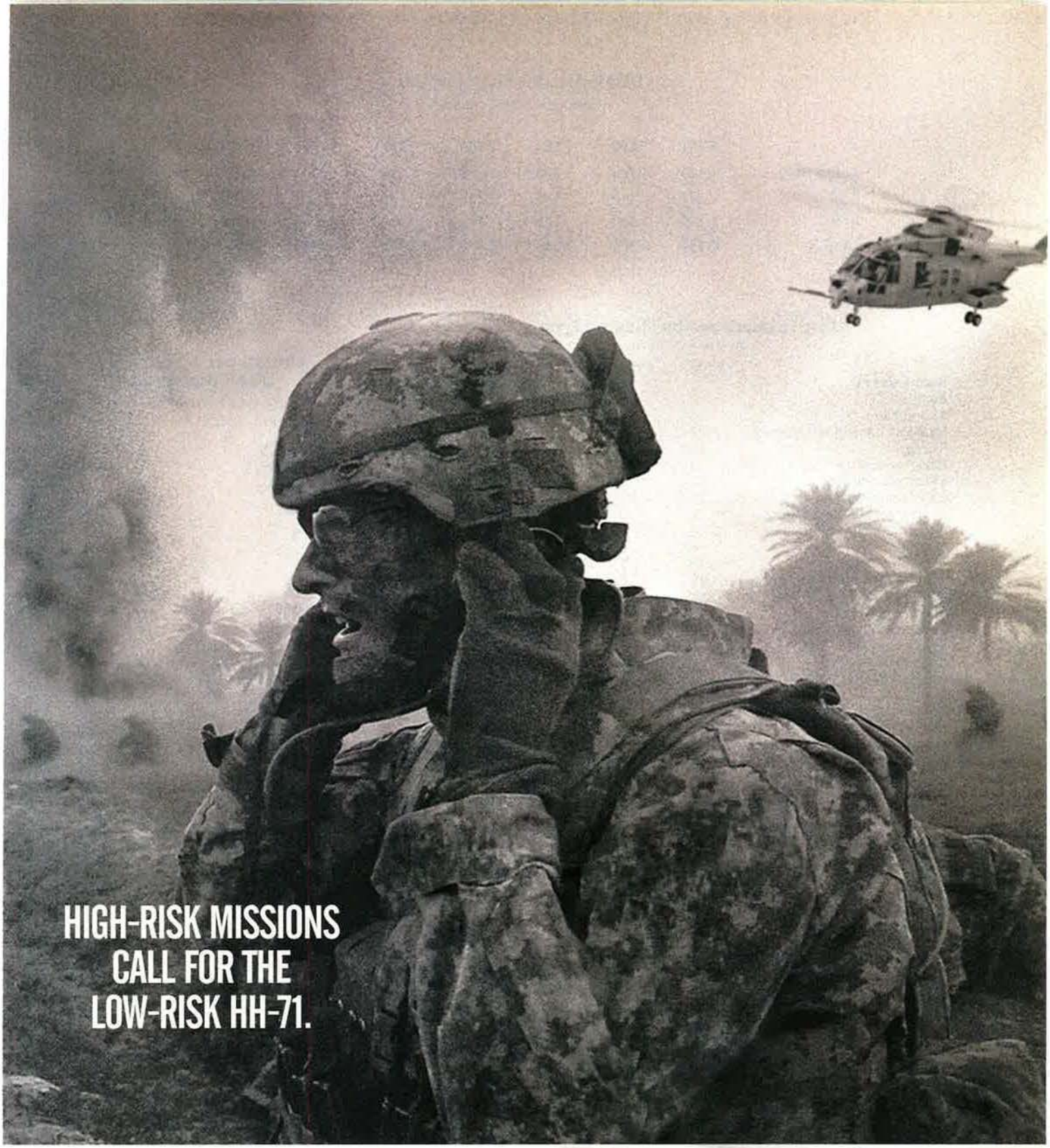
ICBMs and Spacecraft in Service

(As of Sept. 30, 2007)

Type of system	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**	**FY06**	**FY07**
Minuteman III ICBM	500	500	500	500	500	450	450
Peacekeeper ICBM	50	50	23	6	0	0	0
Total ICBMs	**550**	**550**	**523**	**506**	**500**	**450**	**450**
DMSP satellite	2	2	2	2	2	2	2
DSCS satellite	5	5	10	11	9	9	9
DSP satellite (data classified)	—	—	—	—	—	—	—
GPS satellite	27	28	28	30	29	30	30
Milstar satellite	3	4	5	5	5	5	5
Total satellites	**37**	**39**	**45**	**48**	**45**	**46**	**46**

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

As of FY02, satellite data show the number of satellites that are primary mission capable.



The HH-71 is the only all-weather, combat-proven helicopter already flying the CSAR mission. It has over 130,000 flight hours including 21,500 desert landings without incident. BERP IV advanced rotor blades further reduce acoustic signature, and minimize brownout and whiteout. Its small footprint allows more landing options and faster, safer ingress. Three engines provide an unmatched margin of safety. And only the HH-71 offers 360 degrees field of fire with overlapping weapons coverage. No other helicopter maximizes survivability for warfighters in peril and for CSAR crews who rescue them. Learn more at **HH71proven.com.**

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HH-71 COMBAT-PROVEN MISSION-READY

USAF Aircraft Flying Hours

(In thousands, as of Sept. 30, 2007)

	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Active duty	1,579	1,768	1,700	1,708	1,615	1,611	1,517
ANG	341	410	426	393	368	351	338
AFRC	146	186	193	177	160	202	195
Total	**2,066**	**2,364**	**2,319**	**2,278**	**2,143**	**2,164**	**2,050**

USAF Squadrons by Mission Type

(As of Sept. 30, 2007)

	FY03	FY04	FY05	FY06	FY07
Active forces					
Bomber	9	9	9	9	9
Air refueling	26	17	16	16	18
Strategic command & control	2	2	2	4	1
Fighter	46	45	43	31	40
Reconnaissance	9	10	10	12	9
Electronic warfare	2	2	2	2	1
Special operations	21	21	22	23	19
Ground theater air control	2	2	2	2	5
Airborne theater air control	8	8	8	5	3
Rescue	8	8	8	8	8
Theater airlift	12	12	12	12	12
Long-range airlift	18	13	11	16	17
ICBM	11	11	10	10	10
Space operations	8	9	8	8	7
Space communications	0	6	7	7	6
Space warning	8	6	6	6	6
Space surveillance	3	3	0	0	0
Space launch	4	4	3	3	3
Range	2	2	2	2	2
Space control & tactics	3	3	5	6	6
Space aggressor	1	1	1	1	0
Total	**203**	**194**	**187**	**183**	**182**
Reserve forces					
ANG Selected Reserve					
Flying	101	102	101	101	106
Ground theater air control					8
Airborne theater air control					2
Space operations	3	3	3	3	1
Space warning	1	1	1	1	2
AFRC					
Flying	61	61	68	67	67
Space operations	4	4	4	4	4
Space warning	1	1	1	1	1
Space aggressor	1	1	1	1	1
Total	**172**	**173**	**179**	**178**	**192**
Grand total	**375**	**367**	**366**	**361**	**374**

Aircraft per Active Duty USAF Squadron

(As of Sept. 30, 2007)

Aircraft	Number
A/OA-10	18/24
AC-130H	8
AC-130U	17
B-1B	12
B-2	8
B-52	8/12
C-5	15
C-17	8/12
C-130	14/16
CV-22	3
E-3	2/5
EC-130	7
F-15	18/24
F-15E	18/24
F-16	15/24
F-22	18
F-117A	24
HC-130	3/4
HH-60	12/14
KC-10	12/15
KC-135	12/16
MC-130E	14
MC-130H/P/W	5/5/4
MH-53	11
MQ-1	28
U-2	29

Air National Guard Air Defense Unit Fin Flashes

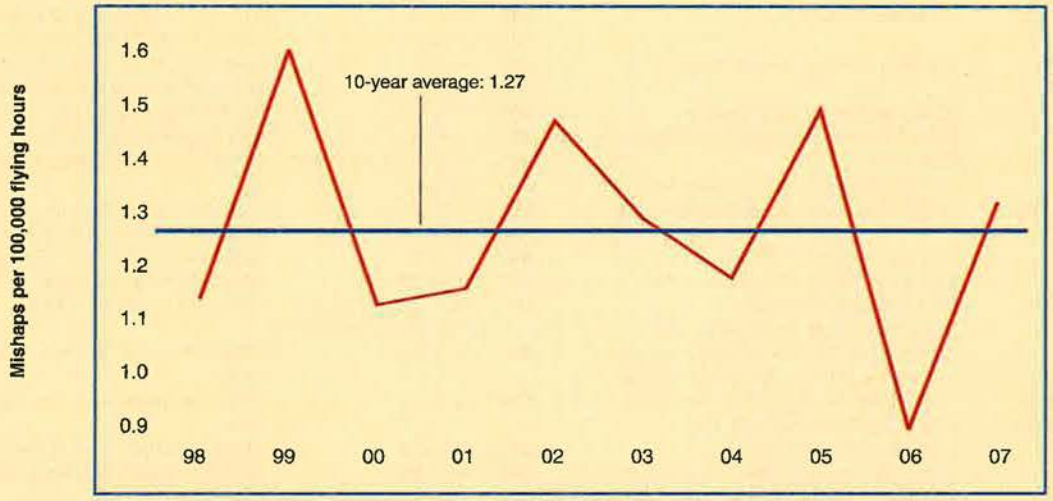
Description	Aircraft	Unit and Location
Minuteman over Massachusetts	F-15A/B	102nd FW, Otis ANGB, Mass.
Subdued eagle and "Oregon" logo	F-15A/B	114th FS (173rd FW), Klamath Falls Arpt., Ore.[a]
Dark gray bison's skull against prairie/mountain profile	F-16C/D	120th FW, Great Falls Arpt., Mont.[b]
Subdued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

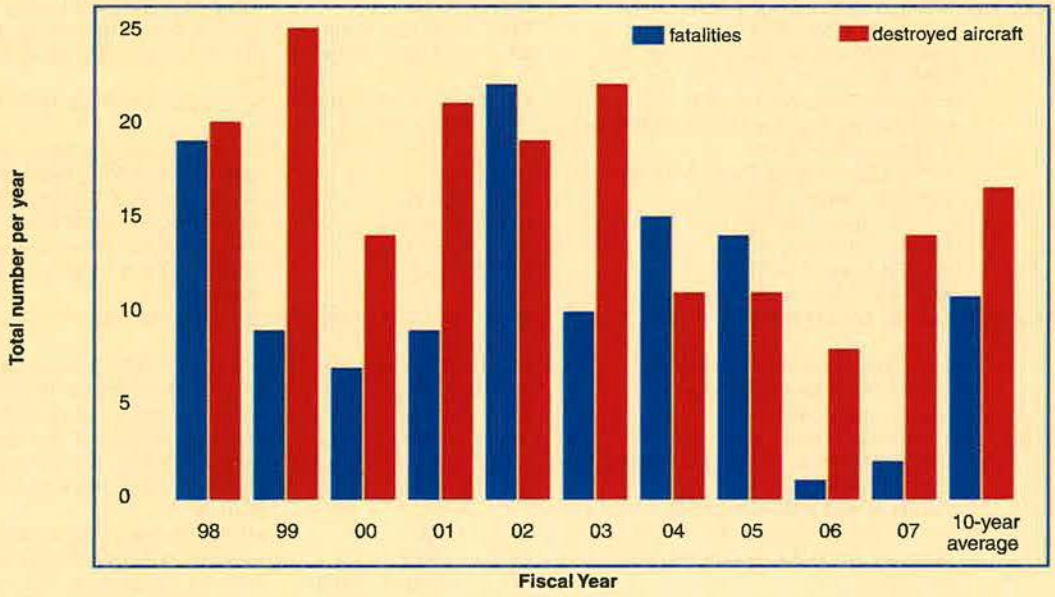
[a] ANG training units.
[b] General-purpose units (no longer air defense only).

Class A Aircraft Mishaps

(As of Sept. 30, 2007)

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





Data provided by USAF

USAF photo by SSgt. Douglas Olson

A B-1B takes off from an air base in Southwest Asia.

USAF Aircraft Tail Markings

Code	Aircraft	Unit and Location
AC	F-16C/D	177th FW (ANG), Atlantic City Arpt., N.J.
AF	gliders, T-41, T-51, UV-18	USAF Academy, Colo.
AK	C-12, C-17, E-3, F-15C, F-22	3rd Wing, Elmendorf AFB, Alaska
AK	F-16C/D	354th FW, Eielson AFB, Alaska
AL	F-16C/D	187th FW (ANG), Montgomery Regional Arpt., Ala.
AL	KC-135	117th ARW (ANG), Birmingham Arpt., Ala.
AN	C-130H, HC-130N, HH-60G	176th Wing (ANG), Kulis ANGB, Alaska
AV	F-16C/D	31st FW, Aviano AB, Italy
AZ	F-16A/B/C/D	162nd FW (ANG), Tucson Arpt., Ariz.
BB	T-38A, RQ-4, U-2	9th RW, Beale AFB, Calif.
BB	RQ-4, U-2	Det. 2, 53rd Wing, Beale AFB, Calif.
BC	A/OA-10A	110th FW (ANG), W.K. Kellogg Arpt., Mich.
BD	B-52H, A/OA-10A	917th Wing (AFRC), Barksdale AFB, La.
CA	HC-130P, HH-60G	129th RQW (ANG), Moffett Field, Calif.
CB	T-1, T-6, T-37, T-38	14th FTW, Columbus AFB, Miss.
CC	F-16C/D	27th FW, Cannon AFB, N.M.
CI	C-130J	146th AW, Channel Islands ANGS, Calif.
CO	F-16C/D	140th Wing (ANG), Buckley AFB, Colo.
CR	C-130H	302nd AW (AFRC), Peterson AFB, Colo.
CT	A/OA-10A	103rd FW (ANG), Bradley Arpt., Conn.
DC	F-16C/D	113th Wing (ANG), Andrews AFB, Md.
DE	C-130H	166th AW (ANG), New Castle Co. Arpt., Del.
DM	A/OA-10A	355th FW, Davis-Monthan AFB, Ariz.
DM	EC-130E/H	55th Wing, Davis-Monthan AFB, Ariz.
DR	HH-60G	305th RQS (AFRC), Davis-Monthan AFB, Ariz.
DY	B-1B	7th BW, Dyess AFB, Tex.
DY	B-1B	337th TES, 53rd Wing, Dyess AFB, Tex.
ED	Various	412th TW, Edwards AFB, Calif.
EF	F-16C/D	147th FW (ANG), Ellington Fld., Tex.
EG	F-15C/D	33rd FW, Eglin AFB, Fla.
EL	B-1B	28th BW, Ellsworth AFB, S.D.
EN	T-37B, T-38C	80th FTW, Sheppard AFB, Tex.
ET	A-10A, F-15A/B/C/D/E, F-16A/B/C/D, UH-1N	46th TW, Eglin AFB, Fla.
FC	UH-1N	336th TRG, Fairchild AFB, Wash.
FE	UH-1N	90th SW, F.E. Warren AFB, Wyo.
FF	F-15C/D, F-22	1st FW, Langley AFB, Va.
FL	HC-130N/P, HH-60G	920th RQG (AFRC), Patrick AFB, Fla.
FM	F-16C/D	482nd FW (AFRC), Homestead ARB, Fla.
FS	A/OA-10A	188th FW (ANG), Fort Smith Arpt., Ark.
FW	F-16C/D	122nd FW (ANG), Fort Wayne Arpt., Ind.
GA	E-8C	116th ACW (ACC, ANG), Robins AFB, Ga.
GA	C-130H	165th AW (ANG), Savannah Hilton Head Arpt., Ga.
HA	KC-135	185th ARW (ANG), Sioux Gateway Arpt./Col. Bud Day Field, Iowa
HD	QF-4	Det. 1, 53rd Wing, Holloman AFB, N.M.
HH	C-17, C-37, C-40	15th AW (PACAF), Hickam AFB, Hawaii
HH	C-17, F-15A/B/C/D, KC-135R	154th Wing (ANG), Hickam AFB, Hawaii
HL	F-16C/D	388th FW, Hill AFB, Utah
HO	F-117, T-38A	49th FW, Holloman AFB, N.M.
IA	F-16C/D	132nd FW (ANG), Des Moines Arpt., Iowa
ID	A/OA-10A, C-130E	124th Wing (ANG), Boise Air Term., Idaho
IL	C-130H	182nd AW (ANG), Greater Peoria Arpt., Ill.
JZ	F-15A/B	159th FW (ANG), NAS JRB New Orleans
KC	A/OA-10	442nd FW (AFRC), Whiteman AFB, Mo.
KS	C-21	45th AS, Keesler AFB, Miss.
LA	B-52H	2nd BW, Barksdale AFB, La.
LF	F-16C/D	56th FW, Luke AFB, Ariz.
LI	HC-130P, HH-60G	106th RQW (ANG), F.S. Gabreski Arpt., N.Y.
LN	F-15C/E, HH-60G	48th FW, RAF Lakenheath, UK
MA	F-15A/B	102nd FW (ANG), Otis ANGB, Mass.
MA	A/OA-10A	104th FW (ANG), Barnes Arpt., Mass.
MD	A/OA-10A, C-130J	175th Wing (ANG), Martin State Arpt., Md.
MI	F-16C/D	127th Wing (ANG), Selfridge ANGB, Mich.
MI	KC-135R	927th ARW (AFRC), Selfridge ANGB, Mich.
MM	UH-1N	341st SW, Malmstrom AFB, Mont.
MN	C-130H	133rd AW (ANG), Minn.-St. Paul Arpt./ARS
MN	F-16C	148th FW (ANG), Duluth Arpt., Minn.
MO	F-15C/D/E	366th FW, Mountain Home AFB, Idaho
MT	B-52H	5th BW, Minot AFB, N.D.
MT	UH-1N	91st SW, Minot AFB, N.D.
MY	A/OA-10A, HC-130P, HH-60G	347th Rescue Wing, Moody AFB, Ga.
NC	C-130H	145th AW, Charlotte Arpt., N.C.
NM	F-16C/D	150th FW (ANG), Kirtland AFB, N.M.
NV	C-130E	152nd AW (ANG), Reno/Tahoe Arpt., Nev.
NY	F-16C/D	174th FW (ANG), Hancock Fld., N.Y.
OF	RC-135S/U/V/W, TC-135, OC-135B, WC-135	55th Wing, Offutt AFB, Neb.
OH	F-16C/D	178th FW (ANG), Springfield-Beckley Arpt., Ohio
OH	C-130H	179th AW (ANG), Mansfield Lahm Arpt., Ohio
OH	F-16C/D	180th FW (ANG), Toledo Exp. Arpt., Ohio
OK	KC-135R	137th AW (ANG), Will Rogers World Arpt., Okla.
OK	F-16C/D	138th FW (ANG), Tulsa Arpt., Okla.
OK	E-3B/C	552nd ACW, Tinker AFB, Okla.
OS	A/OA-10A, F-16C/D	51st FW, Osan AB, South Korea
OT	F-15C/D/E, F-16C/D	85th TES, 53rd Wing (ACC), Eglin AFB, Fla.
OT	A-10, F-15, F-16A/C, F-22	422nd TES, 53rd Wing, Nellis AFB, Nev.
OT	F-117	Det. 1, 53rd Wing, Holloman AFB, N.M.
OT	B-52	49th TES, 53rd Wing, Barksdale AFB, La.
OT	MQ/RQ-1	Det. 4, 53rd Wing, Creech AFB, Nev.
OT	MQ-1, MQ-9	432nd Wing, Creech AFB, Nev.
PA	A/OA-10A	111th FW (ANG), Willow Grove ARS, Pa.
PR	C-130E	156th AW (ANG), Luis Munoz Marin Arpt., Puerto Rico
RA	T-1A, T-6A, T-38C, T-43A	12th FTW, Randolph AFB, Tex.
RI	C-130J-30	143rd AW (ANG), Quonset State Arpt., R.I.
RS	C-130E	86th AW, Ramstein AB, Germany
SA	F-16C/D	149th FW (ANG), Lackland AFB, Tex.
SC	F-16C/D	169th FW (ANG), McEntire ANGS, S.C.
SD	F-16C/D	114th FW (ANG), Joe Foss Fld., S.D.
SI	F-16C/D	183rd FW (ANG), Abraham Lincoln Capital Arpt., Ill.
SJ	F-15E	4th FW, Seymour Johnson AFB, N.C.
SL	F-15A/B	131st FW (ANG), Lambert-St. Louis Arpt., Mo.
SP	A/OA-10A, F-16CJ	52nd FW, Spangdahlem AB, Germany
SW	F-16C/CJ/D	20th FW, Shaw AFB, S.C.
TD	QF-4	53rd Wing, Tyndall AFB, Fla.
TX	C-130H	136th AW (ANG), NAS JRB F.W., Tex.
TX	F-16C/D	301st FW (AFRC), NAS JRB F.W., Tex.
TY	F-15C/D, F-22	325th FW, Tyndall AFB, Fla.
VN	T-1, T-6, T-38C	71st FTW, Vance AFB, Okla.
WA	Various	57th Wing, Nellis AFB, Nev.
WI	F-16C/D	115th FW (ANG), Truax Fld., Wis.
WM	B-2	72nd TES, 53rd Wing, Whiteman AFB, Mo.
WM	B-2A, T-38A	509th BW, Whiteman AFB, Mo.
WP	F-16C/D	8th FW, Kunsan AB, South Korea
WV	C-130H	130th AW (ANG), Yeager Arpt., W.Va.
WV	C-5A	167th AW (ANG), East. W.Va. Arpt., W.Va.
WW	F-16C/J	35th FW, Misawa AB, Japan
WY	C-130H	153rd AW (ANG), Cheyenne Arpt., Wyo.
XL	T-1, T-6, T-38C	47th FTW, Laughlin AFB, Tex.
XP	C-130H	139th AW (ANG), Rosecrans Arpt., Mo.
YJ	C-12J, C-130E/H, UH-1N	374th AW, Yokota AB, Japan
ZZ	E-3B/C, F-15C/D, KC-135R, HH-60G	18th Wing, Kadena AB, Japan


When it's go time
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USAF Grades and Insignia

Officer

Second Lieutenant
(O-1)

Brigadier General
(O-7)

First Lieutenant
(O-2)

Major General
(O-8)

Captain
(O-3)

Lieutenant General
(O-9)

Major
(O-4)

General
(O-10)

Lieutenant Colonel
(O-5)

Colonel
(O-6)

Enlisted

Airman Basic
(E-1)
No insignia

Airman
(E-2)

Airman First Class
(E-3)

Senior Airman
(E-4)

Staff Sergeant
(E-5)

Technical Sergeant
(E-6)

Master Sergeant
(E-7)

Senior Master Sergeant
(E-8)

Chief Master Sergeant
(E-9)

Chief Master Sergeant of
the Air Force

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

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

Awards and Decorations—Currently Awarded Ribbons

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

Awards and Decorations—Previously Awarded Ribbons

Pre-World War I

Mexican Service Medal

World War I

Victory Medal

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

American Defense Service Medal

Women's Army Corps Service Medal

American Campaign Medal

Asiatic–Pacific Campaign Medal

European–African–Middle Eastern Campaign Medal

World War II Victory Medal

Army of Occupation Medal

Medal for Humane Action

Korean Service Medal

Philippine Defense Ribbon

Philippine Liberation Ribbon

Philippine Independence Ribbon

Philippine Presidential Unit Citation

ROK Presidential Unit Citation

United Nations Service Medal

Republic of Korea Korean War Service Medal

Currently Awarded Devices

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

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

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

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

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

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

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

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

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

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

Previously Awarded Devices

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

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

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

Berets

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

Combat Control

Tactical Air Command and Control

Pararescue

Tactical Airlift Liaison Officer/ALO

Security Forces

Weather Parachutist

Survival Evasion

USAF Badges

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


Pilot


Navigator/Observer


Enlisted Aircrew


Astronaut


Flight Surgeon


Flight Nurse


Officer Aircrew Member


Air Battle Manager


Air Force Space


Parachutist


Transportation


Missile


Missile With Operations Designator


Space/Missile


Civil Engineer


Force Protection


Command and Control


Communications and Information


Paralegal


Intelligence


Services


Chaplain Service Support


Operations Support


Manpower and Personnel


Acquisition and Financial Management


Maintenance


Public Affairs


Meteorologist


Supply/Fuels


Band


Explosive Ordnance Disposal


Logistics


Historian


Information Management


Judge Advocate


Air Traffic Control


Weapons Director


Nurse Corps


Biomedical Science Corps


Dental Corps


Medical Corps


Enlisted Medical


Medical Service Corps


Christian


Jewish


Buddhist


Muslim

AIR FORCE Magazine's

Guide to Aces and Heroes

2008 USAF Almanac

USAF Recipients of the Medal of Honor

*Living Medal of Honor recipient

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

Continued on p. 74

Erwin Bleckley

Horace Carswell Jr.

John Kane

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Neel Kearby

Louis Sebille

George Day

World War II (cont.)

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

Korea

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

Vietnam

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

Peacetime

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

USAF Recipients of the Distinguished Service Cross

World War I

Abernathy, Thomas J.
Aldrich, Perry H.
Alexander, Arthur H.
Alexander, Stirling C.
Allen, Gardner P.
Andrew, Flynn L.A.
Armstrong, Rodney M.
Arthur, Dogan H. (2)
Atwater, Benjamin L.
Avery, Walter L.
Babcock, Philip R.
Backus, David H. (2)
Badham, William T.
Baer, Paul F. (2)
Bagby, Ralph B.
Bartholf, Herbert B.
Baucom, Byrne V. (2)
Beane, James D.
Beebe, David C.
Bellows, Franklin B.
Belzer, William E.
Benell, Otto E.
Bernheimer, Louis G. (2)
Biddle, Charles J.
Bissell, Clayton L.
Blake, Charles R.
Bonnalie, Allan F.
Borden, Horace
Bowers, Lloyd G.
Bowman, Samuel A.
Boyd, Theodore E.
Breese, Clinton S.
Brereton, Lewis H.
Brewster, Hugh
Brooks, Arthur R.
Broomfield, Hugh D.G.
Brotherton, William E.
Brown, Mitchell H.
Buckley, Harold R. (2)
Buford, Edward Jr.
Burdick, Howard
Burger, Valentine J. (2)
Burns, James S.D.
Burt, Byron T. Jr.
Campbell, Douglas (5)
Carroll, George C.
Cassady, Thomas G. (2)
Castleman, John R.
Chambers, Reed M. (4)
Chapman, Charles W. Jr.
Clapp, Kenneth S.
Clarke, Sheldon V.
Clay, Henry R. Jr.
Coleman, Wallace
Conover, Harvey
Cook, Everett R.
Cook, Harvey W. (2)
Coolidge, Hamilton
Cousins, John W.
Creech, Jesse O.
Curtis, Edward P.
Cutter, Edward B.
Dawson, Leo H. (2)
De Castro, Ralph E.
Diekema, Willis A.
Dillon, Raymond P.
D'Olive, Charles R.
Donaldson, John O.
Douglass, Kingman
Dowd, Meredith L.
Drew, Charles W.
Duckstein, Arthur W.
Easterbrook, Arthur E. (2)
Eaton, Warren E.
Elliott, Robert P.
Erwin, William P. (2)
Este, J. Dickinson
Farnsworth, Thomas H.
Ferrenbach, Leo C.
Fisher, George F.
Fleeson, Howard T. (2)
Follette, Justin P.
Fontaine, Hugh L. (2)
Ford, Christopher W.
Frank, William F.
Frost, John
Furlow, George W. (2)

Reed Chambers

Gaylord, Bradley J.
George, Harold H.
Giroux, Ernest A.
Goldthwaite, George E.
Grant, Alfred A.
Graveline, Fred C.
Greist, Edwards H.
Grey, Charles G.
Gundelach, Andre P.
Guthrie, Murray K. (3)
Hall, James N.
Hambleton, John A. (2)
Hamilton, Lloyd A.
Hammond, Leonard C.
Hart, Percival G.
Hartney, Harold E.
Harwood, Benjamin P.
Haslett, Elmer R.
Hays, Frank K.
Healy, James A.
Henderson, Phil A.
Herbert, Thomas W.
Higgs, James A. Jr.
Hill, Maury
Hill, Raymond C.
Hitchcock, Roger W.
Holden, Kenneth H.
Holden, Lansing C. Jr. (2)
Holland, Spessard L.
Hoover, William J.
Hopkins, Stephen T.
Hudson, Donald
Hunter, Frank O'D. (5)
Irving, Livingston G.
Jeffers, John N.
Jervey, Thomas M.
Jones, Arthur H.
Jones, Clinton (2)
Jordan, John W.
Kahle, Clarence C.
Kaye, Samuel Jr. (2)
Keating, James A.
Kelty, Asher E.
Kenney, George C.
Kindley, Field E. (2)
Kinney, Clair A.
Kinsley, Wilbert E.
Knotts, Howard C.
Knowles, James Jr.
Lake, Horace A.
Lambert, John H.
Landis, Reed G.
Larner, Gorman D. (2)
Lawson, Walter R.
Lee, John B.
Lindsay, Robert O.
Littauer, Kenneth P.
Llewellyn, Frank A.
Lowry, Francis B.
Luke, Frank Jr. (2)
MacArthur, John K.
MacBrayne, Winfred C.
Manning, James F. Jr.
Maughan, Russell L.
McClendon, Joel H.

George Kenney

McDermott, Cleveland W.
McDevitt, James A.
McDougall, Harry O.
McKay, Elmore K.
McKay, James R.
McMurry, Ora R. (2)
Meissner, James A. (2)
Mell, Patrick H.
Michener, John H.
Mitchell, John
Mitchell, William
Moore, Edward R.
Morris, Edward M.
Morse, Guy E.
Myers, Oscar B.
Neel, Roland H.
Neibling, Harlou P.
Neidecker, Bertrande C.
Nichols, Harold O.
Nixon, George R.
Norris, Sigbert A.G.
Norton, Fred W.
Noyes, Stephen H.
Nutt, Alan
O'Donnell, Paul J.
O'Neill, Ralph A. (3)
Orr, Edward
Page, Richard C.M.
Palmer, Joseph A.
Palmer, William W.
Paradise, Robert C.
Patterson, Alfred B. Jr. (2)
Payne, Karl C.
Pegues, Josiah J.
Pendell, Elmer
Peterson, David M. (2)
Petree, Harris E.
Phelps, Glen
Phillips, George R.
Plummer, Charles W.
Plush, Lewis C.
Polley, Britton
Ponder, William T.

Numbers in parentheses are total DSCs received by the individual.

Porter, Charles P. (2)
Porter, Earl W.
Porter, Kenneth L.
Potter, William C.
Preston, Glen A. (3)
Putnam, David E.
Pyne, Percy R.
Quinn, John J.
Raible, Joseph C. Jr.
Ralston. Orville A.
Rancourt, John I.
Rath, Howard G.
Raymond, Robert F.
Reeves, Dache M.
Reynolds, Clearton H.
Reynolds, John N. (2)
Richardson, James M.
Rickenbacker, Edward V. (7)
Rooney, Paul N.A.
Rorison, Harmon C.
Ross, Cleo J.
Rucker, Edward W.
Rummell, Leslie J.
Saunders, William H.
Schenck, Alexander P.
Schoen, Karl J.
Seaver, Arthur F.
Sellers, Cecil G.
Sewall, Sumner (2)
Shelby, Richard D.
Simon, Louis C. Jr. (2)
Snyder, John H.
Spaatz, Carl A.
Springs, Elliott W.
Steele, Richard W.
Stenseth, Martinus
Stevens, John H.
Stokes, John Y. Jr.
Stout, Penrose V.
Stovall, William H.
Strahm, Victor H.
Suiter, Wilbur C.
Swaab, Jacques M.
Taylor, William H.
Taylor, William J.R.
Teneyck, Walton B. Jr.
Thaw, William (2)
Thomas, Gerald P.
Thompson, Robert E.
Tillman, Fred A.
Tittman, Harold H.
Tobin, Edgar G.
Treadwell, Alvin H.
Vail, William H.
Vaughn, George A.
Vernam, Remington D.B.
Wallis, James E. Jr.
Waring, William W.
Warner, Donald D.
Way, Pennington H.
Wehner, Joseph F. (2)
White, Wilbert W. (2)
Williams, Bertram
Winslow, Alan F.
Wright, Burdette S.
Wright, Chester E. (2)
Wyly, Lawrence T.

World War II

Able, Johnnie J. Jr.
Adams, Jack
Adams, Robert H.
Adkins, Frank E.
Alexander, John A.
Alison, John R.
Allen, Brooke E.
Allen, Keith N.
Alsip, Raymond H.
Ambrose, Talmadge L.
Anderson, Bernard E.
Anderson, Bernard L.
Anderson, Marshall J.
Anderson, Richard H.
Anderson, Sheldon K.
Anderson, Sherman E.
Anderson, William N.
Anderson, William T.
Andres, Arthur E.
Appold, Norman C.
Armsby, Sherman

Carl Spaatz (center) and Paul Tibbets Jr. (right)

Donald Blakeslee

Armstrong, Frank A. Jr.
Arooth, Michael
Aschenbrener, Robert W.
Ashley, Earl D.
Atkinson, Gwen G.
Atkinson, Paul G.
Avery, Lloyd
Bade, Jack A.
Bail, Bernard W.
Bakalar, John E.
Bankey, Ernest E. Jr.
Banks, Arthur E.
Barbiero, Samuel S.
Barbosa, Vicente R.
Barnicle, Gerald J.
Barockson, William D.
Barrall, Robert W.
Battaglia, Salvatore
Battalio, Samuel T.
Beam, James C.
Beam, Ralph E.
Beck, Joseph A. II
Beckham, Walter C.
Beerbower, Don M.
Beeson, Duane W.
Beeson, Frank H.
Bell, Robert D.
Bengel, George H.
Benn, William G.
Benson, Marion A.
Berryman, Richard C.
Bevlock, James J.
Billingsley, Leonard
Blakeslee, Donald J.M. (2)
Bleyer, Julian M.
Blickenstaff, Wayne K.
Blissard, Grover C.
Blumer, Laurence E.
Boelens, Leo A.
Boggs, Hampton E.
Boiefahr, Wayne N.
Bong, Richard I.
Booth, Charles H. Jr.
Bostrom, Frank P.
Boudreaux, Marcus A.
Boyd, Charles K.
Boyle, Francis M.
Bradley, Jack T.
Brandon, William H.
Breeding, Paul R.
Brereton, Lewis H.
Bright, James C. Jr.
Brill, Allen
Britton, John T.
Brooks, John A. III
Brown, Albert C.
Brown, David W.
Brown, George S.
Brown, Henry W.
Brown, Samuel J.
Brown, Walter L.
Brueland, Lowell K.
Bryan, Donald S.
Buck, William E. Jr.
Burdue, Clayton C.
Burleson, Robert B.
Burney, Willis W.
Burns, Wilbert R.
Caldwell, Kenneth M.
Caldwell, Wilma T. Jr.
Cameron, William R.
Campbell, David A.
Cannon, James L.
Carmichael, Richard H. (2)
Carpenter, Reginald L.
Carr, Bruce W.
Carrington, John R.
Carruth, Thomas A.
Carswell, Horace S. Jr.
Catallo, Albert L.
Caton, Edward H.
Ceuleers, George F.
Christensen, Harold R.
Christianson, Franklin O.
Christopher, Guyton M.
Church, Russel M.
Clark, Phillip R.
Clary, Guy W.
Classen, Thomas J.
Cleven, Gale W.


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Coleman, William F.
Collett, Howard G.
Collins, James F.
Coltharp, Chester A.
Compton, Keith K.
Conger, Paul A.
Connick, Arden D.
Corl, George P.
Corsetti, John
Cox, Leonard L.
Cox, Ray L.
Cragg, Edward
Crandall, Donald O.
Crenshaw, Claude J.
Crimmins, Fred T. Jr.
Crosbie, Maurice G.
Cullerton, William J.
Curtis, Robert C.
Czechowski, Chester M.
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Dale, Jack D.
Dallas, Frederick W. Jr.
Dalton, Malcolm C.
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Danver, Edison K.
Davies, John H.
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Davis, Robert R.
Davis, Robert T.
Dawkins, Cecil H.
Deal, James F.
Decker, Richard C.
DeGenaro, August V.
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Dent, Elliott E. Jr.
Diehl, John H. Jr. (2)
Dillman, Forrest E.
Dinn, Wallace S.
Dixon, Robert J.
Doherty, William K.
Dolk, Carl E.
Donaldson, I.B. Jack
Donegan, John M.
Dorwart, Robert J.
Douglas, Paul P. Jr. (2)
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Drier, William C.
Dubisher, Francis E.
Dufrane, John L. Jr.
Dunagan, Sidney W.
Dunaway, John S.
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Duncan, Glen E.
Dunham, William D.
Dunn, Edward B.
Dunn, Jack D.
Dunn, John A.
Durand, Edward D.
Durand, Frederick W.
Duval, Jessie B.
Dyer, Fred W.
Dyess, William E. (2)
Eagleston, Glen T.
Eareckson, William O.
Eaton, Frederick C. Jr.
Eckrich, James F.
Edeburn, Harry E.
Elam, Daniel F.
Ellis, Lewis N.
Ellis, Richard H.
Embree, Hoy D.
Emerson, Elwood R.
Emmer, Wallace N.
Endres, Robert J.
Engel, Russel W.
England, George H.
Ent, Uzal G.
Erickson, Irving A.
Evans, John G.
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Fegan, Robert W.
Ferguson, William H. Jr.
Fields, Virgil C. Jr.
Fletcher, Leo C.
Forrest, Nathan B. III
Forti, Joseph J.
Fowler, Gordon W.
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Fox, Joseph M.
Frazier, James L.
French, Clifford E.
Fridge, Benjamin W.
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Fry, Robert M.
Fulmer, Edward S.
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Garris, Benjamin L.
Garry, William J.
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Gause, Damon J.
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Gilpin, John A.
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Glass, Walter L. Jr.
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Gooden, Clarence W.
Goodson, James A.
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Gray, Leon W.
Green, Herschel H.
Greene, George B.
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Hanson, Robert T.
Hantman, Sidney
Hardison, Felix M.
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Harriger, Robert L.
Harrington, Archibald A.
Harris, Arizona T.
Harrison, Edgar E.
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Hascall, Alva S.
Hasek, Ivan S. Jr.
Hass, Floyd N.
Hatch, Herbert B. Jr.
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Hawthorne, Harry J.
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Heidger, Luther C.
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Helmick, George H.
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Henry, Maurice V.
Herlevic, Frank A.
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Herriott, Harold T.
Herron, Christian I.
Herron, Edwin R.
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Hinze, Frederick S. Jr.
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Hively, Howard D.
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Hoevet, Dean C.
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Holliday, Robert L.
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Holub, Anthony C.
Homer, Cyril F.

Dominic Gentile

Hoover, John R.
Horton, Robert W.
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Hovde, William J.
Howat, Kenneth W.
Howell, John J.
Hubbard, Ronald D.
Hudson, Charles S.
Huffstickler, Benjamin F.
Hughes, Charles W.
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Hull, Jack T.
Ingelido, Michael J.
Inman, Harold R.
Irons, John P.
Jackson, Roland B.
James, Joseph H.
Jamison, Roger W.
Jernigan, William D.J.
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Johnson, Albert L.
Johnson, Gerald R. (2)
Johnson, Gerald W.
Johnson, Robert S.
Johnson, Russell H.
Johnson, Theron E.
Johnson, Thomas E.
Johnson, William H.
Johnston, Robert D.
Johnston, Ruby E.
Jolly, Hoyt A. Jr.
Jones, Charles T.
Jones, Cyril W. Jr.
Jones, William Jr.
Joyce, John D.
Juchheim, Alwin M.
Judy, James D.
Kase, Louis N.
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Key, Algene E.
Kimmey, Doyle
Kinnard, Claiborne H. Jr.
Kiser, George E.
Kjosness, Gustav D.
Klepinger, Nolan W.
Klette, Immanuel
Knickerbocker, Malcolm M.
Koenig, Charles W.
Koon, Ralph E.
Kosters, Allen
Kovacik, Steve H.
Kramer, Vernon J.
Krause, John E.
Krug, Richard M.
Kunkle, James K.
Lackness, Berdines
Ladisic, Peter
Lael, Francis V.
LaFleur, Joseph V.
Lambert, James V.
Land, George R.
Landry, Larry D.
Lannon, Louis A.
Larson, Harold B.
Latham, John L. Jr.
Lauraine, Loye J.
Laven, George Jr.
Ledford, Jack C.
LeMay, Curtis E.
Leverette, William L.
Levi, Nelson
Liimatainen, Alvar A.
Lillis, Joseph D.
Lines, Ted E.
Lipscomb, Paul M.
Littge, Raymond H.
Litton, William P.
Loegering, Weston A.
Lohmeyer, Marvin E.
London, Charles P.
Lonsway, Louis G.
LoPresti, Nicholas O.
Lowery, Herman F.
Lowry, Allan W.
Ludolph, George L.
Ludwig, Vance P.
Luksic, Carl J.
Lyle, Lewis E.
Lynch, Thomas J.
MacDonald, Charles H. (2)
Magoffin, Morton D.
Mahoney, John F.
Mahony, Grant M.
Mahurin, Walker M.
Manders, John H.
Marett, Samuel H.
Marpe, Frank C. Jr.
Marshall, Lyndon O.
Martin, Ernest V.
Martin, John C.
Martin, Kenneth R.
Martinson, Meynard L.
Mason, Joe L.
Matchitt, Ray J.
Matson, Rex E.
Matte, Joseph Z.
Matthews, John E.
Mayes, Herbert C.
McArthur, Paul G.
McCabe, Ernest J.
McCall, Ben J.
McCallister, Garrett H.
McCallum, Gerald
McCormick, John B.
McCullar, Kenneth D.
McCurdy, Jimmy E.
McDaniel, Gordon H.
McElroy, Joseph G.
McFarland, Kenton D.
McGrath, Thomas J.
McGuire, Thomas B. Jr.
McHenry, William S.
McLaughlin, Frank B.
McLaughlin, John A.
McLeod, Stanley A.
McMahan, Darrell E.
McMahon, Robert F.
McNees, Richard A.
McNeese, Harold G.
Meals, Elbert O.
Megura, Nicholas
Melo, Frank L.
Merkel, Howard W.
Merrill, John O.
Meyer, John C. (3)
Middlebrook, Garrett E.
Middleditch, Lyman Jr.
Miles, James E.
Miller, Guy M.
Miller, Robert E.
Millikan, Willard W.
Milton, Theodore R.
Mitchell, John W.
Mix, Joseph E.
Moats, Sanford K.
Mohler, William A.
Mohon, Ernest M. Jr.
Molina, Pedro Q.
Momyer, William W.
Monkton, Lyle
Montgomery, Robert P.
Mooney, Robert C.
Moore, Carl W.
Moore, Clarence J.
Moore, Joseph H.
Moore, Pren L.
Moore, William W.
Moran, Harold D.
Morehead, James B.
Morgan, Marion W.
Morris, James M.
Morrissey, Robert L.
Moses, John H.
Moullen, Roy F.
Moye, Albert J.
Muckley, Dwight S.
Mueller, Alvin Jr.
Muir, Marvin F.
Mulligan, Charles D.
Munsey, James S.
Muri, James P.
Murphy, Philip J.
Myers, Joseph
Negley, Richard V.W. Jr.
Nepil, Slavomir
Nielsen, Leland C.
Noell, Robert E.
Norton, Charles E.
Nuchols, William L.
O'Brien, Kenneth J.
O'Connor, Frank O.
Oestreicher, Robert G.
Oettel, Fred W.
Old, Archie J.
Oldham, Richard G.
O'Leary, Eugene B.
Olson, Henry L.
O'Neal, James A.
O'Neill, Brian
O'Neill, Lawrence F.
O'Rourke, Edward J.
Orr, William F.
Owen, Albert E.
Owens, Marion P.
Paisley, Melvyn R.
Partridge, Donald D.
Patrick, Augustus R. Jr.
Pawloswski, Edward J.
Pear, Sidney A.
Pearson, John M.
Pederson, Harold L.
Pell, Floyd J.
Perdomo, Oscar F.
Peres, Jack R.
Perry, Elton S.
Peters, Robert O.
Petersen, Jacob
Peterson, Chesley G.
Petty, Charles A.
Phillips, Claude B.
Phillips, Hubert E.
Phillips, Reginald H.
Pickard, John G.
Pierce, Sammy A.
Pittman, Charles K.
Ploetz, Frederick F.
Polifka, Karl L.
Poore, Wesley A.
Posey, James T.
Post, Arthur L.
Potter, A.J.
Potts, Ramsey D. Jr.
Preddy, George E.
Price, Herbert M.
Price, Raymond E.
Priest, Royce W.
Prince, George A.
Prince, William H.
Pugh, Herbert W.
Putnam, Walter B.
Radtke, Dean M.
Rahner, Raymond M.
Rairigh, John E.
Ramey, Gordon A.
Ramey, Roger M.
Randerson, Luther W.
Rankin, Robert J.
Rau, Oscar J.
Rauschkolb, Frank
Ray, Charles P.
Ray, John W.
Reams, Luther S.
Reeder, Sumner H.
Reeves, Charles T.
Rice, Burt H.
Richards, Conrad B.
Ridolfi, Peter J.
Righetti, Elwyn G.
Rist, Robert P.
Ritchey, Andrew J.
Robbins, Jay T. (2)
Roberts, Daniel T.
Roberts, Eugene P.
Robinson, Stanley K.

Curtis LeMay

Roche, John R.
Rogers, Arthur H.
Rogers, Robert J.
Roller, John R.
Rorer, George A. Jr.
Rose, Dudley E.
Rose, Henry J.
Rosenthal, Robert
Royce, Ralph
Ruegg, Robert G.
Sacks, Seymour
Sanford, James T.
Sanford, William L.
Sans, Charles H.
Saunders, Lester W.
Schellin, Roy L.
Schild, William C.
Schilling, David C. (2)
Schiltz, Glenn D. Jr.
Scholz, Richard J.
Schreiber, Leroy A.
Schulman, Herbert E.
Schuman, John P.
Sconiers, Edward T.
Seaman, Theodore L.
Seith, Louis T.
Seitz, Bernard C.
Sellers, Thomas D.
Sewart, Allan J. Jr.
Shaw, William S.
Shelton, Stephen C.
Shingler, Herbert I.
Shirey, Harry R.
Shubin, Murray J.
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Simeral, George A.
Sims, Tommie J.
Skinner, William E.
Slade, Richard J.
Slessor, Lee D.
Smart, Jacob E.
Smith, Donovan F.
Smith, Edmond H.
Smith, George A.
Smith, Harry W.
Smith, Jack E.
Smith, James R.
Smith, Mack H.
Smith, Stephen M.
Snyder, Donald L.
Spencer, Charles W.
Spencer, Dale F.
Sprague, Charles A.
Stach, Paul J.
Starczweski, Phillip R.
Starks, Richard F.
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Steen, Zerrill J.
Steffy, Robert F.
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Stewart, Walter T.
Stipe, Leon D.
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Stricker, Thomas A.
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Talbott, Carlos M.
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Taylor, Robert L.
Tennille, William G. Jr.
Thomas, Jay P.
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Thornell, John F. Jr.
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Tidwell, Billy M.
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Trimingham, Charles E.
Trout, Chester E.

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Turner, William L.
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Van Deventer, Cowell
Van Ness, James
Vance, Paul W.
Vaughan, William
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Via, James E.
Villamor, Jesus A. (2)
Villines, Colin O.
Vitali, Chester A.
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Voll, John J.
Vondrachek, Charles E.
Voss, Raymond J.
Wagner, Boyd D.
Wagner, Donald F.
Wainwright, John H.
Walker, Clyde B.
Walker, Leland A.
Walker, William R.
Wallace, Robert D.
Walter, Donald A.
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Walton, Victor E.
Ward, Emery M.
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Warmer, Benjamin F.
Waskowitz, Frank T.
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Watson, William S.
Watt, James R.
Wayland, William J.
Weeks, Elbert W.
Weems, Thomas N. Jr.
Welch, George S.
Werner, William T.L.
Wesche, Frederick F. III
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Westby, Morton K.
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Wetmore, Ray S. (2)
Whalen, Norman M.
Wheless, Hewitt T.
Wherry, William B.
Whisner, William T. Jr. (2)
White, Raymond S.
Whitehead, Ennis C.
Whitson, William D.
Whittington, Leonard H.
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Wiegand, Arthur H.
Wilde, Robert M.
Wilkinson, James W.
Williams, Greeley B.
Williamson, Felix D.
Wilson, Avis K.
Wilson, Frederick M.
Wilson, James W.
Wilson, Russell A.
Winters, Elmer R.
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Witt, Lynn E. Jr.
Wolf, John K.
Woliver, Robert M.
Wood, Howard C.
Wood, Jack W.
Wood, Richard M.
Woods, Francis
Woods, Sidney S.
Woody, Robert E.
Wright, Arthur H. Jr.
Wright, Clifton J.
Wright, Ellis W. Jr.
Wright, John B.
Wylie, John W.
Yearwood, Roy W.
Yevich, Edward S.
Zdanzukas, Vincent R.
Zemke, Hubert

Korean War

Baker, Royal N.
Blesse, Frederick C.
Bryan, William W.
Davis, George A. Jr.
Dixon, Jacob W.
Fernandez, Manuel J. Jr.
Fischer, Harold E.
Freligh, Lawrence E.
Garrison, Vermont
Gebaur, Arthur W. Jr.
Georgi, William F.
Halton, William T.
Hicks, Forrest L.
Jabara, James
Johnson, James K.
Ledford, James H.
MacArthur, David W.
McConnell, Joseph Jr.
Moore, Lonnie R.
Morse, John Jr.
Najarian, John J.
Nichols, Donald
O'Donnell, Emmett Jr.
Orr, Robert H.
Parker, Robert B.
Parr, Ralph S.
Partridge, Earle E.
Rhoads, John K.
Savage, Richard L.
Shields, Everett L. Jr.
Spath, Charles R.
Stratemeyer, George E.
Tunner, William H.
Vojvodich, Mele Jr.
Whisner, William T. Jr.
Wilkerson, Desmond R.

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USAF Recipients of the Air Force Cross

World War II
Drew, Maj. Urban L.
Sloan, Lt. Col. William J.

Cuba Crisis
Anderson, Maj. Rudolph

Vietnam War
Adams, TSgt. Victor R.
Allee, Maj. Richard K.
Allison, Lt. Col. John V.
Armstrong, Maj. Larry D.
Atterberry, Lt. Col. Edwin L.
Baer, Lt. Col. Allan R.
Baldwin, Maj. Robert L.
Beale, Maj. Robert S.
Black, A3C Arthur N.
Bode, Maj. John R.
Boyd, Capt. Charles G.
Boyd, Lt. Col. William Jr.
Brickel, Lt. Col. James R.
Britt, Maj. Aquilla F.
Britton, Col. Warner A.
Broughton, Col. Jacksel M.
Brower, Capt. Ralph W.
Bucher, Maj. Bernard L.
Burroughs, Maj. William D.
Caldwell, Capt. William R.
Campbell, Maj. Jesse W.
Campbell, Maj. Thomas A.
Carroll, Maj. John L.
Carter, Capt. William R.
Cherry, Col. Fred V.
Clarke, Maj. Colin A.
Clay, SSgt. Eugene L.
Cobeil, Lt. Col. Earl G.
Cody, Capt. Howard R.
Collins, Capt. Willard M.
Conley, Lt. Col. Eugene O.
Conran, Maj. Philip J.
Cooper, Lt. Col. William E.
Corder, Capt. John A.
Courtney, Capt. Terence F.
Curtis, Capt. Thomas J.
Dallman, Lt. Col. Howard M.
Day, Col. George E.
Dayton, Maj. Thomas E.
DeBellevue, Capt. Charles B.
DeTar, Maj. Dean E.
Donelson, Capt. Nicholas J.
Donohue, Maj. Frederic M.
Dorsett, Capt. Tracey K. Jr.
Draeger, Capt. Walter F. Jr.
Dramesi, Col. John A. (2)
Engle, Capt. Charles E.
Eppinger, Maj. Dale L.
Etchberger, CMSgt. Richard L.
Etzel, Capt. Gregory A.M.
Feinstein, Capt. Jeffrey S.
Feuerriegel, Lt. Col. Karl T.
Finck, Maj. George C.
Firse, Capt. John A.
Fish, Sgt. Michael E.
Fleener, Capt. Delbert W.
Flynn, Lt. Gen. John P.
Francisco, Capt. Michael C.
Funderburk, Capt. Leonard J.
Gamlin, Sgt. Theodore R.
Gibson, Maj. James K.
Gilroy, Capt. Kevin A.
Gonzales, Maj. Leonard A.
Green, Maj. Joe B.
Griggs, Maj. Jerry M.
Gruver, Capt. John C.
Guarino, Col. Lawrence N.
Gustafson, Maj. Gerald C.
Guy, Col. Theodore W.
Hackney, A2C Duane D.
Hackney, Maj. Hunter F.
Hall, 1st Lt. James H.
Hamilton, Col. John S.
Harding, Maj. James C.
Harp, Capt. Tilford W.
Henning, Capt. Hal P.
Hickman, Capt. Vincent J.
Hoblit, Capt. Jerry N.
Hoggatt, Lt. Col. Ralph S.
Holland, Maj. Lawrence T.
Hopkins, Lt. Col. James R.
Horinek, Capt. Ramon A.
Hudson, Capt. Jackson L.
Hunt, Sgt. Russell M.
Jeanotte, Lt. Col. Alfred J. Jr.
Johnson, Capt. Harold E.
Kalen, Maj. Herbert D.
Kasler, Lt. Col. James H. (3)
Kennedy, Capt. Leland T. (2)
Kent, Sgt. Nacey Jr.
Killian, Col. Melvin J.
King, A1C Charles D.
Kirk, Col. Thomas H. Jr.
Knight, Col. Roy A. Jr.
Koeltzow, Maj. Paul F.
Lackey, Capt. John E.
Leetun, Capt. Darel D.
Lielmanis, 1st Lt. Atis K.
Lukasik, Capt. Bernard F.
Madden, Maj. Joseph B.
Maisey, Capt. Reginald V. Jr.
Martin, 1st Lt. Duane W.
Martin, Capt. William R.
Marx, Capt. Donald L.
Mason, Capt. Larry B.
Maysey, Sgt. Larry W.
Maywald, Capt. Philip V.
McAllister, Maj. William W.
McCarthy, Col. James R.
McGrath, Sgt. Charles D.
McInerney, Lt. Col. James E. Jr.
McKnight, Lt. Col. George G.
McTasney, Capt. John B.
Mehr, Maj. Richard L.
Mitchell, Maj. Carl B.
Mize, Capt. John D.
Mongillo, Maj. Paul J.
Moorberg, Capt. Monte L.
Nagel, Capt. Richard A. Jr.
Newman, Sgt. Thomas A.
Norris, Lt. Col. William C.
O'Mara, Capt. Oliver E.
Olds, Col. Robin
Olsen, Maj. Don P.
Orrell, Capt. Bennie D.
Parr, Col. Ralph S.
Personett, Capt. Joseph A.
Peterson, Capt. Delbert R.
Pogreba, Lt. Col. Dean A.
Poling, Capt. Richard L.
Price, Capt. Donald S.
Richardson, CMSgt. Dennis
Richter, 1st Lt. Karl W.
Risner, Lt. Col. Robinson (2)
Ritchie, Capt. Richard S.
Robinson, A1C William A.
Robinson, Maj. William P.
Ronca, Maj. Robert F.
Rowan, Maj. John M.
Schaneberg, Capt. Leroy C.
Schmidt, Col. Norman
Schurr, Lt. Col. Harry W.
Scott, Capt. Travis H. Jr.
Sellers, Maj. Jerry A.
Sellers, Capt. Kenneth H.
Shannon, Capt. Fred
Shaub, SSgt. Charles L.
Smith, TSgt. Donald G.
Smith, Lt. Col. Robert W.
Smith, Capt. Ronald E.
Smith, Capt. Rowland F. Jr.
Smith, Maj. Weston T.
Stevens, Capt. Donald D.
Stocks, Maj. Bruce D.
Storz, Lt. Col. Ronald E.
Stovall, Capt. Dale E.
Talley, Amn. Joel E.
Titus, Lt. Col. Robert F.
Trautman, Maj. Konrad W.
Traynor, Capt. Dennis W. III
Tsouprake, Maj. Peter
Turner, Maj. Robert E.
Weatherby, Capt. Jack W.
Wells, Capt. Norman L.
Whatley, Maj. Wayne N.
White, Col. Robert M.
Whitesides, Capt. Richard L.
Wilke, Col. Robert F.
Williams, Capt. David H.
Wofford, Maj. Travis
Wood, Maj. Patrick H.
Worrell, 1st Lt. Rowland H. III
Wright, Capt. Garth A.
Wright, TSgt. LeRoy
York, Maj. Glen P.

Mayaguez Incident
Backlund, 1st Lt. Donald R.
Brims, 1st Lt. Richard C.
Harston, SSgt. Jon D.
Purser, Capt. Rowland W.

Operation Desert Storm
Andrews, Capt. Bill
Johnson, Capt. Paul T.

Somalia
Wilkinson, TSgt. Timothy A.

Operation Enduring Freedom
Chapman, TSgt. John
Cunningham, SrA. Jason D.

Nacey Kent Jr. (right)

John Chapman

From a compilation by C. Douglas Sterner, www.homeofheroes.com

Guide to Aces

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

Left: James Jabara, the first USAF ace of the Korean War. Jabara scored 15 victories before the end of the war.

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

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

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

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

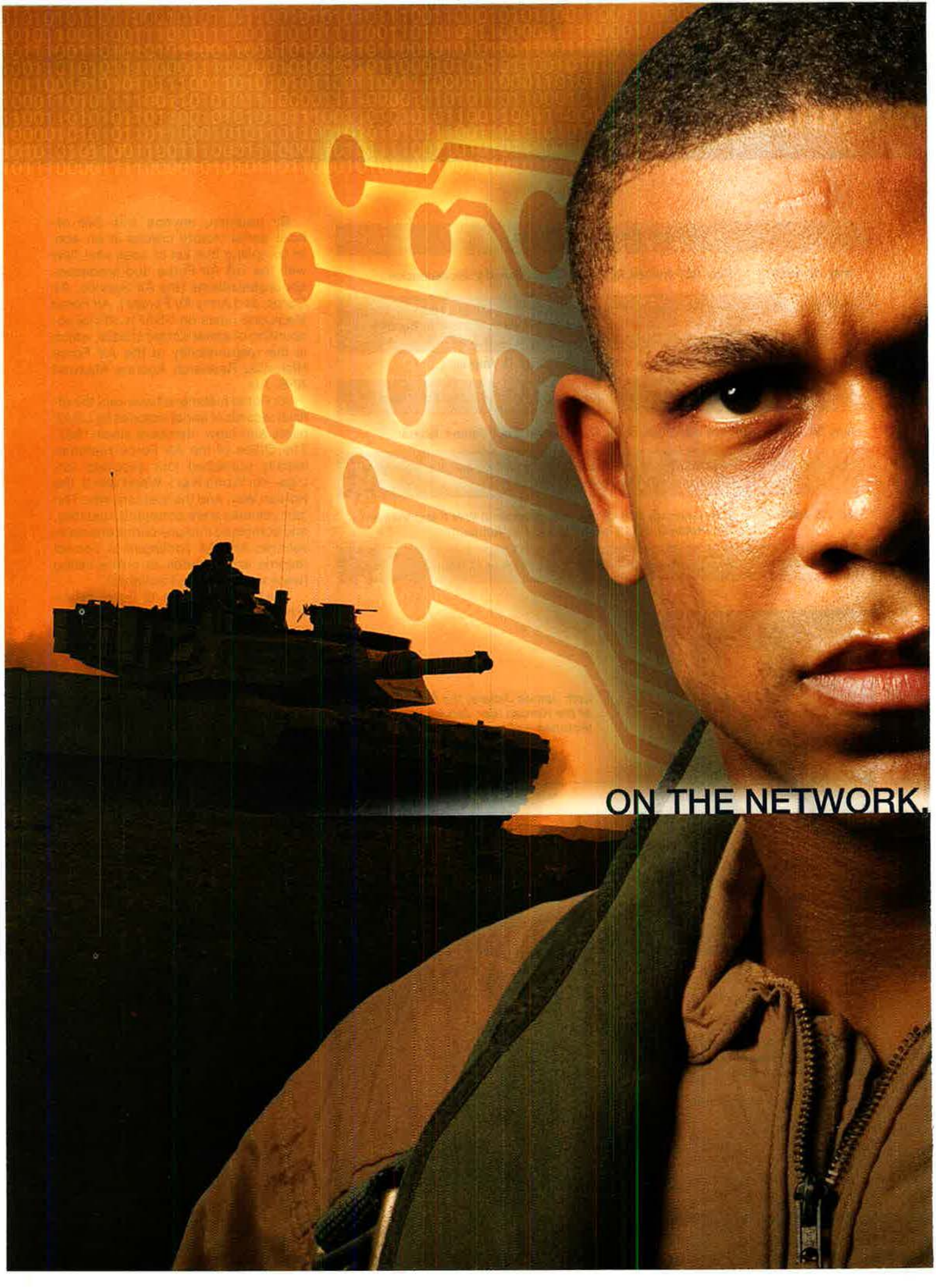
In many cases during World War I, several aviators worked together to down a single aircraft. The Air Service awarded one whole credit to each aviator who contributed to the victory. A single victory could—and often did—result in three or four victory credits.

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

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

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

Continued on p. 86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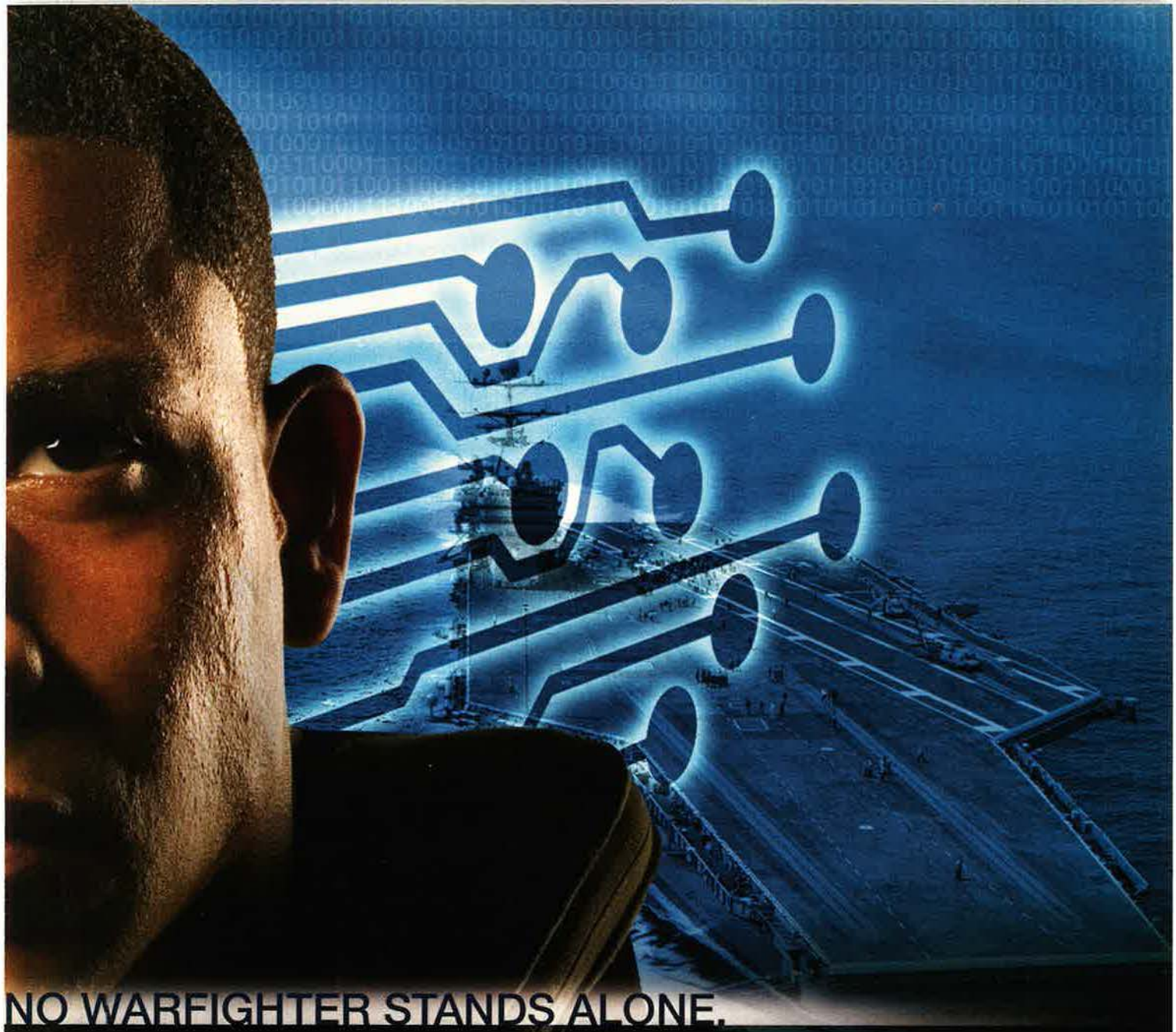


NO WARFIGHTER STANDS ALONE.

A fully networked military connects all warfighters, so each is stronger and safer. By seamlessly integrating joint assets in real time, all forces have the right information at the right time for faster, more decisive action. Boeing's leadership in network-enabled operations for combat systems, aircraft, satellite and communication systems is helping bring the benefits of this transformation to our forces today. To ensure no warfighter ever stands alone.

BOEING

American Aces of World War I

Eddie Rickenbacker (26)

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

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

Frank Luke Jr. (18)

Army Air Forces Aces of World War II

Richard Bong (40)

Ranks are as of last victory in World War II.

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

Thomas McGuire Jr. (38)

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

Robert Johnson (27) **and Francis Gabreski** (28)

Moran, 1st Lt. Glennon T.	13
Parker, Capt. Harry A.	13
Stephens, Maj. Robert W.	13
Williamson, Capt. Felix D.	13
Brueland, Maj. Lowell K.	12.50
Brown, Maj. Quince L.	12.33
Brezas, 1st Lt. Michael	12
Chase, Lt. Col. Levi R.	12
East, Capt. Clyde B.	12
Gleason, Capt. George W.	12
Hively, Maj. Howard D.	12
Ladd, Capt. Kenneth G.	12
Moore, Maj. Robert W.	12
Olds, Maj. Robin	12
Schreiber, Capt. Leroy A.	12
Skogstad, 1st Lt. Norman C.	12
Sloan, 1st Lt. William J.	12
Watkins, Capt. James A.	12
Megura, Capt. Nicholas	11.83
Blakeslee, Col. Donald J.M.	11.50
Conger, Maj. Paul A.	11.50
Kirla, 1st Lt. John A.	11.50
McDonald, Maj. Norman L.	11.50
Stewart, Maj. James C.	11.50
Yeager, Capt. Charles E.	11.50
Norley, Maj. Louis H.	11.33
Frantz, 1st Lt. Carl M.	11
Goebel, Capt. Robert J.	11
Lawler, Capt. John B.	11
Lent, 1st Lt. Francis J.	11
Leverette, Lt. Col. William L.	11
Loisel, Maj. John S.	11
Lowry, 1st Lt. Wayne L.	11
McCorkle, Col. Charles M.	11
McKennon, Maj. Pierce W.	11
Mitchell, Lt. Col. John W.	11
Molland, Capt. Leland P.	11
Quirk, Capt. Michael J.	11
Riddle, 1st Lt. Robert E.	11
Shubin, 1st Lt. Murray J.	11
Smith, Capt. Cornelius M. Jr.	11
Sparks, 1st Lt. Kenneth C.	11
Turner, Maj. Richard E.	11
O'Connor, Capt. Frank Q.	10.75
Ceuleers, Lt. Col. George F.	10.50
Clark, Lt. Col. James A. Jr.	10.50
Doersch, Capt. George A.	10.50
Halton, Maj. William T.	10.50
Hovde, Maj. William J.	10.50
Littge, Capt. Raymond H.	10.50
Storch, Lt. Col. John A.	10.50
Glover, Maj. Fred W.	10.33
Anderson, 1st Lt. Charles F.	10
Aschenbrener, Capt. Robert W.	10
Blickenstaff, Lt. Col. Wayne K.	10
England, Maj. James J.	10

Hubert Zemke (17.75)

Richard Turner (11)

John Godfrey (16.33)

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

Boyd Wagner (8)

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

William Shomo (8)

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

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

James Howard (7)

Urban Drew (6)

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

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

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

Clinton Vincent (6)

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

Edwin Heller (5.5)

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

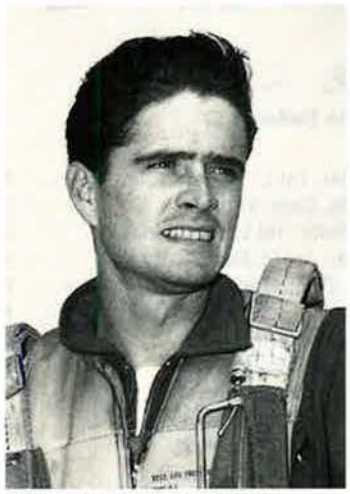
Harrison Thyng (5)

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

USAF Aces of the Korean War

Joseph McConnell Jr. (16)

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



William Whisner Jr. (5.50)

USAF Aces of the Vietnam War

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

Jeffrey Feinstein (5)

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

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

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

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

John Meyer (26)

George Davis Jr. (21)

Leading Air Service/AAF/USAF Aces of All Wars

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

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

Walker Mahurin (24.25) **and Walter Beckham** (18)

Hq. Air Force

2008 USAF Almanac

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

Headquarters Air Force

HAF

Headquarters Pentagon, Washington, D.C.

Established Sept. 18, 1947

Secretary Michael W. Wynne

Chief of Staff Gen. T. Michael Moseley

ROLE

Organize, train, and equip air and space forces

MISSION

Deliver sovereign options for the defense of the United States of America and its global interests—to fly and fight in air, space, and cyberspace

FORCE STRUCTURE—SECRETARIAT

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

FORCE STRUCTURE—AIR STAFF

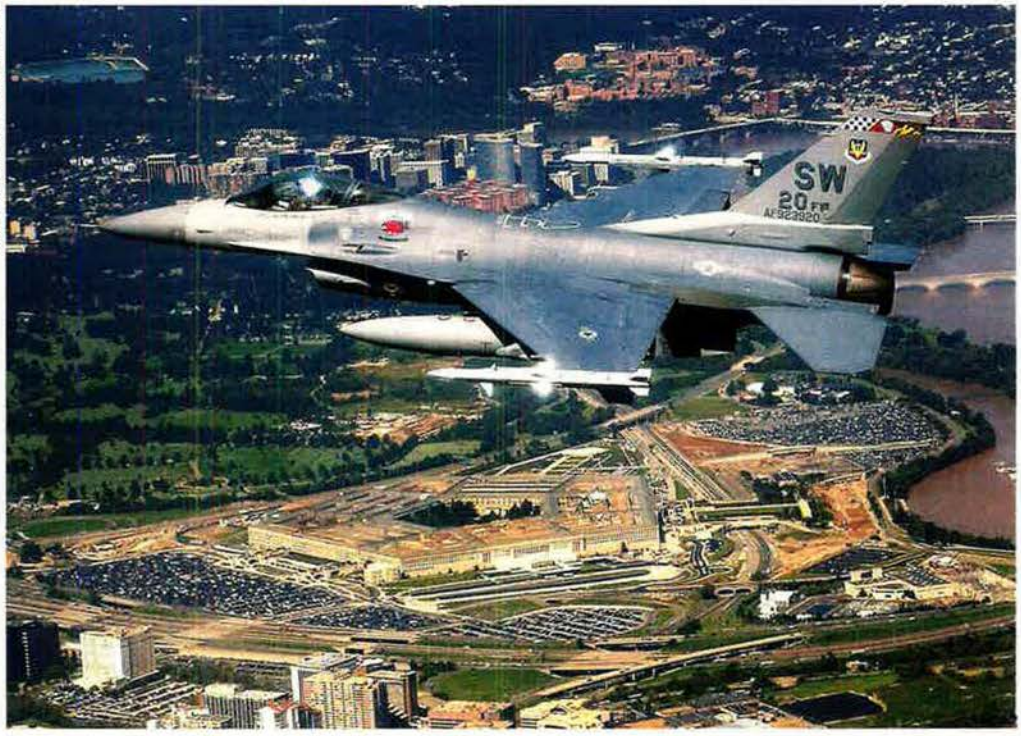
One Chief of Staff
One vice chief of staff
One Chief Master Sergeant of the Air Force
Six deputy chiefs of staff
Three directors
Eight offices

PERSONNEL

(as of Sept. 30, 2007)

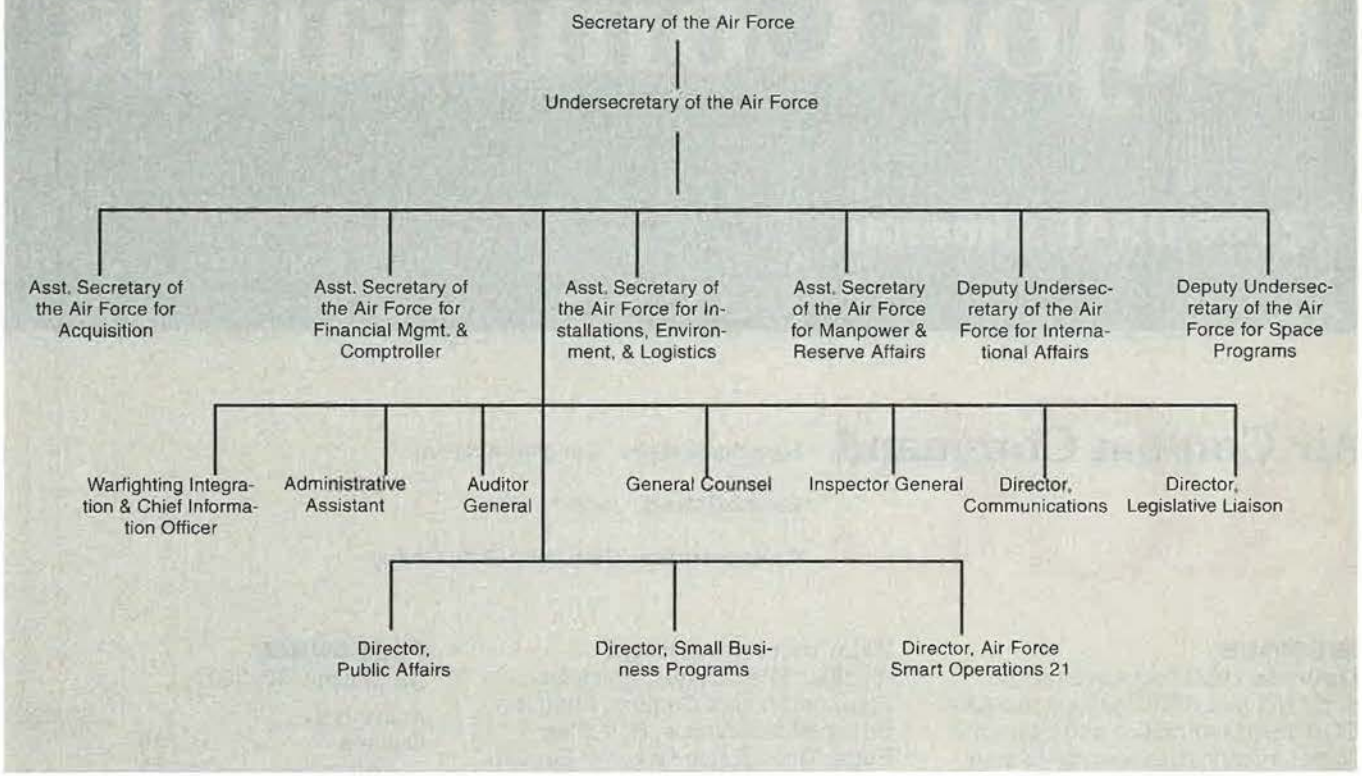
Active duty		1,642
Officers	1,389	
Enlisted	253	
Reserve components		493
ANG	61	
AFRC	432	
Civilian		818
Total		**2,953**

USAF photo by SSgt. Aaron D. Allmon II

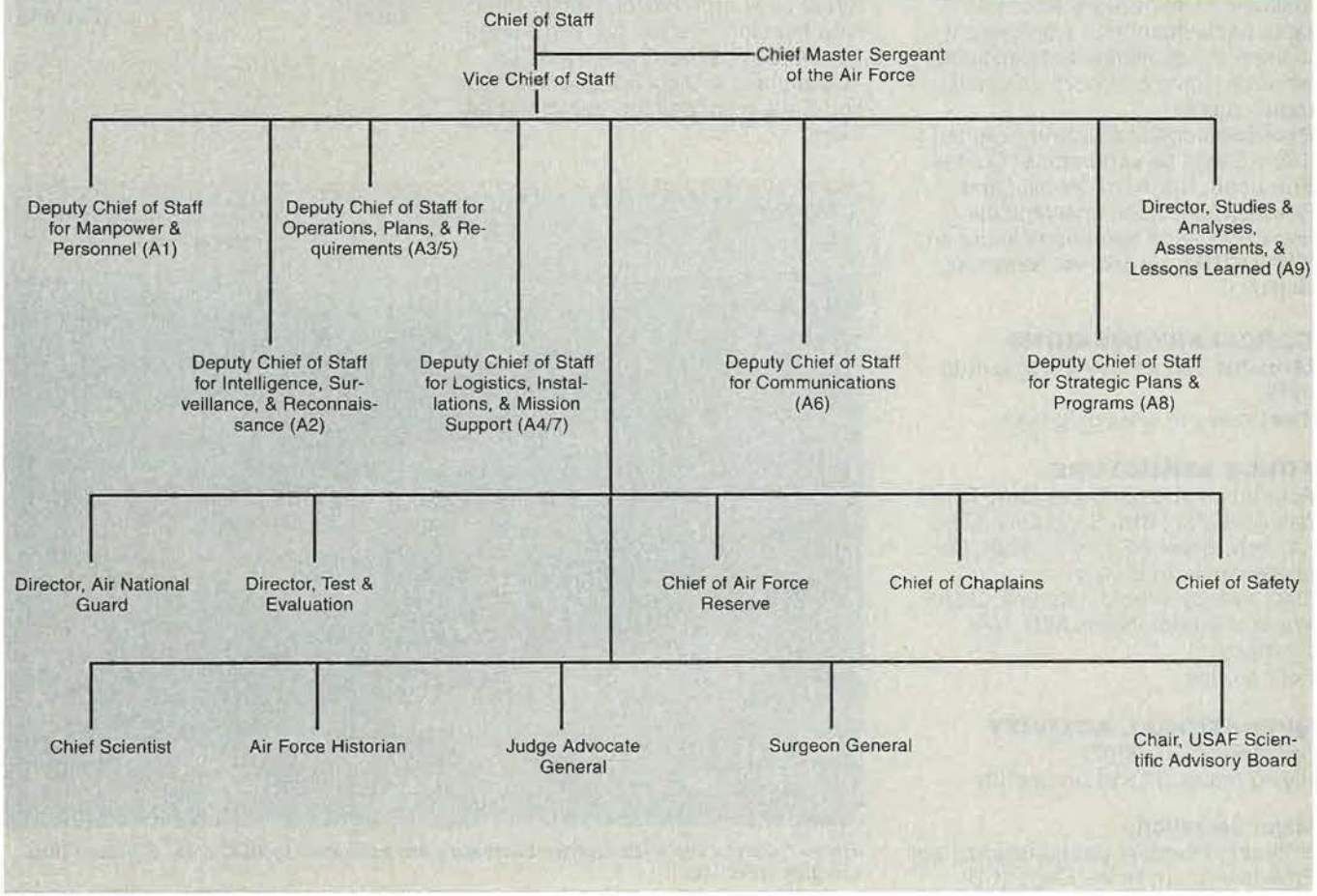


An F-16 of the 20th Fighter Wing, Shaw AFB, S.C., flies near the Pentagon as part of Noble Eagle.

SECRETARIAT, PENTAGON, WASHINGTON, D.C.



AIR STAFF, PENTAGON, WASHINGTON, D.C.



Major Commands

2008 USAF Almanac

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

Air Combat Command

ACC

Headquarters Langley AFB, Va.

Established June 1, 1992

Commander Gen. John D.W. Corley

MISSIONS

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

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

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

COROLLARY MISSIONS

Monitor and intercept illegal drug traffic

Test new combat equipment

FORCE STRUCTURE

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

One primary subordinate unit: USAF Warfare Center, Nellis AFB, Nev.

27 wings

Four groups

OPERATIONAL ACTIVITY

(as of Sept. 30, 2007)

Flying hours: 27,316 per month

Major operations

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

Major training exercises

Amalgam Dart Series; Amalgam Phantom; Ardent Century; Atlantic Strike; Blue Advance; Blue Flag; Eager Tiger; Eagle Resolve; Eastern Falcon; Ellipse Echo; Falcon Condor; Falcon Nest; Foal Eagle; Global Lightning; Global Thunder; Green Flag East and West; Initial Link; Internal Look; Iron Falcon; Maple Flag; New Horizons Series; Northern Edge; Panamax; Positive Force; Red Flag; Terminal Fury; Ulchi Focus Lens; Unified Endeavor; Vigilant Shield; Virtual Flag

PERSONNEL

(as of Sept. 30, 2007)

Active duty		83,631
Officers	11,849	
Enlisted	71,782	
Reserve components		57,418
ANG	46,913	
AFRC	10,505	
Civilian		10,394
Total		**151,443**

Photo by Rick Llinares

These F-22s of the 94th Fighter Squadron are assigned to ACC's 1st Fighter Wing, Langley AFB, Va.

companied, UAQ/UEQ, 267; visiting, VOQ, 119, VAQ/VEQ, 48, TLF, 100. **Clinic.**

Buckley AFB, Colo. 80011-9524; 8 mi. E of Denver. **Phone:** 720-847-9011 DSN 847-9011. **Majcom:** AFSPC. **Host:** 460th Space Wing. **Mission:** provides global surveillance, space-based missile warning, and space communications operations. **Major tenants:** 140th Wing (ANG); Aerospace Data Facility; Navy/Marine Reserve Center; Army Aviation Support Facility. **History:** activated April 1, 1942 as a gunnery training facility. Named for 1st Lt. John H. Buckley, a WWI flier, killed Sept. 17, 1918. ANG assumed control from US Navy in 1959. Became active duty Air Force base Oct. 2, 2000. **Area:** 3,832 acres. **Runway:** 11,000 ft. **Altitude:** 5,663 ft. **Personnel:** permanent party military, 3,626; DOD civilians, 3,337. **Housing:** two dorms and 351 single-family units. **Clinic.**

Cannon AFB, N.M. 88103-5000; 7 mi. W of Clovis. **Phone:** 505-784-1110; DSN 681-1110. **Majcom:** AFSOC. **Host:** 27th Special Operations Wing. **Mission:** MC-130W and MQ-1 operations. **History:** activated August 1942. Named for Gen. John K. Cannon, WWII commander of all Allied air forces in the Mediterranean Theater and former commander, Tactical Air Command. **Area:** 3,789 acres, excluding range. **Runways:** 10,000 ft. and 8,200 ft. **Altitude:** 4,295 ft. **Personnel:** permanent party military, 2,470; DOD civilians, 392. **Housing:** single family, officer, 143, enlisted, 1,501; unaccompanied, 835; visiting, 57, TLF, 36. **Ambulatory care clinic.**

Charleston AFB, S.C. 29404-5000; 10 mi. from downtown Charleston. **Phone:** 843-963-2100; DSN 673-8400. **Majcom:** AMC. **Host:** 437th AW. **Mission:** C-17 operations. **Major tenant:** 315th AW (AFRC assoc.), C-17. **History:** activated October 1942; inactivated March 1946; reactivated August 1953. **Area:** 6,033 acres (including auxiliary airfield). **Runway:** 9,000 ft.; joint-use airfield. **Altitude:** 46 ft. **Personnel:** permanent party military, 4,169; DOD civilians, 1,450. **Housing:** single family, officer, 726, enlisted, 641; unaccompanied, UOQ, 85; UAQ/UEQ, 587; visiting, VOQ, 156, VAQ/VEQ, 40, TLF, 40. **Clinic.**

Columbus AFB, Miss. 39710-1000; 7.5 mi. NW of Columbus. **Phone:** 662-434-7322; DSN 742-1110. **Majcom:** AETC. **Host:** 14th Flying Training Wing. **Mission:** Specialized Undergraduate Pilot Training (T-1, T-6, T-37, T-38). **History:** activated 1942 for pilot training. **Area:** 5,325 acres. **Runways:** 12,000 ft., 8,000 ft., and 6,300 ft. **Altitude:** 219 ft. **Personnel:** permanent party military, 1,165; DOD civilians, 570. **Housing:** single family, 517; unaccompanied, UOQ, 234, UAQ/UEQ, 166; visiting, 73, DV, 4, TLF, 20. **Clinic.**

Davis-Monthan AFB, Ariz. 85707-5000; within Tucson. **Phone:** 520-228-1110; DSN 228-1110. **Majcom:** ACC. **Host:** 355th FW. **Mission:** A-10 combat crew training; OA-10 and FAC HC-130 training and operations; EC-130H; HH-60 Pavehawk; and CSAR operations. **Major tenants:** 12th Air Force (ACC); 309th Aerospace Maintenance and Regeneration Group (AFMC), DOD's single location for regeneration, maintenance, parts reclamation, preservation, storage, and disposal of excess DOD and government aerospace vehicles; 943rd Rescue Gp. (AFRC), HH-60; 55th ECG (ACC); 563rd RQG (AFSOC); US Customs and Border Protection. **History:** activated 1927. Named for two local aviators: 2nd Lt. Samuel H. Davis, killed Dec. 28, 1921, and 2nd Lt. Oscar Monthan, killed March 27, 1924. **Area:** 10,633 acres. **Runway:** 13,643 ft. **Altitude:** 2,404 ft. **Personnel:** permanent party military, 6,900; DOD civilians, 1,970. **Housing:** single family, officer, 125, enlisted, 1,129; unaccompanied, 756; visiting, VOQ, 20, VAQ/VEQ, 61, DV, 165, TLF, 50. **Clinic.**

Dover AFB, Del. 19902-7209; 6 mi. SE of Dover. **Phone:** 302-677-3000; DSN 445-3000. **Majcom:** AMC. **Host:** 436th AW. **Mission:** C-5 and C-17 operations; operates largest DOD aerial port facility; houses military's East Coast mortuary. **Major tenant:** 512th AW (AFRC assoc.). **History:** activated December 1941; inactivated 1946; reactivated February 1951. **Area:** 3,400 acres. **Runways:** 12,900 ft. and 9,600 ft. **Altitude:** 28 ft. **Personnel:** permanent party military, 3,350; DOD civilians, 1,040. **Housing:** single family, officer, 50, enlisted, 657; unaccompanied, UAQ/UEQ, 504; visiting, VQ, 251, TLF, 0. **Clinic.**

Dyess AFB, Tex. 79607-1980; WSW border of Abilene. **Phone:** 325-696-1110; DSN 461-1110. **Majcom:** ACC. **Host:** 7th BW. **Mission:** B-1 operations. **Major tenant:** 317th Airlift Gp. (AMC), C-130. **History:** activated April 1942; deactivated December 1945; reactivated as Abilene AFB September 1955. In December 1956, renamed for Lt. Col. William E. Dyess, WWII fighter pilot who escaped from a Japanese prison camp, killed in P-38 crash in December 1943. **Area:** 6,342 acres (including off-base sites). **Runway:** 13,500 ft. **Altitude:** 1,789 ft. **Personnel:** permanent party military, 5,370; DOD civilians, 435. **Housing:** single family, officer, 108, enlisted, 515; unaccompanied, 808; visiting, 137, TLF, 39. **Clinic.**

Edwards AFB, Calif. 93524; adjacent to Rosamond. **Phone:** 661-227-1110; DSN 527-1110. **Majcom:** AFMC. **Host:** 95th Air Base Wing. **Mission:** The Air Force Flight Test Center is AFMC's center of excellence for research, development, test, and evaluation of aerospace systems from concept to combat. It operates the US Air Force Test Pilot School. **Major tenants:** AFRL's Propulsion Directorate (AFMC); Dryden Flight Research Center (NASA); Air Force Operational Test and Evaluation Center, Det. 5; 31st Test and Evaluation Squadron (ACC); Marine Aircraft Group 46, Det. Bravo. **History:** activities began in September 1933 when the Muroc Bombing and Gunnery Range was established. In 1942, it was designated Muroc Army Air Base. Renamed in 1949 for Capt. Glen W. Edwards, killed June 5, 1948 in crash of a YB-49 "Flying Wing." **Area:** 301,000 acres. **Runways:** 21, from 4,000 to 39,000 ft. **Altitude:** 2,302 ft. **Personnel:** permanent party military, 2,665; DOD civilians, 3,360. **Housing:** officer, 194; enlisted, 603; unaccompanied, UOQ, 80; UEQ; 670. **Medical and dental clinics.**

Eglin AFB, Fla. 32542; 2 mi. SW of the twin cities of Niceville and Valparaiso; 7 mi. NE of Fort Walton Beach. **Phone:** 850-882-1110; DSN 872-1110. **Majcom:** AFMC. **Host:** 96th ABW. **Mission:** The Air Armament Center is responsible for the development, acquisition, testing, and deployment of all air-delivered weapons. **Major tenants:** AFRL's Munitions Directorate (AFMC); 33rd FW (ACC), F-15; 53rd Wing (ACC); 919th Special Operations Wing (AFRC) at Duke Field, MC-130; Air Force Armament Museum; Army 6th Ranger Training Battalion; Naval School Explosive Ordnance Disposal. **History:** activated 1935. Named for Lt. Col. Frederick I. Eglin, WWI flier killed in aircraft accident Jan. 1, 1937. **Area:** 463,452 acres. Eglin is the nation's largest Air Force base in terms of acreage, covering an area roughly two-thirds the size of Rhode Island. **Runways:** 12,000 ft. and 10,000 ft. **Altitude:** 85 ft. **Personnel:** permanent party military, 7,127; DOD civilians, 3,884 (excluding Hurlburt Field). **Housing:** single family, officer, 285, enlisted, 1,767; unaccompanied, UAQ/UEQ, 933; visiting, VOQ, 169, VAQ/VEQ, 156, TLF, 87. **Hospital.**

Eielson AFB, Alaska 99702-5000; 26 mi. SE of Fairbanks. **Phone:** 907-377-1110; DSN 317-377-1110. **Majcom:** PACAF. **Host:** 354th FW. **Mission:** F-16C/D operations; oversees Pacific Alaska Range Complex and Red Flag-Alaska. **Major tenants:** Arctic Survival School (AETC); 168th Air Refueling Wing (ANG), KC-135; 353rd Combat Training Sq. **History:** activated October 1944. Named for Carl Ben Eielson, Arctic aviation pioneer who died in an Arctic rescue mission in November 1929. **Area:** 19,790 acres (including 16 remote sites, 63,195 acres). **Runway:** 14,500 ft. **Altitude:** 534 ft. **Personnel:** permanent party military, 2,930; DOD civilians, 633. **Housing:** single family, officer, 181, enlisted, 1,243; unaccompanied, UOQ, 8, UAQ, 522, UEQ, 16; visiting, VOQ, 206, VAQ/VEQ, 328, TLF, 40. **Outpatient clinic.**

Ellsworth AFB, S.D. 57706-5000; 12 mi. ENE of Rapid City. **Phone:** 605-385-5056; DSN 675-5056. **Majcom:** ACC. **Host:** 28th BW. **Mission:** B-1 operations. **Major tenants:** Det. 21, Belle Fourche Electronic Scoring Site; Det. 8, 372nd Training Sq. (AETC); Det. 226, AFOSI; Air Force Financial Services Center. **History:** activated January 1942 as Rapid City AAB; renamed June 13, 1953 for Brig. Gen. Richard E. Ellsworth, killed March 18, 1953 in RB-36 crash. **Area:** 5,411 acres. **Runway:** 13,500 ft. **Altitude:** 3,276 ft. **Personnel:** permanent party military, 3,664; DOD civilians, 484. **Housing:** single family, officer, 413, enlisted, 1,508, unaccompanied, 728; visiting, 80, DV, 8, TLF, 29. **Clinic.**

Elmendorf AFB, Alaska 99506-5000; bordering Anchorage. **Phone:** 907-552-1110; DSN 317-552-1110. **Majcom:** PACAF. **Host:** 3rd Wing. **Mission:** C-12, C-17, E-3B Airborne Warning and Control System, F-15, and F-22A operations. Hub for air traffic to and from Far East. **Major tenants:** Alaskan Command; 11th Air Force (PACAF); Alaskan NORAD Region. **History:** activated July 1940. Named for Capt. Hugh Elmendorf, killed Jan. 13, 1933. **Area:** 13,100 acres. **Runways:** 10,000 ft. and 7,500 ft. **Altitude:** 213 ft. **Personnel:** permanent party military, 6,642; DOD civilians, 840. **Housing:** single family, officer, 112, enlisted, 1,910; unaccompanied, UAQ/UEQ, 850; visiting, VOQ, 178, VAQ/VEQ, 195, TLF, 86. **Hospital.**

Fairchild AFB, Wash. 99011-9588; 10 mi. WSW of Spokane. **Phone:** 509-247-1110; DSN 657-1110. **Majcom:** AMC. **Host:** 92nd Air Refueling Wing. **Mission:** KC-135R operations. **Major tenants:** 336th Training Gp. (USAF Survival School, AETC); 141st ARW (ANG). **History:** activated January 1942. Named for Gen. Muir S. Fairchild, USAF vice chief of staff at his death in 1950. **Area:** 5,823 acres; 530,205 acres used for survival school. **Runway:** 13,901 ft. **Altitude:** 2,426 ft. **Personnel:** permanent party military, 2,749; DOD civilians, 700. **Housing:** single family, officer, 167, enlisted, 889; unaccompanied, VOQ, 126, VAQ, 180, TLF, 42. **Clinic.**

F.E. Warren AFB, Wyo. 82005-5000; adjacent to Cheyenne. **Phone:** 307-773-1110; DSN 481-1110. **Majcom:** AFSPC. **Host:** 90th SW. **Mission:** Minuteman III ICBMs and UH-1N operations. **Major tenants:** 20th Air Force (AFSPC); Air Force ICBM Museum. **History:** activated as Ft. D.A. Russell July 4, 1867; under Army jurisdiction until 1949, when reassigned to USAF; renamed in 1930 for Francis Emory Warren, Wyoming Senator and first state governor. **Area:** 5,866 acres. Missile site area covering more than 12,600 sq. mi. in Wyoming, Colorado, and Nebraska. **Runway:** none. **Altitude:** 6,142 ft. **Personnel:** permanent party military, 1,361; DOD civilians, 1,149. **Housing:** privatized single-family units, 617; TLF, 57. **Clinic.**

Goodfellow AFB, Tex. 76908-4410; SE of San Angelo. **Phone:** 325-654-1110; DSN 477-1110. **Majcom:** AETC. **Host:** 17th Training Wing. **Mission:** trains intelligence, fire protection, and special instruments personnel for US military and

DOD and international agencies. **Major tenants:** 344th Military Intelligence Battalion (Army); Center for Information Dominance det. (Navy); USMC det.; NCO Academy. **History:** activated January 1941. Named for Lt. John J. Goodfellow Jr., WWI observation airplane pilot killed in combat Sept. 14, 1918. **Area:** 1,136 acres. **Runway:** none. **Altitude:** 1,900 ft. **Personnel:** permanent party military, 1,582; DOD civilians, 861. **Housing:** single family, officer, 2, enlisted, 96; unaccompanied, UOQ, 144, UAQ/UEQ, 236; visiting, VOQ, 114, VAQ/VEQ, 321, TLF, 31. **Clinic.**

Grand Forks AFB, N.D. 58205-5000; 16 mi. W of Grand Forks. **Phone:** 701-747-3000; DSN 362-3000. **Majcom:** AMC. **Host:** 319th ARW. **Mission:** KC-135R operations. **History:** activated 1956. Named after town of Grand Forks, whose citizens bought the property for the Air Force. **Area:** 4,830 acres. **Runway:** 12,351 ft. **Altitude:** 911 ft. **Personnel:** permanent party military, 2,429; DOD civilians, 1,112. **Housing:** single family, officer, 148, enlisted, 756; unaccompanied, UAQ/UEQ, 370; visiting; VOQ, 5, VAQ/VEQ, 2, TLF, 27. **Hospital.**

Hanscom AFB, Mass. 01731-5000; 17 mi. NW of Boston. **Phone:** 781-377-1110; DSN 478-1110. **Majcom:** AFMC. **Host:** 66th ABW. **Mission:** Electronic Systems Center manages development and acquisition of command and control systems. **Major tenants:** AFRL's Space Vehicles Directorate-Hanscom; AFRL's Sensors Directorate-Hanscom. **History:** activated 1941. Named for Laurence G. Hanscom, a pre-WWII advocate of private aviation, killed in a lightplane accident in 1941. **Area:** 846 acres. **Runway:** no flying mission; transient USAF aircraft use runways of Laurence G. Hanscom Field, state-operated airfield adjoining the base. **Altitude:** 133 ft. **Personnel:** permanent party military, 1,769; DOD civilians, 2,316. **Housing:** single family, officer, 314, enlisted, 470; unaccompanied, UAQ/UEQ, 122; visiting, 148, TLF, 47. **Clinic.**

Hickam AFB, Hawaii 96853-5000; 9 mi. W of Honolulu. **Phone:** 808-449-7110 (Oahu military operator); DSN 315-449-7110. **Majcom:** PACAF. **Host:** 15th AW (C-17, C-37, C-40). **Mission:** C-17, C-37, C-40 operations. **Major tenants:** PACAF; 13th AF; 154th Wing (ANG), C-17, C-130, F-15, KC-135R; Joint POW/MIA Accounting Command. **History:** activated September 1938. Named for Lt. Col. Horace M. Hickam, aviation pioneer killed in crash Nov. 5, 1934. **Area:** 2,761 acres. **Runways:** Four joint-use runways shared with Honolulu Arpt.: 12,357 ft., 12,000 ft., 9,000 ft., and 6,952 ft. **Altitude:** 13 ft. **Personnel:** permanent party military, 5,016; DOD civilians, 1,405. **Housing:** single family, officer, 586, enlisted, 703; unaccompanied, UAQ/UEQ, 767; visiting, VOQ, 157, VAQ/VEQ, 115, TLF, 40. **Clinic.**

Hill AFB, Utah 84056-5990; 25 mi. N. of Salt Lake City. **Phone:** 801-777-1110; DSN 777-1110. **Majcom:** AFMC. **Host:** 75th ABW. **Mission:** Ogden Air Logistics Center provides worldwide engineering and logistics management; maintains the A-10, C-130, F-16, and F-22; handles logistics management and maintenance for Minuteman ICBMs; provides sustainment and logistics support for space and C3I programs; overhauls and repairs landing gear for all USAF (and 70 percent of DOD) aircraft; operates and maintains the Utah Test and Training Range. **Major tenants:** 388th FW (ACC); 419th FW (AFRC), F-16; Hill Aerospace Museum; Defense Enterprise Computing Center (DISA); Defense Distribution Depot Hill Utah; Defense Logistics Agency; 372nd Recruiting Gp. (USAF). **History:** activated 1940. Named for Maj. Ployer P. Hill, killed Oct. 30, 1935 while test flying the first B-17. **Area:** 6,797 acres; 962,076 acres (UTTR). **Runway:** 13,500 ft. **Altitude:** 4,789 ft. **Personnel:** permanent party military, 4,700; DOD civilians, 13,000. **Housing:** single family, officer, 109, enlisted, 909; unaccompanied, UAQ/UEQ, 774; visiting, VOQ, 13, VAQ/VEQ, 147, TLF, 61. **Clinic.**

Holloman AFB, N.M. 88330; 8 mi. SW of Alamogordo. **Phone:** 505-572-1110; DSN 572-1110. **Majcom:** ACC. **Host:** 49th FW. **Mission:** Planned transition to F-22s. **Major tenants:** 46th Test Gp. (AFMC); 4th Space Control Sq. (AFSPC); German Air Force Flying Training Center. **History:** activated 1941. Named for Col. George Holloman, guided-missile pioneer. **Area:** 58,000 acres. **Runways:** 12,000 ft., 10,500 ft., and 8,000 ft. **Altitude:** 4,350 ft. **Personnel:** permanent party military, 3,143; DOD civilians, 839. **Housing:** single family, officer, 78, enlisted, 654; unaccompanied, 633; visiting, 196, TLF, 49. **Clinic.**

Hurlburt Field, Fla. 32544-5000; 5 mi. W of Fort Walton Beach. **Phone:** 850-884-7464; DSN 579-7464. **Majcom:** AFSOC. **Host:** 1st SOW. **Mission:** AC-130H/U, CV-22, MC-130H, MC-130P (located at Eglin), MH-53J/M, U-28A, UH-1N operations. **Major tenants:** AFSOC; Joint Special Operations University; USAF Combat Weather Center; USAF Special Operations School; 505th Command and Control Wing (ACC); 720th Special Tactics Gp. (AFSOC); 18th Flight Test Sq. (AFSOC); 25th Intelligence Sq.; 39th Informations Operations Sq.; 413th Flight Test Sq. (AFMC); 823rd RED HORSE (ACC). **History:** activated 1943. Named for Lt. Donald W. Hurlburt, WWII pilot killed Oct. 1, 1943. **Area:** 6,600 acres. **Runway:** 6,900 ft. **Altitude:** 38 ft. **Personnel:** permanent party military, 7,600; DOD civilians, 800. **Housing:** single family, officer, 52, enlisted, 628; unaccompanied, UAQ/UEQ, 1,150; visiting, VOQ, 131, VAQ/VEQ, 91, TLF, 24. **Clinic.**

Incirlik AB, Turkey, APO AE 09824; 6 mi. E of Adana. **Phone:** (cmcl, from CONUS) 011-90-322-316-6060; DSN (from CONUS) 676-6060. **Majcom:** USAFE. **Host:** 39th ABW. **Mission:** provides forward operating base support to expeditionary forces. **History:** activated May 1954. Present unit began operations March 1966. Incirlik, in Turkish, means fig orchard. **Area:** 3,400 acres. **Runway:** 10,000 ft. **Altitude:** 240 ft. **Personnel:** permanent party military, 1,500; DOD civilians, 65. **Housing:** single family, 750; unaccompanied, UOQ, 105, UEQ, 756; visiting, VOQ, 91, VAQ/VEQ, 192, DV, 18, TLF, 80. **Clinic.**

Kadena AB, Japan, APO AP 96368-5000; 15 mi. N of Naha. **Phone:** (cmcl, from CONUS) 011-81-6117-34-1110; DSN 315-634-1110. **Majcom:** PACAF. **Host:** 18th Wing. **Mission:** E-3, F-15C/D, KC-135R, and HH-60 operations. **Major tenants:** 353rd Special Operations Gp. (AFSOC); 390th Intelligence Sq.; 82nd Reconnaissance Sq. (ACC); 733rd Air Mobility Support Sq. (AMC); 1-1 Air Defense Artillery Battalion (Army); Commander Fleet Activities Okinawa (Navy). **History:** occupied by US forces in April 1945. Named for city of Kadena, Okinawa. **Area:** 11,210 acres. **Runway:** 12,100 ft. **Altitude:** 146 ft. **Personnel:** permanent party military, 8,000; DOD civilians, 1,800. **Housing:** single family, officer, 1,495 enlisted, 5,296; unaccompanied, UOQ, 35, UAQ/UEQ, 1,629; visiting, VOQ, 226, VAQ/VEQ, 222, TLF, 122. **Clinic.**

Keesler AFB, Miss. 39534-5000; located in Biloxi. **Phone:** 228-377-1110; DSN 597-1110. **Majcom:** AETC. **Host:** 81st TRW. **Mission:** conducts Air Force, joint service, and international training for basic electronics, communications electronic systems, communications computer systems, air traffic control, airfield management, command post, air weapons control, weather, precision measurement, education and training, financial management and comptroller, information management, manpower and personnel, and medical, dental, and nursing specialties. **Major tenants:** 2nd Air Force (AETC); 45th Airlift Sq. (AETC), C-21; 403rd Wing (AFRC), C-130, WC-130. **History:** activated June 12, 1941. Named for 2nd Lt. Samuel R. Keesler Jr., a native of Mississippi and WWI aerial observer killed in action Oct. 9, 1918. **Area:** 3,554 acres, excluding off-base housing. **Runway:** 6,600 ft. **Altitude:** 33 ft. **Personnel:** permanent party military, 7,500; DOD civilians, 3,600. **Housing:** 456; post-Katrina construction ongoing; visiting, 1,028, TLF, 80. **Keesler Medical Center.**

Kirtland AFB, N.M. 87117-5606; SE quadrant of Albuquerque. **Phone:** 505-846-1110; DSN 246-1110. **Majcom:** AFMC. **Host:** 377th ABW. **Mission:** The Nuclear Weapons Center provides acquisition, modernization, and sustainment of nuclear system programs for DOD and DOE. The 498th Armament Systems Wing sustains nuclear munitions and cruise missiles. **Major tenants:** 58th SOW (AETC), CV-22, HC-130, MC-130, HH-60, MH-53,UH-1. Missile Defense Agency's Airborne Laser Program Office; Air Force Distributed Mission Operations Center; Air Force Nuclear Weapons and Counterproliferation Agency; Det. 1, 342nd TRS, Pararescue and Combat Rescue Officer School; Air Force Office of Aerospace Studies; Air Force Operational Test and Evaluation Center; AFRL's Space Vehicles and Directed Energy Directorates (AFMC); 150th FW (ANG), F-16; Defense Threat Reduction Agency; Sandia National Laboratories; National Nuclear

Air Force Installations

Major Installations	FY03	FY04	FY05	FY06	FY07	FY08
US and possessions	72	72	72	72	72	72
Foreign	13	13	13	12	12	12
Worldwide	85	85	85	84	84	84
Minor Installations						
US and possessions	80	80	80	80	80	80
Foreign	2	2	2	2	2	2
Worldwide	82	82	82	82	82	82

Includes Air National Guard and Air Force Reserve Command.


Major Air Force Installations in the US
McChord AFB (AMC)
Fairchild AFB (AMC)
Wash.
Malmstrom AFB (AFSPC)
Minot AFB (ACC)
Grand Forks AFB (AMC)
N.D.
Mont.
Ore.
Idaho
Minn.
Mich.
Maine
Vt.
N.H.
Mountain Home AFB (ACC)
Wyo.
S.D.
Ellsworth AFB (ACC)
Wis.
N.Y.
Mich.
Hanscom AFB (AFMC)
Otis ANGB (ANG)
Mass.
Conn.
R.I.
Hill AFB (AFMC)
Selfridge ANGB (ANG)
Westover ARB (AFRC)
Beale AFB (ACC)
F.E. Warren AFB (AFSPC)
Iowa
Pa.
N.J.
McGuire AFB (AMC)
Nev.
Neb.
Grissom ARB (AFRC)
Ohio
Travis AFB (AMC)
Offutt AFB (ACC)
Del.
Schriever AFB (AFSPC)
Buckley AFB (AFSPC)
Utah
Ill.
Ind.
Wright-Patterson AFB (AFMC)
Dover AFB (AMC)
Calif.
USAF Academy
Peterson AFB (AFSPC)
Md.
W. Va.
Kan.
Whiteman AFB (ACC)
Scott AFB (AMC)
Va.
Colo.
Mo.
Ky.
Nellis AFB (ACC)
McConnell AFB (AMC)
Langley AFB (ACC)
Arnold AFB (AFMC)
Vandenberg AFB (AFSPC)
Seymour Johnson AFB (ACC)
Vance AFB (AETC)
Tenn.
N.C.
Ariz.
Kirtland AFB (AFMC)
Okla.
Pope AFB (AMC)
Edwards AFB (AFMC)
Tinker AFB (AFMC)
Little Rock AFB (AETC)
Los Angeles AFB (AFSPC)
N.M.
Dobbins ARB (AFRC)
S.C.
Shaw AFB (ACC)
Luke AFB (AETC)
Altus AFB (AETC)
Charleston AFB (AMC)
March ARB (AFRC)
Cannon AFB (AFSOC)
Ark.
Tex.
Columbus AFB (AETC)
Davis-Monthan AFB (ACC)
Holloman AFB (ACC)
Miss.
Robins AFB (AFMC)
Barksdale AFB (ACC)
Maxwell AFB (AETC)
Ga.
Ala.
Moody AFB (ACC)
Goodfellow AFB (AETC)
La.
Dyess AFB (ACC)
Sheppard AFB (AETC)
Keesler AFB (AETC)
Laughlin AFB (AETC)
Fla.
Eielson AFB (PACAF)
Elmendorf AFB (PACAF)
Hickam AFB (PACAF)
Oahu
Hurlburt Field (AFSOC)
Eglin AFB (AFMC)
Tyndall AFB (AETC)
Patrick AFB (AFSPC)
MacDill AFB (AMC)
Homestead ARB (AFRC)
Alaska
Hawaii
Randolph AFB (AETC)
Lackland AFB (AETC)
Washington, D.C.
Md.
Hq. USAF
Bolling AFB
Va.
Andrews AFB

Security Administration (DOE); Air Force Inspection Agency; Air Force Safety Center; Space Development and Test Wing (AFSPC). **History:** activated January 1941. Named for Col. Roy C. Kirtland, aviation pioneer who died May 2, 1941. **Area:** 52,678 acres. **Runways:** two, each 13,000 ft.; 10,000 ft.; and 6,000 ft. **Altitude:** 5,352 ft. **Personnel:** permanent party military, 3,784; DOD civilians, 1,974. **Housing:** single family, officer, 187, enlisted, 891; unaccompanied, UAQ/UEQ, 828; visiting, VOQ, 181, VAQ/VEQ, 216, DV, 38, TLF, 39. **Air Force-VA joint medical center.**

Kunsan AB, South Korea, APO AP 96264-5000; 8 mi. SW of Kunsan City. **Phone:** (cmcl, from CONUS) 011-82-63-470-1110; DSN 782-1110. **Majcom:** PACAF. **Host:** 8th FW. **Mission:** F-16C/D operations. **Major tenants:** US Army's Charlie and Delta Batteries, 2nd Battalion, 1st Air Defense Artillery; US Army Contracting Command Korea. **History:** built by the Japanese in 1938. **Area:** 2,157 acres. **Runway:** 9,000 ft. **Altitude:** 29 ft. **Personnel:** permanent party military, 2,447; DOD civilians, 31. **Housing:** unaccompanied, UOQ, 247, UAQ/UEQ, 2,648; visiting, VOQ, 27, VAQ/VEQ, 60. **Clinic.**

Lackland AFB, Tex. 78236-5000; 8 mi. SW of downtown San Antonio. **Phone:** 210-671-1110; DSN 473-1110. **Majcom:** AETC. **Host:** 37th TRW. **Mission:** provides basic military training for recruits entering Air Force, ANG, and AFRC; conducts ground combat (base support) courses, English language training for international and US military students, and specialized maintenance and security training in Spanish to military forces and government agencies from 26 Latin American nations. **Major tenants:** Air Force Intelligence, Surveillance, and Reconnaissance Agency; 433rd AW (AFRC), C-5; 149th FW (ANG), F-16; 67th Network Warfare Wing (ACC); National Security Agency/Central Security Service Texas; 59th Medical Wing; Air Force Security Forces Center; Cryptologic Systems Gp. (AFMC). **History:** activated 1941. Named for Brig. Gen. Frank D. Lackland, early commandant of Kelly Field flying school, who died in 1943. **Area:** 9,572 acres. **Runway:** 11,550 ft. **Altitude:** 691 ft. **Personnel:** permanent party military, 18,480; DOD civilians, 5,197. **Housing:** single family, officer, 151, enlisted, 1,060; unaccompanied, enlisted, 1,243; visiting, 2,760, TLF, 96. **Wilford Hall Medical Center.**

Lajes Field, Azores, Portugal, APO AE 09720-5000; Terceira Island, 900 mi. W of Portugal. **Phone:** (cmcl, from CONUS) 011-351-295-57-1110; DSN from US 535-1110, from Europe 535-1110. **Majcom:** USAFE. **Host:** 65th ABW. **Mission:** provides support to US and allied aircraft and personnel transiting the Atlantic, through US military and host-nation coordination. **Major tenants:** 65th ABW; 729th AMS (AMC). **History:** US operations began at Lajes Field 1943. **Area:** 1,192 acres. **Runway:** 10,865 ft. **Altitude:** 180 ft. **Personnel:** permanent party military, 835; DOD civilians, 197. **Housing:** single family, officer, 74, enlisted, 368; unaccompanied, UOQ, 10, UAQ/UEQ, 240; visiting, 242, TLF, 30. **Clinic.**

Langley AFB, Va. 23665-5000; 3 mi. N of Hampton. **Phone:** 757-764-1110; DSN 574-1110. **Majcom:** ACC. **Host:** 1st FW. **Mission:** F-15 and F-22A operations. **Major tenants:** ACC; Air Force Rescue Coordination Center; Air Force Global Cyberspace Integration Center; USAF Heritage of America Band; 480th Intelligence Wg. (ACC). **History:** activated Dec. 30, 1916. Langley is the first military base in the US purchased and built specifically for military aviation. Named for aviation pioneer and scientist Samuel Pierpont Langley, who died in 1906. **Area:** 2,900 acres. **Runway:** 10,000 ft. **Altitude:** 11 ft. **Personnel:** permanent party military, 8,861; DOD civilians, 2,016. **Housing:** single family, officer, 328, enlisted, 1,053; unaccompanied, 1,053; visiting, VOQ, 78, VAQ/VEQ, 153, TLF, 60. **Hospital.**

Laughlin AFB, Tex. 78843-5000; 6 mi. E of Del Rio. **Phone:** 830-298-3511; DSN 732-1110. **Majcom:** AETC. **Host:** 47th FTW. **Mission:** SUPT (T-1, T-6, T-38). **History:** activated July 1942. Named for 1st Lt. Jack Thomas Laughlin, Del Rio native, B-17 pilot, killed Jan. 29, 1942. **Area:** 5,343 acres. **Runways:** 8,852 ft., 8,316 ft., and 6,236 ft. **Altitude:** 1,081 ft. **Personnel:** permanent party military, 883; DOD civilians, 879. **Housing:** single family, officer, 297, enlisted, 219; unaccompanied, UOQ, 340, UEQ, 130; visiting, VQ, 90, DV, 6, TLF, 20. **Clinic.**

Little Rock AFB, Ark. 72099-4940; 17 mi. NE of Little Rock (Jacksonville). **Phone:** 501-987-1110; DSN 731-1110. **Majcom:** AETC. **Host:** 314th AW. **Mission:** C-130 training base; trains crew members from all services and 31 nations. **Major tenants:** 463rd Airlift Gp. (AMC), C-130; 189th AW (ANG), C-130; US Air Force Mobility Weapons School (ACC); Hq. Ark. ANG. **History:** activated Oct. 9, 1955. **Area:** 6,600 acres. **Runway:** 12,000 ft. **Altitude:** 310 ft. **Personnel:** permanent party military, 4,887; DOD civilians, 459. **Housing:** single family, 1,221; unaccompanied, 840; visiting, 183. **Clinic,** no emergency room.

Los Angeles AFB, Calif. 90245-4657; in El Segundo, 3 mi. SE of Los Angeles Arpt.; base housing and support facilities 18 mi. S of the main base, in San Pedro. **Phone:** 310-653-1110; DSN 633-1110. **Majcom:** AFSPC. **Host:** Space and Missile Systems Center. **Mission:** responsible for research, development, acquisition, on-orbit testing, and sustainment of military space and missile systems. **History:** activated as Air Research and Development Command's Western Development Division July 1, 1954. **Area:** 57 acres at Los Angeles AFB and 156 acres at Ft. MacArthur Military Family Housing Annex. **Runway:** none. **Altitude:** 95 ft. **Personnel:** permanent party military, 1,361; DOD civilians, 1,068. **Housing:** privatized, 617 units, TLF, 57. **Clinic.**

Luke AFB, Ariz. 85309-5000; 20 mi. WNW of downtown Phoenix. **Phone:** 623-856-1110; DSN 896-1110. **Majcom:** AETC. **Host:** 56th FW. **Mission:** F-16 operations; conducts USAF and allied F-16 pilot and crew chief training. **Major tenant:** 944th FW (AFRC), F-16. **History:** activated 1941. Named for 2nd Lt. Frank Luke Jr., observation balloon-busting ace of WW I and first American aviator to receive the Medal of Honor, killed in action Sept. 29, 1918. Luke is the largest fighter training base in the world. **Area:** 4,624 acres, plus 1.7 million-acre Barry M. Goldwater Range. **Runways:** 10,012 ft. and 9,904 ft. **Altitude:** 1,085 ft. **Personnel:** permanent party military, 5,008; DOD civilians, 935. **Housing:** single family, 598; unaccompanied, UAQ/UEQ, 704; visiting, 161, TLF, 44. **Clinic.**

MacDill AFB, Fla. 33621-5000; on the Interbay Peninsula in southern Tampa. **Phone:** 813-828-1110; DSN 968-1110. **Majcom:** AMC. **Host:** 6th AMW. **Mission:** KC-135 operations. **Major tenants:** SOCOM; CENTCOM; Joint Communications Support Element; NOAA Aircraft Operations Center. **History:** activated April 15, 1941. Named for Col. Leslie MacDill, killed in aircraft accident Nov. 8, 1938. **Area:** 5,767 acres. **Runways:** 11,420 ft. and 7,167 ft. **Altitude:** 6 ft. **Personnel:** permanent party military, 4,182; DOD civilians, 1,271. **Housing:** single family, officer, 45, enlisted, 629; unaccompanied, UAQ/UEQ, 610; visiting, VOQ, 112, VAQ/VEQ, 130, TLF, 5 **Clinic.**

Malmstrom AFB, Mont. 59402-5000; 1.5 mi. E of Great Falls. **Phone:** 406-731-1110; DSN 632-1110. **Majcom:** AFSPC. **Host:** 341st SW. **Mission:** Minuteman III ICBM operations, UH-1N. **Major tenant:** 819th RED HORSE (ACC). **History:** activated Dec. 15, 1942. Named for Col. Einar A. Malmstrom, WWII fighter commander killed in air accident Aug. 21, 1954. Site of SAC's first Minuteman wing. **Area:** 3,716 acres, plus about 23,500 sq. mi. for missile sites. **Runway:** closed. **Altitude:** 3,460 ft. **Personnel:** permanent party military, 3,357; DOD civilians, 518. **Housing:** single family, officer, 216, enlisted, 828; unaccompanied, UAQ/UEQ, 850; visiting, 53, TLF, 30. **Clinic.**

Maxwell AFB, Ala. 36112-5000; 1 mi. WNW of Montgomery. **Phone:** 334-953-1110; DSN 493-1110. **Majcom:** AETC. **Host:** 42nd ABW. **Mission:** Air University conducts professional military, graduate, and professional continuing education for precommissioned and commissioned officers, enlisted personnel, and civilians. Its elements include Air War College; Air Command and Staff College; Air Force Doctrine Development and Education Center; Muir S. Fairchild Research Information Center; Center for Strategy and Technology; National Space Studies Center; Cyberspace and Information Operations Study Center; School of Advanced Air and Space Studies; Air Force Officer Accession and Training Schools; Ira C. Eaker College for Professional Development; College for Enlisted Professional Military Education; Community College of the Air Force; Air Force Institute for Advanced Distributed Learning; Squadron Officer College. **Major tenants:** Civil Air Patrol; 908th AW (AFRC), C-130; Air Force Historical Research Agency; 754th Electronic Systems Gp.; USAF Counterproliferation Center. **History:** activated 1918. Named for 2nd Lt. William C. Maxwell, killed in air accident Aug. 12, 1920. **Area:** 3,028 acres (includes Gunter Annex). **Runway:** 8,000 ft. **Altitude:** 172 ft. **Personnel:** permanent party military, 2,463; DOD civilians, 3,888. **Housing:** single family, officer, 364, enlisted, 377; unaccompanied, UAQ/UEQ, 211; visiting, 2,246, TLF, 30. **Clinic.**

McChord AFB, Wash. 98438-1109; 8 mi. S of Tacoma. **Phone:** 253-982-1110; DSN 382-1110. **Majcom:** AMC. **Host:** 62nd AW. **Mission:** C-17 operations. **Major tenant:** 446th AW (AFRC assoc.). **History:** activated May 5, 1938. Named for Col. William C. McChord, killed Aug. 18, 1937. **Area:** 4,639 acres. **Runway:** 10,100 ft. **Altitude:** 323 ft. **Personnel:** permanent party military, 4,007; DOD civilians, 1,149. **Housing:** single family, officer, 112, enlisted, 865; unaccompanied, UOQ, 2, UAQ/UEQ, 627; visiting, VOQ, 68, VAQ/VEQ, 230, TLF, 20. **Dispensary.** Madigan Army Medical Center is located 4 mi. SE.

McConnell AFB, Kan. 67221-5000; SE corner of Wichita. **Phone:** 316-759-6100; DSN 734-1110. **Majcom:** AMC. **Host:** 22nd ARW. **Mission:** KC-135 operations. **Major tenants:** 184th Intelligence Wing (ANG); 931st Air Refueling Gp. (AFRC assoc.). **History:** activated June 5, 1951. Named for the three McConnell brothers, WWII B-24 pilots from Wichita—Lt. Col. Edwin M. McConnell (died Sept. 1, 1997), Capt. Fred J. McConnell (died in a private airplane crash Oct. 25, 1945), and 2nd Lt. Thomas L. McConnell (killed July 10, 1943). **Area:** 3,533 acres. **Runways:** two, 12,000 ft. each. **Altitude:** 1,371 ft. **Personnel:** permanent party military, 2,431; DOD civilians, 403. **Housing:** single family, officer, 83, enlisted, 506; unaccompanied, UAQ/UEQ, 615; visiting, VOQ, 42, VAQ/VEQ, 44, TLF, 45. **Clinic.**

McGuire AFB, N.J. 08641-5000; 18 mi. SE of Trenton. **Phone:** 609-754-1100; DSN 650-1100. **Majcom:** AMC. **Host:** 305th AMW. **Mission:** C-17 and KC-10 operations. **Major tenants:** 21st Expeditionary Mobility Task Force (AMC); Air Force Expeditionary Center, Ft. Dix, N.J.; N.J.

Major Air Force Installations Overseas

Civil Air Patrol; 108th ARW (ANG), KC-135; 514th AMW (AFRC assoc.). **History:** adjoins Army's Ft. Dix. Formerly Ft. Dix AAB; activated as Air Force base 1948. Named for Maj. Thomas B. McGuire Jr., P-38 pilot, second leading US ace of WWII, Medal of Honor recipient, killed in action Jan. 7, 1945. **Area:** 3,598 acres. **Runways:** 10,001 ft. and 7,129 ft. **Altitude:** 133 ft. **Personnel:** permanent party military, 5,189, DOD civilians, 995. **Housing:** single family, officer, 275, enlisted, 2,089; unaccompanied, UAQ/UEQ, 767; visiting, VOQ, 40, VAQ/VEQ, 444, TLF, 30. **Clinic.**

Minot AFB, N.D. 58705-5000; 13 mi. N of Minot. **Phone:** 701-723-1110; DSN 453-1110. **Majcom:** ACC. **Host:** 5th BW. **Mission:** B-52 operations. **Major tenant:** 91st SW (AFSPC), Minuteman III, UH-1N. **History:** activated January 1957. Named after the city of Minot, whose citizens donated $50,000 toward purchase of the land for USAF. **Area:** 4,732 acres, plus additional 330 acres for missile sites spread over 8,500 sq. miles. **Runway:** 13,200 ft. **Altitude:** 1,668 ft. **Personnel:** permanent party military, 4,590; DOD civilians, 598. **Housing:** single family, officer, 241, enlisted, 1,053; unaccompanied, 951; visiting, 51, TLF, 15. **Clinic.**

Misawa AB, Japan, APO AP 96319-5000; within Misawa city limits. **Phone:** (cmcl, from CONUS) 011-81-176-53-5181 ext. 226-3075; DSN 315-226-5181. **Majcom:** PACAF. **Host:** 35th FW. **Mission:** F-16CJ operations. **Major tenants:** Misawa Security and Operations Center (ACC); Naval Carrier Task Force 72; Joint Tactical Ground Station; Naval Air Facility; Naval Security Gp. Activity; 750th Military Intelligence Det. (Army); Japanese Air Self-Defense Force (JASDF). **History:** occupied by US forces September 1945. **Area:** 3,865 acres. **Runway:** 10,000 ft. **Altitude:** 119 ft. **Personnel:** permanent party military, 3,769; DOD civilians, 398. **Housing:** single family, officer, 298, enlisted, 1,810; unaccompanied, UOQ, 40, UAQ/UEQ, 951; visiting, VOQ, 82, VAQ/VEQ, 44, TLF, 40. **Hospital.**

Moody AFB, Ga. 31699-5000; 10 mi. NNE of Valdosta. **Phone:** 229-257-1110; DSN 460-1110. **Majcom:** ACC. **Host:** 23rd Wing. **Mission:** A-10, HC-130, HH-60, pararescue, and force protection operations. Its units include 23rd Fighter Group, 347th Rescue Group, and 820th Security Forces Group. **History:** activated June 1941. Named for Maj. George P. Moody, killed May 5, 1941. **Area:** 6,050 acres. **Runways:** 9,300 ft. and 8,000 ft. **Altitude:** 235 ft. **Personnel:** permanent party military, 4,000; DOD civilians, 350. **Housing:** single family, officer, 32, enlisted, 271; unaccompanied, 714; visiting, VOQ, 37, VAQ/VEQ, 19, TLF, 32. **Clinic.**

Mountain Home AFB, Idaho 83648-5000; 50 mi. SE of Boise. **Phone:** 208-828-1110; DSN 728-1110. **Majcom:** ACC. **Host:** 366th FW. **Mission:** F-15C and F-15E operations. **Major tenants:** 266th Range Sq. **History:** activated August 1943. **Area:** 9,112 acres. **Runway:** 13,500 ft. **Altitude:** 3,000 ft. **Personnel:** permanent party military, 3,985; DOD civilians, 535. **Housing:** single family, officer, 144, enlisted, 919; unaccompanied, 883; visiting, VOQ, 40, VAQ/VEQ, 50, DV, 5, TLF, 15. **Hospital.**

Nellis AFB, Nev. 89191-5000; 8 mi. NE of Las Vegas. **Phone:** 702-652-1110; DSN 682-1110. **Majcom:** ACC. **Host:** 99th ABW. **Mission:** USAF Warfare Center manages advanced pilot training and tactics development and integrates test and evaluation programs. Its 98th Range Wing oversees a 15,000 sq.-mile Nevada Test and Training Range Complex and two emergency airfields. 57th Wing, A-10A, F-15C/D/E, F-16C/D, F-16CJ, F-22A, HH-60G, Predator MQ-1/9. 57th Wing missions include Red Flag exercises (414th Combat Training Sq.); graduate-level pilot training (USAF Weapons School); support for Army exercises (549th Combat Training Sq.); training for international personnel in joint firepower procedures and techniques (Hq. USAF Air Ground Operations School); and USAF Air Demonstration Sq. (Thunderbirds). 53rd Wing, at 17 locations nationwide, serves as focal point for combat air forces in electronic warfare, armament and avionics, chemical defense, reconnaissance, and aircrew training devices, and operational testing and evaluation of proposed new equipment and systems. 505th Command and Control Wing builds the predominant air and space command and control ability for combined joint warfighters through training, testing, exercising, and experimentation. **Major tenants:** Aerospace Integration Center; Triservice Reserve Center; 58th and 67th Intelligence Gp. (ACC); 58th and 66th RQS (ACC); 820th RED HORSE (ACC); and 896th Munitions Sq. (AFMC). **History:** activated July 1941 as Las Vegas AAF with Army Air Corps Flexible Gunnery School; closed 1947; reopened 1948. Named for 1st Lt. William H. Nellis, WWII P-47 fighter pilot, killed Dec. 27, 1944. **Area:** Main base is 14,000 acres. NRC occupies 3 million acres of restricted air-land use and an additional 7,000 sq.-mile military operating area shared with civilian aircraft. **Runways:** 10,119 ft. and 10,051 ft. **Altitude:** 1,868 ft. **Personnel:** permanent party military, 8,251; DOD civilians, 2,808. **Housing:** single family, officer, 88, enlisted, 1,190; unaccompanied, 1,190; visiting, VOQ, 340, VAQ/VEQ, 354, TLF, 60. **Air Force-VA joint hospital.**

Offutt AFB, Neb. 68113-5000; 8 mi. S of Omaha. **Phone:** 402-294-1110; DSN 271-1110. **Majcom:** ACC. **Host:** 55th Wing. **Mission:** worldwide reconnaissance, intelligence, information warfare, treaty verification, and command and control operations. **Major tenants:** STRATCOM; Joint Intelligence Center (STRATCOM); Air Force Weather Agency; National Airborne Operations Center (JCS); USAF Heartland of America Band. **History:** activated 1896 as Army's Ft. Crook. Landing field named for 1st Lt. Jarvis J. Offutt, WWI pilot who died Aug. 13, 1918. **Area:** 4,039 acres. **Runway:** 11,700 ft. **Altitude:** 1,048 ft. **Personnel:** permanent party military, 8,207; DOD civilians, 2,122. **Housing:** single family, officer, 291, enlisted, 1,349; unaccompanied, 793; visiting, 171, TLF, 60. **Clinic.**

Osan AB, South Korea, APO AP 96278-5000; 38 mi. S of Seoul. **Phone:** (cmcl, from CONUS) 011-82-31-661-1110; DSN 315-784-1110. **Majcom:** PACAF. **Host:** 51st FW. **Mission:** A/OA-10, and F-16C/D operations. **Major tenants:** 7th Air Force (PACAF); 5th RS (ACC), U-2R; Det. 1, 33rd Rescue Sq. (PACAF), HH-60; 303rd Intelligence Sq. (AFISRA); 731st Air Mobility Sq. (AMC); Charlie and Delta Batteries, 7th Battalion, 35th Air Defense Artillery (Army). **History:** originally designated K-55; runway opened December 1952. Renamed Osan AB in 1956 for nearby town that was the scene of first fighting between US and North Korean forces in July 1950. **Area:** 1,674 acres. **Runway:** 9,000 ft. **Altitude:** 38 ft. **Personnel:** permanent party military, 5,530; DOD civilians, 103. **Housing:** single family, officer, 113, enlisted, 80; unaccompanied, UOQ, 390, UAQ/UEQ, 4,987; visiting, VOQ, 350, VAQ/VEQ, 20, DV, 350, TLF, 15. **Hospital.**

Patrick AFB, Fla. 32925-3237; 2 mi. S of Cocoa Beach. **Phone:** 321-494-1110; DSN 854-1110. **Majcom:** AFSPC. **Host:** 45th SW. **Mission:** supports DOD, NASA, Navy (Trident), and other government agency and commercial missile and space programs. Host responsibilities include Cape Canaveral AFS and tracking stations on Antigua and Ascension islands. **Major tenants:** Defense Equal Opportunity Management Institute; Air Force Technical Applications Center; 920th Rescue Wing (AFRC), HC-130, HH-60; 2nd Brigade, 87 Division (Army); Naval Ordnance Test Unit (Navy); Joint Task Force for Joint STARS at Melbourne, Fla. **History:** activated 1940. Named for Maj. Gen. Mason M. Patrick, Chief of AEF's Air Service in WWI and Chief of the Air Service/Air Corps, 1921-27. **Area:** 2,341 acres. **Runway:** 9,000 ft. **Altitude:** 9 ft. **Personnel:** permanent party military, 4,000; DOD civilians, 1,831. **Housing:** single family, enlisted, 524; unaccompanied, UAQ/UEQ, 204; visiting, VOQ, 96, VAQ/VEQ, 102, TLF, 51. **Clinic.**

Peterson AFB, Colo. 80914-5000; at eastern edge of Colorado Springs. **Phone:** 719-556-

Minor Active Duty Installations

In addition to the installations listed above, the Air Force has a number of minor installations. These air stations perform various missions, including space operations and missile warning. Here is a listing of such installations with state (or APO), ZIP code, and major command.

Brooks City-Base, San Antonio, Tex. 78235-5115 (AFMC)	DSN 240-1110
Cape Canaveral AFS, Fla. 32925-5000 (AFSPC)	DSN 467-1110
Cape Cod AFS, Mass. 02561-0428 (AFSPC)	DSN 557-2235
Cavalier AFS, N.D. 58220-9314 (AFSPC)	DSN 330-3695
Cheyenne Mountain AFS, Colo. 80914-6066 (AFSPC)	DSN 268-1110
Clear AFS, Alaska, APO AP 99704-0013 (AFSPC)	DSN 317-585-6110
Creech AFB, Nev. 89018-1230 (ACC)	DSN 682-1110
Onizuka AFS, Calif. 94088-3430 (AFSPC)	DSN 561-3000
Thule AB, Greenland, APO AE 09704-5000 (AFSPC) (ask for Thule operator)	DSN 268-3840

7321; DSN 834-7321. **Majcom:** AFSPC. **Host:** 21st SW. **Mission:** missile warning and space control operations; detects, tracks, and catalogs objects in space. **Major tenants:** NORAD; AFSPC; NORTHCOM; US Army Space and Missile Defense Command/Army Forces Strategic Command; 302nd AW (AFRC), C-130. **History:** activated 1942. Named for 1st Lt. Edward J. Peterson, killed Aug. 8, 1942. **Area:** 1,277 acres. **Runway:** shared with city. **Altitude:** 6,200 ft. **Personnel:** permanent party military, 4,820; DOD civilians, 2,390. **Housing:** single family, officer, 103, enlisted, 384; unaccompanied, UAQ/UEQ, 704; visiting, VOQ, 100, VAQ/VEQ, 54, TLF, 68. **Clinic.**

Pope AFB, N.C. 28308-2391; 12 mi. NNW of Fayetteville. **Phone:** 910-394-1110; DSN 424-1110. **Majcom:** AMC. **Host:** 43rd AW. **Mission:** C-130 operations. **Major tenants:** 18th Air Support Operations Gp. (ACC); 440th AW (AFRC); 21st and 24th STSs (AFSOC); USAF Combat Control School. **History:** activated 1919. Named after 1st Lt. Harley H. Pope, WWI pilot, killed Jan. 7,1919. **Area:** 2,198 acres. **Runway:** 7,500 ft. **Altitude:** 218 ft. **Personnel:** permanent party military, 4,135; DOD civilians, 648. **Housing:** single family, officer, 84, enlisted, 543; unaccompanied, UAQ/UEQ, 668; visiting, VOQ, 8, VAQ/VEQ, 159, TLF, 22. **Clinic.**

RAF Lakenheath, UK, APO AE 09461-5000; 70 mi. NE of London; 25 mi. NE of Cambridge. **Phone:** (cmcl, from CONUS) 011-44-1638-52-3000; DSN 226-1110. **Majcom:** USAFE. **Host:** 48th FW (USAFE). **Mission:** F-15C/D and F-15E operations. **History:** activated 1941. US forces arrived August 1948; the 48th FW arrived January 1960. Named after nearby village. **Area:** 2,290 acres. **Runway:** 9,000 ft. **Altitude:** 32 ft. **Personnel:** permanent party military, 4,500; DOD civilians, 230. **Housing:** single family, officer, 300, enlisted, 1,800; unaccompanied, UAQ/UEQ, 1,100; visiting, VOQ, 132, VAQ/VEQ, 23, TLF, 82. **Regional medical center.**

RAF Mildenhall, UK, APO AE 09459-5000; 20 mi. NE of Cambridge. **Phone:** (cmcl, from CONUS) 011-44-1638-54-2654; DSN 238-2654. **Majcom:** USAFE. **Host:** 100th ARW. **Mission:** KC-135R operations. **Major tenants:** 352nd SOG (AFSOC), MC-130, MH-53; 95th RS (ACC); 488th Intelligence Sq. (ACC); Naval Air Facility. **History:** activated 1934; US presence began July 1950. Named after nearby town. **Area:** 1,144 acres. **Runway:** 9,227 ft. **Altitude:** 33 ft. **Personnel:** permanent party military, 3,460; DOD civilians, 440. **Housing:** single family, officer, 64, enlisted, 137; unaccompanied, UAQ/UEQ, 783; visiting, 328, TLF, 36.

Ramstein AB, Germany, APO AE 09094-0385; adjacent to the city of Ramstein, 10 mi. W of Kaiserslautern. **Phone:** (cmcl, from CONUS) 011-49-6371-47-1110; DSN 314-480-1110. **Majcom:** USAFE. **Host:** 86th AW. **Mission:** C-20, C-21, and C-130E operations; expeditionary airlift for first-in base opening capabilities; 86th AW commander also serves as commander of the Kaiserslautern Military Community. The 435th Air Base Wing provides base support services for KMC. **Major tenant:** USAFE. **History:** activated and US presence began 1953. **Area:** 3,212 acres. **Runways:** 10,498 ft. and 8,015 ft. **Altitude:** 782 ft. **Personnel:** permanent party military, 14,761; DOD civilians, 6,698. **Housing:** single family, officer, 473, enlisted, 4,588; unaccompanied, UOQ, 32, UAQ/UEQ, 1,795; visiting, 547, TLF, 70. **Clinic.**

Randolph AFB, Tex. 78150-5000; 17 mi. NE of San Antonio. **Phone:** 210-652-1110; DSN 487-1110. **Majcom:** AETC. **Host:** 12th FTW. **Mission:** conducts T-1, T-6, and T-38 instructor pilot training and combat systems officer training in the T-43. **Major tenants:** AETC; 19th Air Force; Air and Space Expeditionary Force Center (AFPC); Air Force Personnel Center; Air Force Manpower Agency; Air Force Recruiting Service. **History:** dedicated June 1930. Named for Capt. William M. Randolph, killed Feb. 17, 1928. **Area:** 5,044 acres. **Runways:** two, 8,350 ft. each. **Altitude:** 761 ft. **Personnel:** permanent party military, 4,178; DOD civilians, 4,110. **Housing:** single family, officer, 659, enlisted, 441; unaccompanied, UOQ, 202, UEQ, 168; visiting, VOQ, 381, VAQ/VEQ, 169, TLF, 30. **Clinic.**

Robins AFB, Ga. 31098; 15 mi. SSE of Macon at Warner Robins. **Phone:** 478-926-1110; DSN 468-1001. **Majcom:** AFMC. **Host:** 78th ABW. **Mission:** Warner Robins Air Logistics Center provides worldwide logistics management for the C-5, C-17, C-130, E-8, F-15, U-2, and various special operations forces aircraft; combat-ready weapon systems, equipment, services, and support personnel; and sustainment and contingency response for US and allied warfighters through cradle-to-grave management, maintenance, and combat support. **Major tenants:** Air Force Reserve Command; 116th Air Control Wing (ACC/ANG), E-8; 19th ARG (AMC), KC-135; 5th Combat Communications Gp. (ACC); 367th Air Force Recruiting Gp.; Defense Information Systems Agency. **History:** activated March 1942. Named for Brig. Gen. Augustine Warner Robins, an early chief of the Materiel Division of the Army Air Corps, who died June 16, 1940. **Area:** 8,700 acres. **Runway:** 12,000 ft. **Altitude:** 294 ft. **Personnel:** permanent party military, 5,369; DOD civilians, 12,605. **Housing:** single family, officer, 108, enlisted, 675; unaccompanied, UAQ/UEQ, 672; visiting, VOQ, 134, VAQ/VEQ, 157, TLF, 50. **Clinic.**

Schriever AFB, Colo. 80912-2101; 10 mi. E of Colorado Springs. **Phone:** 719-567-1110; DSN 560-1110. **Majcom:** AFSPC. **Host:** 50th SW. **Mission:** communication, navigation, warning, surveillance, and weather satellite command, control, operations, and support. **Major tenants:** Missile Defense Integration Operations Center; 310th Space Gp. (AFRC); Space Innovation and Development Center. **History:** designated as Falcon AFB June 1988. Renamed in June 1998 for Gen. Bernard A. Schriever. **Area:** 3,840 acres. **Runway:** none. **Altitude:** 6,267 ft. **Personnel:** permanent party military, 1,689; DOD civilians, 496. **Housing:** none. **Medical and dental clinic.**

Scott AFB, Ill. 62225-5000; 6 mi. ENE of Belleville. **Phone:** 618-256-1110; DSN 576-1110. **Majcom:** AMC. **Host:** 375th AW. **Mission:** C-21 operations. **Major tenants:** TRANSCOM; AMC; Military Surface Deployment and Distribution Command; 18th Air Force; Air Force Communications Agency; Defense Information Technology Contracting Office; 126th ARW (ANG), KC-135; 932nd AW (AFRC), C-9, C-40. **History:** activated June 14, 1917. Named for Cpl. Frank S. Scott, the first enlisted man to die in an aircraft accident, killed Sept. 28, 1912. **Area:** 3,230 acres. **Runways:** 10,000 ft. and 8,000 ft. (joint-use airfield). **Altitude:** 453 ft. **Personnel:** permanent party military, 5,919; DOD civilians, 3,211. **Housing:** single family, officer, 298, enlisted, 1,122; unaccompanied, UAQ/UEQ, 564; visiting, VOQ, 222, VAQ/VEQ, 173, TLF, 60. **Clinic.**

Seymour Johnson AFB, N.C. 27531; within city limits of Goldsboro. **Phone:** 919-722-1110; DSN 722-1110. **Majcom:** ACC. **Host:** 4th FW. **Mission:** F-15E operations and training. **Major tenant:** 916th ARW (AFRC), KC-135R. **History:** activated June 12, 1942. Named for Navy Lt. Seymour A. Johnson, Goldsboro native, killed March 5, 1941. **Area:** 3,558 acres. **Runway:** 11,758 ft. **Altitude:** 110 ft. **Personnel:** permanent party military, 5,515; DOD civilians, 1,029. **Housing:** single family, officer, 53, enlisted, 732; unaccompanied, 706; visiting, VOQ, 43, VAQ/VEQ, 40, DV, 9, TLF, 69. **Clinic.**

Shaw AFB, S.C. 29152-5000; 8 mi. WNW of Sumter. **Phone:** 803-895-1110; DSN 965-1110. **Majcom:** ACC. **Host:** 20th FW. **Mission:** F-16CJ operations. **Major tenants:** 9th Air Force (ACC); US Air Forces Central. **History:** activated Aug. 30, 1941. Named for 1st Lt. Ervin D. Shaw, one of the first Americans to see air action in WWI, killed in France July 9, 1918. **Area:** 121,930 acres. **Runways:** 10,000 ft. and 8,000 ft. **Altitude:** 242 ft. **Personnel:** permanent party military, 6,037; DOD civilians, 1,096. **Housing:** single family, officer, 124, enlisted, 1,047; unaccompanied, 1,112; visiting, VQ, 91, DV, 6, TLF, 39. **Clinic.**

Sheppard AFB, Tex. 76311-5000; 5 mi. N of Wichita Falls. **Phone:** 940-676-1110; DSN 736-2511. **Majcom:** AETC. **Host:** 82nd TRW. **Mission:** conducts US and allied military training in aircraft maintenance, aircraft avionics, aerospace propulsion, fuels, ammo and munitions, armament, aerospace ground equipment, life support, civil engineering, communications, and various medical and dental specialties; provides instruction in a wide range of specialties at more than 60 USAF installations worldwide. **Major tenant:** 80th FTW (AETC), T-37 and T-38 UPT, instructor pilot training in the Euro-NATO Joint Jet Pilot Training program, and Introduction to Fighter Fundamentals with AT-38 aircraft. **History:** activated June 14, 1941. Named for US Sen. Morris E. Sheppard, who died April 9, 1941. **Area:** 6,158 acres. **Runways:** 13,100 ft., 10,000 ft., 7,000 ft., and 6,000 ft. **Altitude:** 1,019 ft. **Personnel:** permanent party military, 3,419; DOD civilians, 1,440. **Housing:** privatized single family, 1,005; unaccompanied, UOQ, 196, UAQ/UEQ, 396. **Clinic.**

Spangdahlem AB, Germany, APO AE 09126-5000; 20 mi. NE of Trier; 9 mi. E of Bitburg. **Phone:** (cmcl, from CONUS) 011-49-6565-61-1110; DSN 452-1110. **Majcom:** USAFE. **Host:** 52nd FW. **Mission:** A/OA-10A and HARM-equipped F-16CJ operations; air control squadron operations with logistics responsibilities at several GSUs. **History:** built by the French in 1951 and turned over to US in 1952. Named after nearby town. **Area:** 1,616 acres. **Runway:** 10,000 ft. **Altitude:** 1,196 ft. **Personnel:** permanent party military, 5,472; DOD civilians, 218. **Housing:** single family, officer, 70, enlisted, 743; visiting, 266, TLF, 54. **Clinic.**

Tinker AFB, Okla. 73145-3010; 8 mi. SE of Oklahoma City. **Phone:** 405-732-1110; DSN 884-1110. **Majcom:** AFMC. **Host:** 72nd ABW. **Mission:** Oklahoma City Air Logistics Center is the worldwide manager for a wide range of aircraft engines, missiles, and commodity items. The center handles aircraft modifications and repairs and maintains bombers, refuelers, and reconnaissance aircraft. It also serves as the repair center for such items as automatic flight control, engine instruments, air driven accessories, and life support. **Major tenants:** 552nd Air Control Wing (ACC), E-3; Navy Strategic Communications Wing One, E-6; 507th ARW (AFRC), KC-135; 513th Air Control Gp. (AFRC assoc.), E-3; Defense Information Systems Agency; Defense Distribution Center Oklahoma (DLA); 3rd Combat Communications Gp. (ACC); 38th Engineering Installation Gp. (AFMC). **History:** activated March 1942. Named for Maj. Gen. Clarence L. Tinker, who went down at sea June 7, 1942 while leading a group of LB-30 bombers against Japan. **Area:** 5,033 acres. **Runways:** 11,100 ft. and 10,000 ft. **Altitude:** 1,291 ft. **Personnel:** permanent party military, 6,113; DOD civilians, 13,547. **Housing:** single family, officer, 107, enlisted, 587; unaccompanied, UAQ/UEQ, 1,222; visiting, VOQ, 109, VAQ/VEQ, 50, TLF, 40. **Clinic.**

Travis AFB, Calif. 94535-5000; 50 mi. NE of San Francisco at Fairfield. **Phone:** 707-424-1110; DSN 837-1110. **Majcom:** AMC. **Host:** 60th AMW. **Mission:** C-5, C-17, and KC-10 operations. **Major tenants:** 615th Contingency Response Wing (AMC); 15th Expeditionary Mobility Task Force (AMC); 349th AMW (AFRC assoc.); USAF Band of the Golden West; Air Museum. **History:** activated May 17, 1943. Named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950. **Area:** 6,383 acres. **Runways:** two, approx. 11,000 ft. each. **Altitude:** 62 ft. **Personnel:** permanent party military, 8,443; DOD civilians, 3,511. **Housing:** single family, officer, 148, enlisted, 1,057; unaccompanied, UAQ/UEQ, 873; visiting, VQ, 340, TLF, 46. **David Grant Medical Center.**

Tyndall AFB, Fla. 32403-5000; 12 mi. E of Panama City. **Phone:** 850-283-1113; DSN 523-1113. **Majcom:** AETC. **Host:** 325th FW. **Mission:** F-15 and F-22 operations; trains USAF F-15 and F-22 pilots. **Major tenants:** 1st Air Force/Air Forces Northern (ANG); Continental US NORAD Region; 53rd Weapons Evaluation Gp. (ACC); Air Force Civil Engineer Support Agency. **History:** activated Dec. 7, 1941. Named for 1st Lt. Frank B. Tyndall, WWI fighter pilot killed July 15, 1930. **Area:** 29,102 acres. **Runways:** 10,000 ft., 9,000 ft., and 7,000 ft. **Altitude:** 18 ft. **Personnel:** permanent party military, 4,280; DOD civilians, 687. **Housing:** single family, officer, 123, enlisted, 727; unaccompanied, UAQ/UEQ, 448; visiting, 648, TLF, 94. **Clinic.**

US Air Force Academy, Colo. 80840-5025; N of Coloraco Springs. **Phone:** 719-333-1110; DSN 333-1110. **Host:** USAFA. **Mission:** educates and develops young men and women to become Air Force officers. **History:** established April 1, 1954. Moved to permanent location August 1958. **Area:** 18,500 acres. **Runways:** 4,500 ft., 3,500 ft., and 2,300 ft. **Altitude:** 7,200 ft. **Personnel:** permanent party military, 1,890; DOD civilians, 1,995. **Housing:** single family, officer, 231, enlistec, 978; unaccompanied, 130; visiting, 90, TLF, 30. **Hospital.**

Vance AFB, Okla. 73705-5000; 3 mi. SSW of Enid. **Phone:** 580-213-5000; DSN 448-7110. **Majcom:** AETC. **Host:** 71st FTW. **Mission:** provides Joint SUPT in T-1, T-6, and T-38 aircraft. **History:** activated November 1941. Named for Lt. Col. Leon R. Vance Jr., Enid native, 1939 West Point graduate, and Medal of Honor recipient, killed July 26, 1944. **Area:** 2,000 acres. **Runways:** 9,200 ft., 9,200 ft., and 5,001 ft. **Altitude:** 1,307 ft. **Personnel:** permanent party military, 1,085; DOD civilians, 145. **Housing:** single family, 229; unaccompanied, UOQ, 200, UAQ/UEQ, 109; visiting, 54, TLF, 10. **Clinic.**

Vandenberg AFB, Calif. 93437-5000; 8 mi. NNW of Lompoc. **Phone:** 805-606-1110; DSN 276-1110. **Majcom:** AFSPC. **Host:** 30th SW. **Mission:** conducts polar-orbiting space launches and supports R&D tests and launch range operations for DOD, USAF, and NASA space, ballistic missile, and aeronautical systems ar d commercial space launches; provides test support for DOD space and ICBM systems; furnishes facilities and essential services to more than 36 aerospace contractors. **Major tenants:** 14th Air Force (AFSPC); 381st Training Gp. (AETC); 576th Flight Test Sq. (Space Warfare Center). **History:** originally Army's Camp Cooke. Activated October 1941; taken over by USAF June 7, 1957. Renamed for Gen. Hoyt S. Vandenberg, USAF's second Chief of Staff. **Area:** 98,400 acres. **Runway:** 15,000 ft. **Altitude:** 367 ft. **Personnel:** permanent party military, 2,700; DOD civilians, 1,100. **Housing:** single family, officer, 343, enlisted, 993; unaccompanied, dorm rooms, 668, UOQ, 43, UAQ/UEQ, 59; visiting, VOQ, 111, VAQ/VEQ, 124, DV, 18, TLF, 26. **Clinic.**

Whiteman AFB, Mo. 65305-5000; 2 mi. S of Knob Noster. **Phone:** 660-687-1110; DSN 975-1110. **Majcom:** ACC. **Host:** 509th BW. **Mission:** B-2 operations. **Major tenants:** 442nd FW (AFRC), A/OA-10; 1st Battalion, 135th Aviation Regiment (ARNG); Mobile Inshore Undersea Warfare Unit 114 (Navy Reserve). **History:** activated 1942. Named for 2nd Lt. George A. Whiteman, first pilot to die in aerial combat during the attack on Pearl Harbor. **Area:** 4,993 acres. **Runway:** 12,400 ft. **Altitude:** 871 ft. **Personnel:** permanent party military, 5,290; DOD civilians, 748. **Housing:** single family, officer, 88, enlisted, 837; unaccompanied, 686; visiting, VOQ, 52, VAQ/VEQ, 35, TLF, 31. **Clinic.**

Wright-Patterson AFB, Ohio 45433; 10 mi. ENE of Dayton. **Phone:** 937-257-1110; DSN 787-1110. **Majcom:** AFMC. **Host:** 88th ABW. **Mission:** Aeronautical Systems Center develops, acquires, modernizes, and sustains aerospace systems. **Major tenants:** AFMC; Air Force Research Laboratory (AFMC); Air Force Security Assistance Center (AFMC); 445th AW (AFRC), C-5; Air Force Institute of Technology (AETC); National Air and Space Intelligence Center; National Museum of the US Air Force. **History:** originally separate, Wright Field and Patterson Field were merged and redesignated Wright-Patterson AFB Jan. 13, 1948. Named for aviation pioneers Orville and Wilbur Wright and for 1st Lt. Frank S. Patterson, killed June 19, 1918. The Wright brothers did much of their early flying on Huffman Prairie, now in Area C of the present base. The prairie is part of the Dayton Aviation Heritage National Historical Park. Site of US Air Force Marathon, held annually on Saturday nearest Sept. 18. **Area:** 8,357 acres. **Runway:** 12,600 ft. **Altitude:** 824 ft. **Personnel:** permanent party military, 5,863; DOD civilians, 10,954. **Housing:** single family, officer, 182, enlisted, 294; unaccompanied, UAQ/UEQ, 408; privatized housing, oficers, 566, enlisted, 970; visiting, 414, TLF, 41. **Wright-Patterson Medical Center.**

Yokota AB, Japan, APO AP 96328-5000; approx. 28 mi. W of downtown Tokyo. **Phone:** (cmcl, from CONUS) 011-81-311-755-1110; DSN 315-225-1110. **Majcom:** PACAF. **Host:** 374th AW. **Mission:** C-12J, C-130, and UH-1N operations. Primary aerial port in Japan. **Major tenants:** US Forces, Japan; 5th Air Force (PACAF); 730th AMS (AMC); Det. 1, Air Force Band of the Pacific-Asia; American Forces Network Tokyo; DFAS-Japan. **History:** opened as Tama AAF by the Japanese in 1939. **Area:** 1,750 acres. **Runway:** 11,000 ft. **Altitude:** 457 ft. **Personnel:** permanent party military, 2,737; DOD civilians, 199. **Housing:** single family, officer, 683, enlisted, 1,956; unaccompanied, UOQ, 184, UAQ/UEQ, 896; visiting, VOQ, 202, VAQ/VEQ, 23, TLF, 189. **Hospital.**

USAF photo by A1C Cory Todd

At Whiteman AFB, Mo., two B-2s taxi past another pair of Spirits.

ANG and AFRC Installations

This section consolidates Air National Guard and Air Force Reserve Command facilities into a single listing. Units are listed by base names or according to the airports whose facilities they share. In addition, some ANG and AFRC units are located on USAF bases and are included as major tenants on those bases in the "Major Active Duty Installations" section.

ANG and AFRC personnel are organized into two categories. Part-time personnel are traditional Guardsmen and Reservists who work in the private sector during the week, serve in ANG or AFRC one weekend each month, and go on active duty for two weeks during the year. If called up by the President, they go on active military status.

ANG's second category, full-time support personnel, are Title 32 Active Guard Reserve (AGR), Title 32 civilians, and Title 5 civilians. Guard AGR positions are controlled by the state. They do not serve at the national level. They receive the same benefits as regular active duty military. Title 32 civilian personnel are civilians employed full-time by the Guard and must also serve in military status one weekend per month and for two weeks of training per year. They can also be activated and mobilized during times of national crisis. Title 5 civilian personnel are federal civilian employees who hold administrative positions in ANG.

AFRC's second category, full-time support personnel, are Title 32 AGR, Title 32 Air Reserve Technicians (ART), and Title 5 civilians. Reservists in AGR positions serve primarily in flight training and flight testing units, as recruiters, or at the headquarters level. They receive the same benefits as regular active duty military. Title 32 ARTs are full-time federal civilian employees who serve in the same position as Reservists at least one weekend per month and for two weeks of training per year. They can also be activated and mobilized during times of national crisis. Title 5 personnel are federal civilian employees who hold administrative positions in AFRC.

Abraham Lincoln Capital Arpt., Ill. 62707-5001; 4 mi. NW of Springfield. **Phone:** 217-757-1219; DSN 892-8219. **Unit:** 183rd Fighter Wing (ANG). **Area:** 91 acres. **Runways:** 8,000 ft., 7,000 ft., and 5,300 ft. **Altitude:** 588 ft. **Full-time personnel:** 304.

Allen C. Thompson Field, Miss. 39232-8881; 6 mi. E of Jackson. **Phone:** 601-936-8370; DSN 731-9370. **Unit:** 172nd Airlift Wing (ANG). **Area:** 140 acres. **Runway:** 8,500 ft. **Altitude:** 346 ft. **Full-time personnel:** 477.

Alpena County Regional Arpt., Mich. 49707; 5 mi W of Alpena. **Phone:** 989-354-6210; DSN 741-3210. **Unit:** Combat Readiness Training Center (ANG). **Area:** 610 acres. **Runways:** 9,000 ft. and 5,030 ft. **Altitude:** 682 ft. **Full-time personnel:** 83.

Atlantic City Arpt., N.J. 08234-9500; 9 mi. NW of Atlantic City. **Phone:** 609-645-6000; DSN 455-6000.

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

Unit: 177th Fighter Wing (ANG). **Area:** 296 acres. **Runways:** 10,000 ft. and 6,144 ft. **Altitude:** 71 ft. **Full-time personnel:** 354.

Bangor Arpt., Maine 04401-8009; within city of Bangor. **Phone:** 207-990-7700; DSN 698-7700. **Units:** 101st Air Refueling Wing (ANG); 776th Radar Sq. (ACC). **Area:** 503 acres. **Runway:** 11,400 ft. **Altitude:** 178 ft. **Full-time personnel:** 378. Commissary; exchange.

Barnes Arpt., Mass. 01085-1482; 3 mi. N of downtown Westfield. **Phone:** 413-568-9151; DSN 636-9210. **Unit:** 104th Fighter Wing (ANG). **Area:** 186 acres. **Runway:** 9,000 ft. **Altitude:** 271 ft. **Full-time personnel:** 307.

Birmingham Arpt., Ala. 35217-3545, 7 mi. E of Birmingham. **Phone:** 205-714-2000; DSN 778-2210. **Unit:** 117th Air Refueling Wing (ANG). **Area:** 145 acres. **Runway:** 10,000 ft. **Altitude:** 644 ft. **Full-time personnel:** 284.

Boise Air Terminal (Gowen Field), Idaho 83705-8006; 1 mi. S of Boise. **Phone:** 208-422-5322; DSN 422-5322. **Units:** 124th Wing (ANG). Also host for the Army National Guard (ARNG); Army Reserve; Army Research Institute; Navy/Marine Corps Reserves; and Civil Air Patrol. **History:** named for Lt. Paul R. Gowen, killed in B-10 crash in Panama July 11, 1938. **Area:** 576 acres. **Runway:** 9,800 ft. **Altitude:** 2,836 ft. **Full-time personnel:** 564. Limited transient facilities available during ARNG camps.

Bradley Arpt., Conn. 06026-9309; 15 mi. N of Hartford. **Phone:** 860-292-2526; DSN 636-8310. **Units:** 103rd Fighter Wing (ANG); ARNG aviation battalion. **History:** named for Lt. Eugene M. Bradley, killed in P-40 crash August 1941. **Area:** 148 acres. **Runway:** 9,600 ft. **Altitude:** 172 ft. **Full-time personnel:** 340.

Burlington Arpt., Vt. 05403-5872; 1 mi. E of Burlington. **Phone:** 802-660-5215; DSN 220-5215. **Unit:** 158th Fighter Wing (ANG). **Area:** 230 acres. **Runway:** 7,800 ft. **Altitude:** 355 ft. **Full-time personnel:** 382.

Channel Islands ANGS, Calif. 93041-4002, 3 mi. SE of Oxnard. **Phone:** 805-986-8000; DSN 893-7000. **Unit:** 146th Airlift Wing (ANG). **Area:** 206 acres. **Runway:** 11,100 ft. **Altitude:** 12 ft. **Full-time personnel:** 346.

Charlotte/Douglas Arpt., N.C. 28208, 6 mi. W of downtown Charlotte. **Phone:** 704-391-4100; DSN 583-9129. **Unit:** 145th Airlift Wing (ANG). **Area:** 79 acres. **Runway:** 10,000 ft. **Altitude:** 745 ft. **Full-time personnel:** 333.

Cheyenne Arpt., Wyo. 82009. **Phone:** 307-772-6110; DSN 943-6110. **Unit:** 153rd Airlift Wing (ANG). **Area:** 77 acres. **Runway:** 9,202 ft. **Altitude:** 6,250 ft. **Full-time personnel:** 373.

Des Moines Arpt., Iowa 50321-2799; within Des Moines. **Phone:** 515-256-8210; DSN 946-8210. **Unit:** 132nd Fighter Wing (ANG). **Area:** 162 acres. **Runway:** 9,000 ft. **Altitude:** 942 ft. **Full-time personnel:** 307.

Dobbins ARB, Ga. 30069-4904; 16 mi. NW of Atlanta. **Phone:** 678-655-5467; DSN 625-1110. **Units:** Hq. 22nd Air Force (AFRC); 94th Airlift Wing (AFRC); Hq. Ga. ANG; Army Aviation Group (Ga. ARNG); US Army Reserve Center; 283rd Combat Communications Sq.; and Marine Corps Reserve Center Atlanta. **History:** activated 1943. Named for Capt. Charles Dobbins, pilot killed in WWII. **Area:** 1,660 acres. NAS Atlanta and Lockheed Martin Aeronautical Systems Co./Air Force Plant 6 adjoin Dobbins ARB and use airfield facilities. **Runway:** 10,000 ft. **Altitude:** 193 ft. **Full-time personnel:** AFRC, 632; ANG, 29.

Duke Field, Fla. 32542-6644; 6 mi. S of Crestview. **Phone:** 850-883-6347; DSN 875-6347. **Unit:** 919th Special Operations Wing (AFRC). **History:** Named for Lt. Robert L. Duke, pilot killed Dec. 29, 1943 in test flight. **Area:** 1,348 acres. **Runway:** 8,000 ft. **Altitude:** 193 ft. **Full-time personnel:** active duty, 300; ARTs, 323, ANG, 1.

Duluth Arpt., Minn. 55811-6036; 5 mi. WNW of Duluth. **Phone:** 218-788-7210; DSN 825-7210. **Unit:** 148th Fighter Wing (ANG). **Area:** 285 acres. **Runway:** 10,150 ft. **Altitude:** 1,430 ft. **Full-time personnel:** 351.

Eastern West Virginia Arpt. (Shepherd Field), W. Va. 25401-7702; 4 mi. S of Martinsburg. **Phone:** 304-616-5100; DSN 242-5100. **Unit:** 167th Airlift Wing (ANG). **Area:** 340 acres. **Runway:** 7,000 ft. **Altitude:** 556 ft. **Full-time personnel:** 406.

Ellington Field, Tex. 77034-5586; a city of Houston airport 10 mi. SE of downtown Houston. **Phone:** 281-929-2337; DSN 454-2337. **Units:** 147th Reconnaissance Wing (ANG); 111th FIS; NASA Flight Operations; US Coast Guard; ARNG; FAA. **History:** named for Lt. Eric L. Ellington, pilot killed November 1913. **Area:** 190 acres. **Runway:** 9,000 ft. **Altitude:** 34 ft. **Full-time personnel:** 350.

Forbes Field, Kan. 66619-5370; 6 mi. S of Topeka. **Phone:** 785-861-4210; DSN 720-4210. **Unit:** 190th Air Refueling Wing (ANG). **History:** named for Maj. Daniel H. Forbes Jr., pilot killed June 5, 1948 test-flying the Northrop YB-49 "Flying Wing." **Area:** 193 acres. **Runway:** 12,819 ft. **Altitude:** 1,079 ft. **Full-time personnel:** 322.

Fort Smith Arpt., Ark. 72903; within Fort Smith. **Phone:** 479-573-5188; DSN 778-5188. **Unit:** 188th Fighter Wing (ANG). **Area:** 130 acres. **Runway:** 8,000 ft. **Altitude:** 468 ft. **Full-time personnel:** 295.

Fort Wayne Arpt., Ind. 46809-0122; 8 mi. SSW of downtown Fort Wayne. **Phone:** 260-478-3210; DSN 786-1210. **Unit:** 122nd Fighter Wing (ANG). **Area:** 166 acres. **Runway:** 12,000 ft. **Altitude:** 802 ft. **Full-time personnel:** 293.

Francis S. Gabreski Arpt., N.Y. 11978-1201; 1 mi. N of Westhampton Beach. **Phone:** 631-288-7335; DSN 456-7335. **Unit:** 106th Rescue Wing (ANG). **History:** named for Col. Francis S. Gabreski, WWII and Korean War ace. **Area:** 88 acres. **Runways:** 9,000 ft., 5,000 ft., and 3,000 ft. **Altitude:** 68 ft. **Full-time personnel:** 275.

Fresno Yosemite Arpt., Calif. 93727-2199; within Fresno. **Phone:** 559-454-5100; DSN 949-9100. **Unit:** 144th Fighter Wing (ANG). **Area:** 111 acres. **Runway:** 9,222 ft. **Altitude:** 332 ft. **Full-time personnel:** 334.

General Mitchell Arpt./ARS, Wis. 53207-6299; SW corner of Milwaukee. **AFRC phone:** 414-482-5488; DSN 741-5488. **ANG phone:** 414-944-8410; DSN 580-8410. **Units:** 128th Air Refueling Wing (ANG). **History:** named for Maj. Gen. William "Billy" Mitchell. **Area:** AFRC, 103 acres; ANG, 70 acres. **Runway:** 9,690 ft. **Altitude:** 670 ft. **Full-time personnel:** ANG, 268.

Greater Peoria Arpt., Ill. 61607-5023; 5 mi. SW of Peoria. **Phone:** 309-633-5210; DSN 724-5210. **Unit:** 182nd Airlift Wing (ANG). **Area:** 339 acres. **Runways:** 10,000 ft. and 8,006 ft. **Altitude:** 656 ft. **Full-time personnel:** 295.

Great Falls Arpt., Mont. 59404-5570; 5 mi. SW of Great Falls. **Phone:** 406-791-6285; DSN 279-2285. **Unit:** 120th Fighter Wing (ANG). **Area:** 141 acres. **Runways:** 10,502 ft. and 6,357 ft. **Altitude:** 3,679 ft. **Full-time personnel:** 365.

Grissom ARB, Ind. 46971-5000; 15 mi. N of Kokomo. **Phone:** 765-688-3348; DSN 388-3348. **Unit:** 434th Air Refueling Wing (AFRC). **History:** activated January 1943 as Bunker Hill NAS. Reactivated June 1954 as Bunker Hill AFB. Renamed in May 1968 for Lt. Col. Virgil I. "Gus" Grissom, killed Jan. 27, 1967 in Apollo capsule fire. Realigned as an AFRC base Oct. 1, 1994. **Area:** 1,127 acres. **Runway:** 12,500 ft. **Altitude:** 800 ft. **Housing:** 485 transient. **Full-time personnel:** 587.

Gulfport-Biloxi Arpt., Miss. 39507; within Gulfport. **Phone:** 228-214-6002; DSN 363-6002. **Units:** Combat Readiness Training Center; 255th Air Control Sq. (ANG); 209th Civil Engineering Sq. An air-to-ground gunnery range is located 70 mi. N of site. **History:** established as a Permanent Field Training Site in 1954 and redesignated as a CRTC in 1990. **Area:** 224 acres. **Runway:** 9,000 ft. **Altitude:** 26 ft. **Full-time personnel:** 119.

Hancock Field, N.Y. 13211-7099; 4 mi. NE of Syracuse. **Phone:** 315-454-6100; 1-800-982-3696; DSN 489-9100. **Units:** 174th Reconnaissance Wing (ANG); 152nd Air Operations Gp.; 274th Air Support Operations Sq. (N.Y. ARNG). **Area:** 356 acres. **Runways:** 9,300 ft. and 7,500 ft. **Altitude:** 410 ft. **Full-time personnel:** 582.

Harrisburg Arpt., Pa. 17057; 6 mi. SE of Harrisburg. **Phone:** 717-948-2200; DSN 423-2200. **Unit:** 193rd Special Operations Wing (ANG). **Area:** 39 acres. **Runway:** 9,501 ft. **Altitude:** 355 ft. **Full-time personnel:** 459.

Hector Arpt., Fargo, N.D. 58102-1051. **Phone:** 701-451-2110; DSN 362-8110. **Unit:** 119th Wing (ANG). **Area:** 260 acres. **Runways:** 9,500 ft., 6,300 ft., and 3,800 ft. **Altitude:** 895 ft. **Full-time personnel:** 354.

Homestead ARB, Fla. 33039-1299; 5 mi. NE of Homestead. **Phone:** 305-224-7303; DSN 791-7303. **Units:** 482nd Fighter Wing (AFRC); Det. 1, 125th Fighter Wing (Fla. ANG, NORAD); US Customs Miami Aviation Branch; Fla. ARNG 50th ASG; Defense Logistics Agency; Civil Air Patrol Sq. 279; AFOSI; Naval Intelligence; FBI. **Area:** approx. 1,000 acres. **Runway:** 11,200 ft. **Altitude:** 11 ft. **Full-time personnel:** AFRC, 624.

Hulman Arpt., Ind. 47803; 6 mi. E of Terre Haute. **Phone:** 812-877-5210; DSN 724-1210. **Unit:** 181st Intelligence Wing (ANG). **Area:** 279 acres. **Runways:** 9,025 ft. and 7,250 ft. **Altitude:** 585 ft. **Full-time personnel:** 271.

Jacksonville Arpt., Fla. 32218-7933; within Jacksonville. **Phone:** 904-741-7100; DSN 641-7100. **Unit:** 125th Fighter Wing (ANG). **Area:** 332 acres. **Runway:** 10,000 ft. **Altitude:** 25 ft. **Full-time personnel:** 794.

Joe Foss Field, S.D. 57104-0264; N side of Sioux Falls. **Phone:** 605-988-5700; DSN 798-7700. **Unit:** 114th Fighter Wing (ANG). **History:** named for Brig. Gen. Joseph J. Foss, WWII ace, former governor, former AFA national president, and founder of the S.D. ANG. **Area:** 214 acres. **Runways:** 9,000 ft. and 8,000 ft. **Altitude:** 1,420 ft. **Full-time personnel:** 294.

Key Field, Miss. 39307-7112; 3 mi. S of Meridian. **Phone:** 601-484-9000; DSN 778-9000. **Units:** 186th Reconnaissance Wing (ANG); 238th Air Support Operations Sq. (ANG). **History:** named after Fred and Al Key, pioneers in air-to-air refueling and holders of flight endurance record (27 continuous days) in 1935 in *Ole Miss,* on permanent display at the National Air and Space Museum. **Area:** 117 acres. **Runways:** 10,000 ft. and 5,000 ft. **Altitude:** 295 ft. **Full-time personnel:** 326.

Klamath Falls Arpt./Kingsley Field, Ore. 97603; 5 mi. S of Klamath Falls. **Phone:** 541-885-6198; DSN 830-6198. **Units:** 173rd Fighter Wing (ANG); 114th FS (ANG); 116th OLAA (ANG); 270th ATCS (ANG). **Area:** 381 acres. **Runway:** 10,301 ft. **Altitude:** 4,088 ft. **Full-time personnel:** 451.

Kulis ANGB, Alaska 99502-1988. **Phone:** 907-249-1176; DSN 317-626-1176. **Units:** 176th Wing (ANG); 144th Airlift Sq. (ANG); 210th Rescue Sq. (ANG). **History:** named for Lt. Albert Kulis, killed in training flight in 1954. **Area:** 129 acres. **Runway:** 10,897 ft. **Altitude:** 94 ft. **Full-time personnel:** 626.

Lambert-St. Louis Arpt., Mo. 63044-2371; 20 mi. NW of downtown St. Louis. **Phone:** 314-527-7000; DSN 824-7000. **Unit:** 131st Fighter Wing (ANG). **Area:** 48 acres. **Runway:** 11,000 ft. **Altitude:** 604 ft. **Full-time personnel:** 409.

Lincoln Arpt., Neb. 68524-1880; 4 mi. NW of downtown Lincoln. **Phone:** 402-458-1234; DSN 946-1234. **Units:** 155th Air Refueling Wing (ANG); ARNG unit. **Area:** 179 acres. **Runways:** 13,500 ft. and 8,620 ft. **Altitude:** 1,050 ft. **Full-time personnel:** 326.

Louisville Arpt./AGS (Standiford Field), Ky. 40213; 5 mi. S of downtown Louisville. **Phone:** 502-364-9400; DSN 989-4400. **Units:** 123rd Airlift Wing (ANG); 223rd Communications Sq. (ANG). **Area:** 81 acres. **Runways:** 10,000 ft. and 7,800 ft. **Altitude:** 500 ft. **Full-time personnel:** 340.

Luis Munoz Marin Arpt., Puerto Rico 00979-1502; E of San Juan. **Phone:** 787-253-5101; DSN 860-9101. **Units:** 156th Airlift Wing (ANG); 612th ASOS Det. Coronet Oak. **Area:** 95 acres. **Runway:** 10,000 ft. **Altitude:** 6 ft. **Full-time personnel:** 362.

Mansfield Lahm Arpt., Ohio 44903-0179; 3 mi. N of Mansfield. **Phone:** 419-520-6100; DSN 696-6100. **Unit:** 179th Airlift Wing (ANG). **History:** named for nearby city and aviation pioneer Brig. Gen. Frank P. Lahm in 1948. **Area:** 67 acres. **Runways:** 9,000 ft. and 6,795 ft. **Altitude:** 1,299 ft. **Full-time personnel:** 230.

March ARB, Calif. 92518-9888; 9 mi. SE of downtown Riverside. **Phone:** 951-655-4137; DSN 447-4137. **ANG Phone:** 951-655-2556; DSN 447-2556. **Units:** 4th Air Force (AFRC); 452nd Air Mobility Wing (AFRC); Det 1, 144th FW (Calif. ANG); 163rd Reconnaissance Wing (Calif. ANG); 4th Combat Camera Sq.; American Forces Radio and Television Broadcast Center; Defense Visual Information Center; Air Force Audit Agency directorate; US Customs Service Domestic Air Interdiction Coordination Center. **History:** activated March 1, 1918; named for 2nd Lt. Peyton C. March Jr., who died of crash injuries Feb. 18, 1918. **Area:** 2,300 acres. **Runway:** 13,300 ft. **Altitude:** 1,530 ft. **Full-time personnel:** AFRC, 1,175; ANG, 264. **Housing:** VOQ, 138, VAQ, 302.

Martin State Arpt., Md. 21220-2899; 8 mi. NE of Baltimore. **Phone:** 410-918-6210; DSN 243-6210. **Unit:** 175th Wing (ANG). **Area:** 175 acres. **Runway:** 8,100 ft. **Altitude:** 21 ft. **Full-time personnel:** 438.

McEntire ANGS, S.C. 29044 15 mi. E of Columbia. **Phone:** 803-647-8300; DSN 583-8300. **Units:** 169th Fighter Wing (ANG); 240th Combat Communications Sq. (ANG); 245th Air Traffic Control Sq. (ANG); Combined Support Maintenance Shop (ARNG); 1/151st Aviation Battalion (ARNG). **History:** named for ANG Brig. Gen. B.B. McEntire Jr., killed in 1961 F-104 accident. **Area:** 2,301 acres. **Runway:** 9,000 ft. **Altitude:** 252 ft. **Full-time personnel:** 384.

McGhee Tyson Arpt., Tenn. 37777; 10 mi. SW of Knoxville. **Phone:** 865-985-3200; DSN 266-3200. **Units:** 134th Air Refueling Wing (ANG); 119th Air Control Sq.; 228th Combat Communications Sq.; ANG's I.G. Brown Training and Education Center. **Area:** 346 acres. **Runway:** 9,008 ft. **Altitude:** 923 ft. **Full-time personnel:** 400.

Memphis Arpt., Tenn. 38118; within Memphis. **Phone:** 901-291-7111; DSN 726-7120. **Unit:** 164th Airlift Wing (ANG). **Area:** 103 acres. **Runway:** 11,120 ft. **Altitude:** 332 ft. **Full-time personnel:** 408. Fitness center and mini-exchange.

Minneapolis-St. Paul Arpt./ARS, Minn. 55450-2100; in Minneapolis, near confluence of the Mississippi and Minnesota Rivers. **AFRC phone:** 612-713-1000; DSN 783-1000. **ANG phone:** 612-713-2501; DSN 783-2501. **Units:** 934th Airlift Wing (AFRC), C-130; 133rd Airlift Wing (ANG), C-130; 210th Engineering Installation Sq. (ANG); Naval Reserve Readiness Command, Region 16; Civil Air Patrol, NCLR, and MNLO; Rothe Development Inc. (AFRC). **Area:** AFRC, 300 acres; ANG, 128 acres. **Runways:** 11,006 ft., 10,000 ft., and 8,200 ft. **Altitude:** 840 ft. **Full-time personnel:** AFRC, 354; ANG, 272. Lodging, clubs, fitness center, and exchange.

Moffett Field, Calif. 94035; 2 mi. N of Mountain View. **Phone:** 650-603-9129; DSN 359-9129. **Unit:** 129th Rescue Wing (ANG). **Area:** 97 acres. **Runway:** 9,200 ft. **Altitude:** 34 ft. **Full-time personnel:** 355.

Montgomery Regional Arpt., Ala. 36108; 7 mi. SW of downtown Montgomery. **Phone:** 334-394-7200; DSN 358-9200. **Units:** 187th Fighter Wing (ANG); 232nd Combat Communications Sq. **History:** originally named for Ens. Clarence Dannelly, Navy pilot killed during WWII. **Area:** 143 acres. **Runway:** 9,000 ft. **Altitude:** 221 ft. **Full-time personnel:** 336.

NAS JRB Fort Worth, Tex. 76127-6200, 7 mi. NW of Fort Worth. **Navy hosted switchboard:** 817-782-5000; DSN 739-5000. **ANG Phone:** 817-852-3202; DSN 874-3202. **Units:** 10th Air Force and 301st Fighter Wing (AFRC); 136th Airlift Wing (ANG). **Area:** Navy hosted base is 1,805 acres; ANG, 81 acres. **Runway:** 12,000 ft. **Altitude:** 650 ft. **Full-time personnel:** AFRC, 646; ANG, 273.

NAS JRB New Orleans, La. 70143-0050, 15 mi. S of New Orleans. **Phone:** 504-391-8600; DSN 457-8600. **Unit:** 159th Fighter Wing (ANG). **Area:** 3,239 acres. **Runways:** 8,000 ft. and 6,000 ft. **Altitude:** 3 ft. **Full-time personnel:** ANG, 459.

Nashville Arpt., Tenn. 37217-2538; 6 mi. SE of downtown Nashville. **Phone:** 615-399-5410; DSN 788-6210. **Unit:** 118th Airlift Wing (ANG). **Area:** 88 acres. **Runway:** 11,150 ft. **Altitude:** 570 ft. **Full-time personnel:** 303.

New Castle County Arpt., Del. 19720; 5 mi. S of Wilmington. **Phone:** 302-323-3500; DSN 445-7500. **Unit:** 166th Airlift Wing (ANG). **Area:** 79 acres. **Runways:** 7,170 ft. and 7,000 ft. **Altitude:** 80 ft. **Full-time personnel:** 262.

Niagara Falls Arpt./ARS, N.Y. 14304-5001; 6 mi. E of Niagara Falls. **Phone:** 716-236-2138; DSN 238-2000. **Units:** 914th Airlift Wing (AFRC), C-130H; 107th Air Refueling Wing (ANG), KC-135. **History:** activated January 1952. **Area:** 979 acres; ANG area, 108 acres. **Runway:** 9,135 ft. **Altitude:** 590 ft. **Full-time personnel:** AFRC, 365; ANG, 268. Lodging, exchange, and consolidated club.

Otis ANGB, Mass. 02542-1330; 7 mi. NNE of Falmouth. **Phone:** 508-968-4667; DSN 557-4667. **Units:** 102nd Reconnaissance Wing (ANG), F-15A/B; 101st Fighter Sq. (ANG). **Tenant Units:** 202nd Weather Flt. (ANG); 253rd CCG (ANG); 267th CCS (ANG). **History:** named for 1st Lt. Frank J. Otis, Mass. ARNG flight surgeon and pilot killed in 1937 crash. **Area:** 4,069 acres. **Runways:** 9,500 ft. and 8,000 ft. **Altitude:** 103 ft. **Full-time personnel:** 420.

Pease Intl. Tradeport ANGS, Portsmouth, N.H. 03803-0157. **Phone:** 603-430-2453; DSN 852-2453.

Unit: 157th Air Refueling Wing (ANG). **Area:** 218 acres. **Runway:** 11,318 ft. **Altitude:** 101 ft. **Full-time personnel:** 357.

Pittsburgh Arpt./ARS, Pa. 15108-4403; 12 mi. NW of Pittsburgh. **AFRC phone:** 412-474-8750; DSN 277-8750. **ANG phone:** 412-474-7359; DSN 277-7359. **Units:** 911th Airlift Wing, C-130H; 171st Air Refueling Wing (ANG), KC-135E. **History:** activated 1943. **Area:** AFRC, 115 acres; ANG, 179 acres. **Runway:** 11,500 ft. **Altitude:** 1,203 ft. **Full-time personnel:** AFRC, 321; ANG, 402. **Housing:** VOQ, 24, VEQ, 230. No on-base housing. Limited exchange.

Portland Arpt., Portland, Ore. 97218-2797. **Phone:** 503-335-4000; DSN 638-4000. **Units:** 142nd Fighter Wing (ANG); 125th Special Tactics Sq. (ANG); 272nd Combat Communications Sq. (ANG); Oregon Wing, CAP; 939th Air Refueling Wing (AFRC); Ore. ARNG. **Area:** 246 acres. **Runways:** 11,000 ft., 8,000 ft., and 7,000 ft. **Altitude:** 18 ft. **Full-time personnel:** ANG, 490; AFRC, 50.

Quonset State Arpt., R.I. 02852; 20 mi. S of Providence. **Phone:** 401-886-1210; DSN 476-3210. **Unit:** 143rd Airlift Wing (ANG). **Area:** 94 acres. **Runway:** 7,800 ft. **Altitude:** 19 ft. **Full-time personnel:** 280.

Reno/Tahoe Arpt. (May Field), Nev. 89502; 5 mi. SE of downtown Reno at 1776 NG Way. **Phone:** 775-788-4500; DSN 830-4500. **Unit:** 152nd Airlift Wing (ANG); 152nd Intel. Sq. (ANG). **History:** named for Maj. Gen. James A. May, Nevada adjutant general, 1947-67. **Area:** 64 acres. **Runways:** 10,00 ft., 9,000 ft., and 6,101 ft. **Altitude:** 4,660 ft. **Full-time personnel:** 364.

Richmond Arpt. (Byrd Field), Va. 23150; 7 mi. SE of downtown Richmond. **Phone:** 804-236-6000; DSN 864-6000. **Unit:** 192nd Fighter Wing (ANG). **History:** named for Adm. Richard E. Byrd, Arctic and Antarctic explorer. **Area:** 143 acres. **Runway:** 9,000 ft. **Altitude:** 168 ft. **Full-time personnel:** 267.

Rickenbacker ANGB, Ohio 43217-1161; 13 mi. SSE of Columbus. **Phone:** 614-492-4468; DSN 696-4468. **Units:** 121st Air Refueling Wing (ANG); 164th Weather Flight (ANG); 52nd CST. **History:** activated 1942. Formerly Lockbourne AFB; renamed May 7, 1974 for Capt. Edward V. Rickenbacker. Base transferred from SAC to ANG April 1, 1980. **Area:** 203 acres. **Runway:** 12,100 ft. **Altitude:** 744 ft. **Full-time personnel:** 347.

Rosecrans Memorial Arpt., Mo. 64503; 4 mi. W of St. Joseph. **Phone:** 816-236-3300; DSN 356-3300. **Unit:** 139th Airlift Wing (ANG). **Area:** 102 acres. **Runway:** 8,059 ft. **Altitude:** 813 ft. **Full-time personnel:** 320.

Salt Lake City Arpt., Utah 84116; 3 mi. W of downtown Salt Lake City. **Phone:** 801-245-2200; DSN 245-2200. **Units:** 151st Air Refueling Wing (ANG); 169th Intel. Sq. (ANG); 130th Engineering Installation Sq. (ANG); 109th Air Control Sq. (ANG); 299th Range Control Sq. (ANG); 101st Information Warfare Flt. (ANG). **Area:** 135 acres. **Runway:** 12,000 ft. **Altitude:** 4,226 ft. **Full-time personnel:** 465.

Savannah Hilton Head Arpt., Ga. 31408; 4 mi. NW of Savannah. **Phone:** 912-966-8204; DSN 860-8204. **Units:** 165th Airlift Wing (ANG); Combat Readiness Training Center. **Area:** 234 acres. **Runway:** 9,351 ft. **Altitude:** 51 ft. **Full-time personnel:** 386.

Schenectady County Arpt. (Stratton ANGB), N.Y. 12302-9752; 2 mi. N of Schenectady. **Phone:** 518-344-2300; DSN 974-9300. **Unit:** 109th Airlift Wing (ANG), 14 C-130s, 10 with skis for Antarctic and Greenland missions. **Area:** 122 acres. **Runway:** 7,000 ft. **Altitude:** 328 ft. **Full-time personnel:** 500.

Selfridge ANGB, Mich. 48045-5046; 3 mi. NE of Mount Clemens. **Phone:** 586-307-4011; DSN 273-4011. **Units:** 127th Wing (ANG); 927th Air Refueling Wing (AFRC); Air Force, Army, Navy, and Marine Corps Reserve units; ARNG; Coast Guard Air Station for Detroit. **History:** activated July 1917; transferred to Mich. ANG July 1971. Named for 1st Lt. Thomas E. Selfridge, killed Sept. 17, 1908 at Ft. Myer, Va., when airplane piloted by Orville Wright crashed. **Area:** 3,070 acres. **Runway:** 9,000 ft. **Altitude:** 580 ft. **Full-time personnel:** ANG, 529; AFRC, 238.

Sioux Gateway Arpt./Col. Bud Day Field, Iowa 51111-1300; 7 mi. S of downtown Sioux City. **Phone:** 712-233-0210; DSN 585-0210. **Unit:** 185th Air Refueling Wing (ANG). **Area:** 288 acres. **Runway:** 9,000 ft. **Altitude:** 1,089 ft. **Full-time personnel:** 323.

Sky Harbor Arpt., Phoenix, Ariz. 85034. **Phone:** 602-302-9000; DSN 853-9000. **Unit:** 161st Air Refueling Wing (ANG). **Area:** 60 acres. **Runway:** 12,000 ft. **Altitude:** 1,000 ft. **Full-time personnel:** 324.

Springfield-Beckley Arpt., Ohio 45502-8783; 5 mi. S of Springfield. **Phone:** 937-327-2100; DSN 346-2100. **Units:** 178th Fighter Wing (ANG); 251st Combat Communications Gp. (ANG); 269th Combat Communications Sq. (ANG). **Area:** 114 acres. **Runway:** 8,999 ft. **Altitude:** 1,053 ft. **Full-time personnel:** 784.

Stewart ANGB, N.Y. 12550-5042; 15 mi. N of US Military Academy (West Point). **Phone:** 914-563-2001; DSN 636-2001. **Units:** 105th Airlift Wing (ANG). **History:** Stewart AFB until 1969; acquired by state of New York in 1970. **Area:** ANG, 267 acres. **Runway:** 12,000 ft. **Altitude:** 491 ft. **Full-time personnel:** 633. Most military services available through West Point or subpost.

Toledo Express Arpt., Ohio 43558; 14 mi. W of Toledo. **Phone:** 419-868-4078; DSN 580-4078. **Unit:** 180th Fighter Wing (ANG). **Area:** 135 acres. **Runways:** 10,600 ft. and 5,600 ft. **Altitude:** 664 ft. **Full-time personnel:** 299.

Truax Field, Wis. 53704-2591; at Dane County Arpt. 2 mi. N of downtown Madison. **Phone:** 608-245-4300; DSN 724-8300. **Unit:** 115th Fighter Wing (ANG). **History:** activated June 1942 as AAF base; taken over by Wis. ANG April 1968. Named for Lt. T.L. Truax, killed in P-40 training accident in 1941. **Area:** 130 acres. **Runway:** 12,000 ft. **Altitude:** 800 ft. **Full-time personnel:** 486.

Tucson Arpt., Ariz. 85706-6052; within Tucson. **Phone:** 520-295-6210; DSN 924-6210. **Unit:** 162nd Fighter Wing (ANG). **Area:** 92 acres. **Runways:** 11,000 ft., 9,000 ft., and 7,000 ft. **Altitude:** 2,556 ft. **Full-time personnel:** 984.

Tulsa Arpt., Okla. 74115-1699; 6 mi. NE of downtown Tulsa. **Phone:** 918-833-7370; DSN 894-7370. **Units:** 138th Fighter Wing (ANG); 219th Engineering Installation Sq. **Area:** 81 acres. **Runway:** 10,000 ft. **Altitude:** 677 ft. **Full-time personnel:** 330.

Volk Field ANGB, Wis. 54618-5001; 87 mi. NW of Madison. **Phone:** 608-427-1210; DSN 871-1210. **Units:** Combat Readiness Training Center (ANG) featuring air-to-air and air-to-ground gunnery ranges; 128th Air Control Sq. **History:** named for Lt. Jerome A. Volk, first Wis. ANG pilot to be killed in the Korean War. **Area:** 2,336 acres. **Runway:** 9,000 ft. **Altitude:** 912 ft. **Full-time personnel:** 199.

W.K. Kellogg Arpt., Mich. 49015-5512; 1 mi. W of Battle Creek. **Phone:** 616-969-3400; DSN 580-3210. **Unit:** 110th Fighter Wing (ANG). **Area:** 320 acres. **Runway:** 10,003 ft. **Altitude:** 929 ft. **Full-time personnel:** 357.

Westover ARB, Mass. 01022-1825; 10 mi. NE of Springfield. **Phone:** 413-557-1110; DSN 589-1110. **Units:** 439th Airlift Wing (AFRC); Army, Navy, and Marine Corps Reserve units. **History:** dedicated April 6, 1940. Named for Maj. Gen. Oscar Westover, Chief of the Air Corps, killed Sept. 21, 1938. **Area:** 2,386 acres. **Runway:** 11,600 ft. **Altitude:** 245 ft. **Full-time personnel:** AFRC, 853; ANG, 27. **Housing:** VOQ, 41, VAQ, 142 beds.

Will Rogers World Arpt., Oklahoma City. 73179-1090; 9 mi. SW of downtown. **Phone:** 405-686-5210; DSN 720-5210. **Units:** 137th Air Refueling Wing (ANG); 205th Engineering Installation Sq. (ANG). **Area:** 133 acres. **Runways:** two, 9,800 ft. each, and 7,800 ft. **Altitude:** 1,272 ft. **Full-time personnel:** 286.

Willow Grove ARS, Pa. 19090-5300; 14 mi. N of Philadelphia. **ANG phone:** 215-443-1500; DSN 991-1500. **Units:** 111th Fighter Wing (ANG). **History:** activated August 1958 (AFRC); activated 1924 (ANG). **Area:** AFRC, 162 acres; ANG, 55 acres. **Altitude:** 356 ft. **Runway:** share use of NAS JRB Willow Grove runway (8,000 ft.). **Full-time personnel:** ANG, 282.

Yeager Arpt., W.Va. 25311; 4 mi. NE of downtown Charleston. **Phone:** 304-341-6126; DSN 366-6210. **Unit:** 130th Airlift Wing (ANG). **History:** named for Brig. Gen. Charles E. "Chuck" Yeager. **Area:** 109 acres. **Runway:** 6,300 ft. **Altitude:** 982 ft. **Full-time personnel:** 261.

Youngstown-Warren Arpt./ARS, Ohio 44473-5912; 14 mi. N of Youngstown. **Phone:** 330-609-1000; DSN 346-1000. **Units:** 910th Airlift Wing (AFRC); Army Corps of Engineers; Army, Navy, and Marine Corps Reserve units; FAA. **History:** activated 1953. **Area:** 230 acres. **Runways:** three, primary length 9,000 ft. **Altitude:** 1,196 ft. **Full-time personnel:** AFRC, 454; ANG, 17. **Lodging:** 142 beds. Limited exchange.

USAF photo by SMSgt. John S. Chapman

A C-5 from Stewart ANGB, N.Y., takes on cargo on the flight line at Hulman Arpt., Ind., during an exercise.

Gallery of USAF Weapons

2008 USAF Almanac

By Susan H.H. Young

Note: Inventory numbers are total active inventory figures as of Sept. 30, 2007.

Bombers

B-1 Lancer

Brief: A long-range, air refuelable multirole bomber capable of flying missions over intercontinental range, then penetrating enemy defenses with the largest payload of guided and unguided weapons in the Air Force inventory.

Function: Long-range conventional bomber.

Operator: ACC, AFMC.

First Flight: Dec. 23, 1974 (B-1A); Oct. 18, 1984 (B-1B).

Delivered: June 1985-May 1988.

IOC: Oct. 1, 1986, Dyess AFB, Tex. (B-1B).

Production: 104.

Inventory: 67.

Unit Location: Dyess AFB, Tex., Ellsworth AFB, S.D., Edwards AFB, Calif.

Contractor: Boeing; AIL Systems; General Electric.

Power Plant: four General Electric F101-GE-102 turbofans, each 30,780 lb thrust.

Accommodation: four, pilot, copilot, and two systems officers (offensive and defensive), on zero/zero ACES II ejection seats.

Dimensions: span spread 137 ft, swept aft 79 ft, length 146 ft, height 34 ft.

Weights: empty equipped 192,000 lb, max operating weight 477,000 lb.

Ceiling: more than 30,000 ft.

Performance: max speed at low level high subsonic; 900+ mph (Mach 1.2 at S/L); range intercontinental.

Armament: three internal weapons bays capable of accommodating a wide range of weapons incl up to 84 Mk 82 (500-lb) bombs or Mk 62 Quick Strike naval mines; up to 30 CBU-87/103 Combined Effects Munitions (CEMs), 30 CBU-89 Gator munitions, and 30 CBU-97 Sensor Fuzed Weapons (SFWs); potentially a combination of up to 30/15/15 (fwd/mid/aft bay) CBU-103/104/105 Wind-Corrected Munitions Dispensers (WCMD); up to 24 GBU-31 (2,000-lb) or 15 GBU-38 (500-lb) Joint Direct Attack Munitions (JDAMs), and 24 AGM-158A Joint Air-to-Surface Standoff Missiles (JASSMs).

COMMENTARY

Of blended wing/body configuration, the B-1's variable-geometry design and turbofan engines combine to provide greater range and high speed at low level, with enhanced survivability. Unswept wing settings provide for maximum range during high-altitude cruise. The fully swept position is used in supersonic flight and for high subsonic, low-altitude penetration.

The bomber's offensive avionics include a strategic Doppler radar, enabling aircrews to navigate, update target coordinates in flight and precision bomb. Radar features include synthetic aperture radar (SAR), ground moving target indicator (GMTI), ground moving target track (GMTT), and terrain-following. Offensive avionics also include an extremely accurate Global Positioning System/inertial navigation system (GPS/INS) and computer-driven avionics.

The current defensive avionics package, built around the ALQ-161 electronic countermeasures (ECM) system, is supplemented by the ALE-50 towed decoy and chaff and flares to protect against radar-guided and heat-seeking missiles. Aircraft structure and radar-absorption materials reduce the aircraft's radar signature to approximately one percent that of a B-52. The ALE-50 provides greater protection against RF threats.

B-1A. USAF acquired four prototype flight-test models of this new strategic bomber in the 1970s, but the program was canceled in 1977. Flight-test of the four B-1A models continued through 1981.

B-1B Lancer (Richard VanderMeulen)

B-1B. Initiated in 1981, the first production model of the improved variant B-1 flew in October 1984. USAF produced a total of 100. The active B-1B inventory was reduced to 67 aircraft (from the remaining 92) with consolidation to two main operating bases within Air Combat Command at Dyess AFB, Tex., and Ellsworth AFB, S.D. First used in combat against Iraq during Desert Fox in December 1998.

B-1B's speed, superior handling qualities, and large payload make it a key element of any joint/composite strike force, combining long endurance with the flexibility to deliver a wide range of guided or unguided weapons to strike emerging targets rapidly and efficiently.

The conventional mission upgrade program (CMUP) has significantly enhanced B-1B lethality and survivability. Block D upgrades include GPS receivers, a MIL-STD-1760 weapon interface, secure interoperable radios, and capability to employ precision weapons. Block E, which completed its final delivery in August 2006, includes follow-on computer and software upgrades permitting simultaneous carriage of mixed guided and unguided weapons and WCMD/JASSM and GBU-38 JDAM integration. Future upgrades will provide improved network centric warfighting capability with cockpit avionics upgrades to enhance crew communications and situational awareness. A program to provide a fully integrated data link capability, including Link 16 and Joint Range Extension along with upgraded displays at the rear crew stations, began in FY05. In addition, a radar maintainability improvement effort began in FY06, to be followed by integration of a targeting pod capability beginning in FY10. USAF is fielding an interim targeting pod modification in mid-2008 as a quick reaction capability using the rear station laptop computer for pod control.

B-2 Spirit

Brief: Stealthy, long-range multirole bomber that can deliver conventional and nuclear munitions anywhere on the globe by flying through previously impenetrable defenses.

Function: Long-range heavy bomber.

Operator: ACC.

First Flight: July 17, 1989.

Delivered: Dec. 20, 1993-2002.

IOC: April 1997, Whiteman AFB, Mo.

Production: 21.

Inventory: 21.

Unit Location: Whiteman AFB, Mo.

Contractor: Northrop Grumman; Boeing; Vought.

Power Plant: four General Electric F118-GE-100 turbofans, each 17,300 lb thrust.

Accommodation: two, mission commander and pilot, on zero/zero ejection seats.

Dimensions: span 172 ft, length 69 ft, height 17 ft.

Weight: empty 125,000-153,700 lb, typical T-O weight 336,500 lb.

Ceiling: 50,000 ft.

Performance: minimum approach speed 140 mph, typical estimated unrefueled range for a hi-lo-hi mission with 16 B61 nuclear free-fall bombs is 5,000 miles, with one aerial refueling more than 10,000 miles.

Armament: in a nuclear role: up to 16 nuclear weapons (B61 Mod 7, B61 Mod 11, B83) on rotary launchers. In a conventional role, 80 Mk 82 500-lb bombs, 34 tactical munitions dispensers, 80 Mk 62 sea mines, or 80 GBU-38 (500-lb) JDAMs mounted on bomb rack assemblies, or up to 16 rotary launcher-mounted weapons: 16 GBU-31 (2,000-lb) JDAMs, or a penetration version of a BLU-109, or 16 Mk 84 2,000-lb bombs; 16 JSOWs, 16 JASSMs, or eight 4,700-lb GBU-37/GBU-28C/B guided weapons.

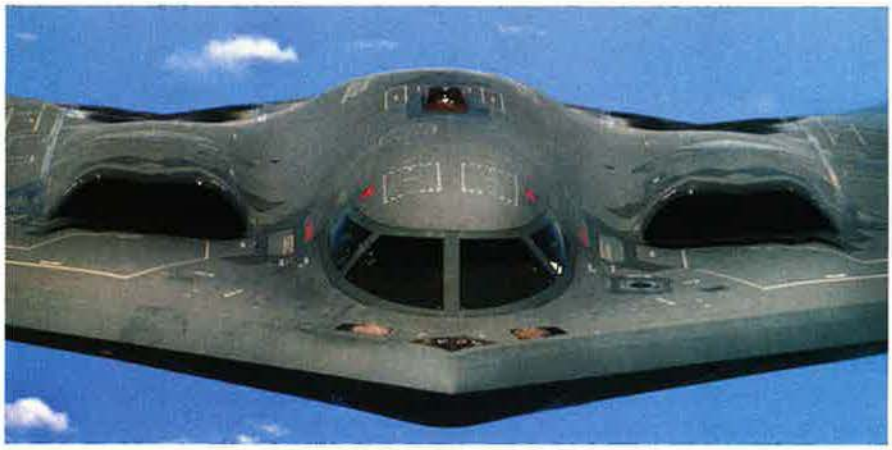
COMMENTARY

The B-2 bomber is a unique, highly advanced system, combining sophisticated technologies, notably low observable (LO) stealth design, with high aerodynamic efficiency, enabling it to attack heavily defended targets and neutralize enemy defenses.

Based on the flying wing concept, the B-2 has no vertical tail surfaces. The smoothly blended "fuselage" section accommodates two flight crew and two large weapons bays side by side in the lower centerbody. These bays contain rotary launchers or bomb rack assemblies capable of carrying up to 40,000 lb of weapons.

Four nonafterburning turbofan engines are mounted in pairs within the wing structure, with scalloped over-wing intake ducts and shielded over-wing trailing edge nozzles. The aircraft has a quadruple-redundant fly-by-wire digital flight-control system, actuating moving surfaces at the wing trailing edges that combine aileron, elevator, and rudder functions. A landing gear track of 40 ft enables the B-2 to use any runway that can handle a Boeing 727 airliner.

B-2A. B-2 production represents three successive blocks of capability. Block 10 aircraft carried B83 nuclear bombs or 16 Mk 84 2,000-lb conventional munitions. Block 20



B-2 Spirit (TSgt. Cecilio Ricardo)

aircraft additionally carried B61/7 and B61/11 nuclear bombs, as well as GPS-aided munitions (GAMs), and GBU-36B, on two rotary launcher assemblies, providing an interim, near-precision strike capability. All Block 10 and 20 aircraft are upgraded to Block 30. (The last original Block 20 B-2, used as a test aircraft at Edwards AFB, Calif., was refurbished as an operational bomber and entered operational service in September 2002.)

Block 30 configuration added significant new weapons capability. Using the rotary launcher assembly, all B-2s are capable of employing 16 Mk 84 JDAMs, 16 JSOWs, 16 JASSMs, 16 BLU-109 JDAMs or eight GBU-37s or GBU-28C/Bs. All B-2s are also capable of substituting bomb rack assemblies in place of the rotary launchers, providing the capability to employ 80 500-lb Mk 82s, 34 tactical munitions dispensers, or 80 Mk 62 sea mines. Modifications to the bomb racks add carriage of 80 independently targeted GBU-38 (500-lb) JDAMs. Other Block 30 enhancements include fully operational defensive and offensive avionics, a more sophisticated mission planning system, and additional operating modes for the synthetic aperture radar. A new stealth coating introduced under the Alternative High Frequency Material (AHFM) program is dramatically improving combat readiness. The entire fleet will be converted by 2012.

Beyond Block 30, USAF plans to add UHF/EHF satellite communications systems and Link 16 digital data sharing capability and to replace the current mechanically scanned phased-array antenna with an active electronically scanned array.

The first use of B-2s in combat took place March 24, 1999, against Serb targets in Allied Force, with two aircraft each dropping 16 JDAMs. In October 2001, B-2s flew the longest combat sorties during Enduring Freedom, flying 44-hour sorties from Whiteman AFB, Mo., striking targets in Afghanistan, then landing in Diego Garcia for an engine running crew change, with the second crew flying a 29-hour sortie back to Whiteman. B-2s operate from three forward locations—Andersen AFB, Guam, RAF Fairford, UK, and Diego Garcia in the Indian Ocean.

B-52 Stratofortress

Brief: A long-range, heavy multirole bomber that can carry nuclear or conventional ordnance or cruise missiles, with worldwide precision navigation capability.

Function: Long-range heavy bomber.

Operator: ACC, AFMC, AFRC.

First Flight: April 15, 1952 (YB-52 prototype).

Delivered: November 1955-October 1962.

IOC: June 19, 1955.

Production: 744.

Inventory: 94.

Unit Location: Barksdale AFB, La. (ACC, AFRC), Edwards AFB, Calif. (AFMC), Minot AFB, N.D.

Contractor: Boeing.

Power Plant: eight Pratt & Whitney TF33-P-3 turbofans, each 17,000 lb thrust.

Accommodation: two pilots, side by side, plus navigator, radar navigator, and electronic warfare officer.

Dimensions: span 185 ft, length 159.3 ft, height 40.7 ft.

Weight: empty approx 188,000 lb, gross 488,000 lb.

Ceiling: 50,000 ft.

Performance (approx): max level speed 449 mph, range more than 10,000 miles.

Armament: 12 AGM-86B Air Launched Cruise Missiles (ALCMs) externally, with provision for eight more ALCMs or gravity weapons internally. Conventional weapons incl AGM-86C/D Conventional ALCMs (CALCMs), naval mines, bombs up to 2,000 lb, CBU 87/89/97 unguided munitions, CBU-103/104/105 Wind-Corrected Munitions Dispenser (WCMD) guided munitions, GBU-31 and GBU-38 JDAMs, JASSMs, and GBU-10/12/28 laser guided bombs. Future weapons incl the Miniature Air Launched Decoy (MALD).

B-52H Stratofortress (Butch Ramsey)

COMMENTARY

The B-52's still-expanding weapons capability reflects its continued ability to perform a wide range of missions, including show of force, maritime operations, long-range precision strikes, close air support (CAS), offensive counterair, air interdiction, and defense suppression. USAF still is considering whether to use B-52s as standoff electronic warfare platforms.

Equipment includes GPS, ARC-210 radios with Have Quick II anti-jam feature, KY-100, providing secure transmission, an electro-optical (EO) viewing system that uses forward-looking infrared (FLIR) and high-resolution low-light-level television (LLLTV) sensors to augment the targeting, battle assessment, flight safety, and terrain avoidance systems, improving combat and low-level flight capability. Pilots have night vision goggles (NVGs) to further enhance operation. The majority of B-52s are modified to carry weapons targeting pods. Future plans include modification of the entire fleet with an integrated self-targeting and battle damage assessment (BDA) capability. B-52s support a MIL-STD-1760 interface resulting in an improved weapons capability for precision weapons externally, including naval mines, precision guided weapons, and advanced weapons such as JDAM, JASSM, and WCMD. The B-52's ECM suite uses a combination of electronic detection, jamming, and infrared (IR) countermeasures to protect against hostile air defense systems.

AFMC is using a B-52 to conduct synthetic fuel experiments.

Several versions of the Stratofortress were produced, including:

B-52A. Initial production version, with J57-P-1W engines and provision for in-flight refueling. First flown Aug. 5, 1954, the three aircraft built were used by Boeing for technical development purposes. Delivered to SAC November 1957. Finally retired 1969.

B-52B. First operational version, 23 of which were built. Also, 27 RB-52B dual-role bomber/reconnaissance variants. First flown January 1955, with deliveries between June 1955-August 1956; powered by J57-P-1W, -19W, -29W, or -29WA engines. Retired in the mid-1960s.

B-52C. Multimission version with increased gross weight and larger under-wing tanks. Powered by J57-P-19W or -29WA engines. First flown March 1956; 35 were delivered June-December 1956. Majority retired 1971.

B-52D. Long-range bomber version, first flown June 1956 and used during the Vietnam War. Total of 170 built, with deliveries beginning late 1956. Retired 1982-83.

B-52E. Version with improved bombing, navigation, and electronics systems. First flown October 1957. One hundred delivered October 1957-June 1958. Retired 1969-70.

B-52F. Version with uprated J57-P-43WA engines, first flown in May 1958. Eighty-nine delivered June 1958-February 1959. Retired 1978.

B-52G. Introduced important design changes, including a redesigned wing containing integral fuel tanks for increased range, fixed under-wing external tanks, a shorter tail fin of greater chord, and a remotely controlled tail gun turret that allowed the gunner to be repositioned with the rest of the crew. Initial flight August 1958, with the first of 193 aircraft entering service in February 1959. Operated as the primary bomber during the first Gulf War. Retired 1994.

B-52H. The only version still in service, the H introduced TF33 turbofans, providing increased unrefueled range, and improved defensive armament. First flown July 1960, 102 were built, with deliveries between May 1961 and October 1962.

The B-52 currently is employable for both conventional and nuclear missions. As the Air Force's only nuclear cruise missile carrier, it performs multiple cruise missile launches at high altitude, often followed by B-52 penetration to attack other targets. When tasked with precision weapons delivery, it conducts close air support and attacks targets using GPS/INS guided weapons.

Ongoing modernization of its conventional capabilities is extending the B-52's service life well into the 21st century, with the ability to provide massive firepower in low- to mid-threat environments supplemented by a standoff attack capability. Iraqi Freedom saw B-52s delivering laser guided bombs for the first time using Litening targeting pods. Use of heavy stores adapter beams enable aircraft to carry most B-52-certified munitions. ALCMs and CALCMs are carried on unique pylons or internally on a rotary launcher. Avionics improvements include the avionics midlife improvement (AMI) program, which replaces the current system processors, inertial navigation unit (INU), and data transfer system (DTS) cartridges. Electronic attack improvements include the ECM improvement upgrade to the ALQ-172 set. The Combat Network Communications Technology (CONECT) improvement provides a modern cockpit information avionics architecture, in-flight beyond-line-of-sight (BLOS) data link connectivity, and mission/weapon reprogramming capability.

Fighter and Attack Aircraft

A-10 Thunderbolt II

Brief: A simple, effective, and survivable twin-engine aircraft specifically designed for close air support (CAS) of ground forces against a wide range of ground targets, including tanks and other armored vehicles.

Function: Attack aircraft.

Operator: ACC, AFMC, PACAF, USAFE, ANG, AFRC.

First Flight: Feb. 15, 1975 (preproduction).

Delivered: November 1975-March 1984.

IOC: October 1977.

Production: 713.
Inventory: 247 (A-10); 106 (OA-10).
Unit Location: Active: Davis-Monthan AFB, Ariz., Eglin AFB, Fla., Moody AFB, Ga., Nellis AFB, Nev., Osan AB, South Korea, Spangdahlem AB, Germany. ANG: Battle Creek ANGB, Mich., Boise Air Terminal, Idaho, Fort Smith Arpt., Ark., Martin State Arpt., Md. AFRC: Barksdale AFB, La., Whiteman AFB, Mo.
Contractor: Fairchild Republic; now Lockheed Martin.
Power Plant: two General Electric TF34-GE-100 turbofans, each 9,065 lb thrust.
Accommodation: pilot only, on zero-height/518 mph-zero-speed ejection seat.
Dimensions: span 57.5 ft, length 53.3 ft, height 14.7 ft.
Weight: empty 28,000 lb, max gross 51,000 lb.
Ceiling: 37,000 ft.
Performance: speed 518 mph, combat range with 9,500 lb of weapons and 1.7 hr loiter, 20 min reserve, 288 miles.
Armament: one 30 mm, seven-barrel, 1,174-rd capacity GAU-8 Gatling gun capable of carrying inert target practice (TP) rds, straight high-explosive incendiary (HEI), or anti-armor tailored HEI/API "combat mix"; 11 hardpoints for up to 16,000 lb of ordnance, incl various types of free-fall or guided bombs such as Mk 82, Mk 84, GBU-10/12/16/38, CBU-87 Combined Effects Munition (CEM), WCMD, 2.75-in high-explosive, white phosphorous, and overt/covert illumination rockets, SUU-25 overt/covert flare dispensers, up to six AGM-65B/D/G/H/K Maverick missiles, and up to four AIM-9 Sidewinder missiles. Up to 480 chaff and flares carried internally to counter radar or IR threats. Up to three 600-gallon fuel tanks can also be carried.

COMMENTARY

Supporting the CAS, airborne forward air controller (FAC(A)), interdiction, combat search and rescue (CSAR) ("Sandy") missions, and special operations forces (SOF) support, the A-10 combines large diverse weapons payload, long loiter, austere airfield capability, maneuverability, and wide combat radius with the ability to operate under 1,000-ft ceilings, with 1.5-mile visibility, or up to 25,000 ft with advanced targeting pods and GPS-guided munition or in darkness with NVGs. In a typical mission, the A-10, nicknamed Warthog, can fly 150 miles with a standard payload and remain on station (loiter) for two hours or much longer with air refueling. The 30 mm GAU-8 gun provides a cost-effective weapon with which to defeat a wide array of ground targets, including heavily armored tanks. The gun-rocket-Maverick medley provides a unique combination of "point-shoot," low-collateral damage, and mobile target capabilities demanded by the danger-close proximity to friendly forces or urban terrain. The cockpit is protected with titanium armor, capable of withstanding projectiles up to 23 mm. A-10s were used extensively in Desert Storm, Allied Force, Enduring Freedom, and Iraqi Freedom, the last operation seeing several A-10 combat firsts, including first use of Litening II targeting pod, first self-lased laser guided bomb (LGB) delivery, and first AGM-65H/K employment. The A-10 is projected to serve well into the 2020s.

A/OA-10A equipment includes an enhanced GPS/INS (EGI), head-up display (HUD), NVGs, and an Integrated Flight and Fire Control Computer (IFFCC) to enhance weapons delivery accuracy, cockpit presentations, targeting pod integration, and terrain avoidance. Other equipment consists of Pave Penny laser target identification pod and self-protection/penetration aids including ALQ 131/184 ECM pods, ALR-69 radar warning receiver and countermeasures system (CMS) to digitally integrate the ALE-40 chaff-flare dispenser and automate future extended IRCM solutions.

A/OA-10C is the new designation for aircraft currently being upgraded with the precision engagement modification, with new glass cockpit displays, full targeting pod integration, hands-on throttle and stick (HOTAS), digital stores management, a Situational Awareness Data Link (SADL), and JDAM/WCMD integration. IOC occurred in August 2007, with the first combat deployment one month later. All aircraft are scheduled to be modified by FY11. Other planned improvements include enhanced communication and improved situational awareness systems and Sniper and Litening targeting pod capability. These improvements will permit the A-10 to attack from higher altitudes and provide a better logistical and maintenance footprint. Additionally, the entire fleet is to receive structural improvements including rewinging where necessary.

Aircraft designated **OA-10A/C** are used primarily for FAC(A), combat escort, CSAR, and visual reconnaissance missions. The OA-10 is identical to the A-10. Mission configurations typically include large weapons loads of white phosphorous marking rockets and covert/overt illumination rockets/flares to mark/illuminate targets for strike aircraft or friendly ground forces. The first OA-10 unit reached initial operational capability (IOC) in October 1987.

***A-10C** Thunderbolt II* (Rick Llinares)

AC-130 Gunship

Brief: Heavily armed aircraft using side-firing weapons integrated with sophisticated sensor, navigation, and fire-control systems to provide precise firepower or area saturation for long periods, at night and in adverse weather.
Function: Attack aircraft.
Operator: AFSOC.
First Flight: 1967.
Delivered: 1968-present.
IOC: 1972 (AC-130H); 1996 (AC-130U).
Production: 43; incl four recent conversions.
Inventory: eight (AC-130H); 17 (AC-130U).
Unit Location: Hurlburt Field, Fla.
Contractor: Lockheed Martin (airframe); Boeing (AC-130H); Rockwell, now Boeing (AC-130U).
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: AC-130H crew of 14; AC-130U crew of 13.
Dimensions: span 132.6 ft, length 99 ft, height 38.5 ft.
Weight: gross 155,000 lb.
Ceiling: 25,000 ft.
Performance: speed 289 mph, range 1,500 miles, with air refueling unlimited.
Armament: two 20 mm Vulcan cannons with 3,000 rd (AC-130H); one 25 mm Gatling gun (AC-130U); one 40 mm Bofors cannon with 256 rd, and one 105 mm Howitzer with 100 rd; 30 mm Bushmaster cannons with 200 rd replace 25 mm and 40 mm guns in new conversions.

COMMENTARY

The AC-130 is a C-130 modified with gun systems, electronic and EO sensors, fire-control systems, enhanced navigation systems, sophisticated communications, defensive systems, and in-flight refueling capability. These systems give the gunship crew the capability to acquire and identify targets day or night, coordinate with ground forces and command and control (C2) agencies, and deliver surgical firepower in support of both conventional and special operations missions. For operations in Afghanistan and Iraq, the AC-130 gunships work in conjunction with the MQ-1 Predator, the latter providing live video and target referencing information.

AC-130A was the initial version, deployed in Vietnam 1968-69. Eighteen produced.

AC-130E, an improved version, of which eight were built. Converted to H standard after service in Vietnam.

AC-130H Spectre aircraft serve with the 1st SOW. The unit has eight, each equipped with a digital fire-control computer. They employ EO sensors and target-acquisition systems, including FLIR and LLLTV, and are capable of in-flight refueling. Fire-control computers, navigation, communications, and sensor suites have been upgraded. Future modifications include a new ground mapping/weather radar, enhanced traffic collision avoidance system (ETACS), large aircraft infrared countermeasures (LAIRCM), and expanded precision weapons capability.

AC-130U Spooky aircraft serve with 1st SOW and are gunship conversions by Rockwell, of which 13 were delivered to AFSOC's 4th SOS in 1994-95. Four additional aircraft were recently converted by Boeing to U standard. The fleet is currently undergoing weapons modifications to replace the 40 mm gun with a 30 mm Bushmaster cannon; anticipated completion is 2010. All weapons can be subordinated to the APQ-180 digital fire-control radar, FLIR, or all-light-level television (ALLTV) for adverse weather attack operations. Future modifications include ETACS, Link 16, an advanced gunship multispectral sensor, and expanded precision weapons capability.

Although the AC-130H Spectre and AC-130U Spooky gunships use dissimilar avionics and other systems, fire support to troops on the ground is generally comparable. The primary mission for the gunship is close air support for special operations forces. Other missions include armed reconnaissance, interdiction, point defense, armed escort, and surveillance.

F-15 Eagle

Brief: A supersonic, all-weather, highly maneuverable tactical fighter designed to permit USAF to swiftly gain and maintain air superiority in aerial combat.
Function: Air superiority fighter.
Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG, AFRC.
First Flight: July 27, 1972.
Delivered: November 1974-85.
IOC: September 1975.
Production: 874.
Inventory: 437.
Unit Location: Active: Eglin AFB, Fla., Elmendorf AFB, Alaska, Kadena AB, Japan, Langley AFB, Va., Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath,

***AC-130** Gunship* (SrA. Julianne Showalter)

UK, Robins AFB, Ga., Tyndall AFB, Fla. ANG: Barnes Arpt., Mass., Hickam AFB, Hawaii, Jacksonville Arpt., Fla., Klamath Falls Arpt., Ore., Lambert-St. Louis Arpt., Mo., NAS JRB New Orleans, La., Portland Arpt., Ore. AFRC: Langley AFB (assoc.), Va.

Contractor: McDonnell Douglas (now Boeing); Raytheon.

Power Plant: F-15C: two Pratt & Whitney F100-PW-220 turbofans, each 25,000 lb thrust, with max afterburner.

Accommodation: pilot only in F-15A/C; two seats in F-15B/D.

Dimensions: span 42.8 ft, length 63.8 ft, height 18.7 ft.

Weight: empty 28,600 lb, gross 68,000 lb.

Ceiling: 65,000 ft.

Performance: F-15C: max speed Mach 2.5, T-O run 900 ft, landing run without braking parachute 3,500 ft, ferry range with external fuel tanks more than 2,878 miles.

Armament: one internally mounted M61A1 20 mm six-barrel cannon; up to four AIM-9L/M/X Sidewinder and up to four AIM-7 Sparrow air-to-air missiles, or up to eight AIM-120 Advanced Medium-Range Air-to-Air Missiles (AMRAAMs), carried externally.

COMMENTARY

For more than 30 years, the F-15 has provided the capability to penetrate hostile defenses and establish air superiority over enemy systems through a combination of superior maneuverability and acceleration, range, weapons, and avionics. F-15 fighters deployed to the Persian Gulf for Desert Storm accounted for 34 of the 37 USAF air-to-air victories, and in Iraqi Freedom F-15Cs led coalition aircraft in maintaining aerial dominance.

F-15A (single-seat) and **F-15B** (two-seat) fighters became USAF's front-line fighter immediately upon introduction in the mid-1970s. A multimission avionics system includes APG-63 pulse-Doppler radar for long-range detection and tracking of small high-speed objects down to treetop level and effective weapons delivery, a HUD for close-in combat, identification, friend or foe (IFF), and INS. F-15A/Bs now serve with ANG. F-15A/Bs retrofitted with E-kit upgrades have additional thrust and improved combat capability.

F-15C (single-seat) and **F-15D** (two-seat) models followed in June 1979. Improvements included 2,000 lb of additional internal fuel and provision for carrying conformal fuel tanks (CFTs), reducing in-flight refueling requirements and increasing time in the combat zone. From 1983 through 1997, tactical capabilities were enhanced extensively through the multistaged improvement program (MSIP), a program of installation of new or modification of existing avionics equipment, allowing for the carriage of more advanced weapons, and increased self-protection. The last 43 aircraft were delivered with the APG-70 radar. The F-15C/Ds that USAF expects to remain in the fleet until 2025 have been further upgraded with the APG-63(V)1. One squadron in Alaska received the later APG-63(V)2, featuring an active electronically scanned array (AESA), permitting the aircraft to track multiple targets and to guide air-to-air missiles against them. The Joint Helmet Mounted Cuing System (JHMCS), a "look and shoot" head-mounted system, is intended, along with the AIM-9X, to significantly enhance lethality in close-range aerial combat. Other modifications include improved engines, GPS equipment, Litening targeting pods, and the Link 16 fighter data link; a proportion will receive the next generation APG-63(V)3 AESA radar. USAF is still considering its options for some 150 F-15s with known structural integrity issues.

F-15E Strike Eagle

Brief: A heavily modified, two-seat, dual-role variant of the original F-15, with weapons systems totally integrated for all-weather deep interdiction missions as well as air-to-air combat.

Function: Dual-role fighter.

Operator: ACC, AFMC, PACAF, USAFE.

First Flight: Dec. 11, 1986.

Delivered: April 1988-2004.

IOC: May 1989.

Production: 236.

Inventory: 223.

Unit Location: Eglin AFB, Fla., Elmendorf AFB, Alaska, Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath, UK, Robins AFB, Ga., Seymour Johnson AFB, N.C.

Contractor: McDonnell Douglas (now Boeing); Raytheon.

Power Plant: two Pratt & Whitney F100-PW-220, each 25,000 lb thrust; or F100-PW-229 turbofans, each 29,000 lb thrust with max afterburner.

Accommodation: crew of two, on zero/zero ejection seats.

Dimensions: span 42.8 ft, length 63.8 ft, height 18.5 ft.

Weight: empty 45,000 lb, gross 81,000 lb.

F-15 Eagle (SSgt. Aaron Allmon)

Ceiling: 50,000 ft.

Performance: max level speed at altitude Mach 2.5, ferry range with CFTs 3,000 miles.

Armament: one internally mounted M61A1 20 mm six-barrel cannon; up to four AIM-9 Sidewinder and up to four AIM-7 Sparrow air-to-air missiles, or up to eight AIM-120 AMRAAMs; up to six AGM-65 Maverick air-to-surface missiles; AGM-130; EGBU-15 and GBU 10/12/15/24/28/31/38 guided munitions; CBU 87/89/97 unguided munitions; CBU-103/104/105 WCMD guided munitions, GBU-39 SDB, and nuclear weapons.

COMMENTARY

F-15E aircraft have a strengthened airframe for increased gross weight at takeoff and maneuver at nine Gs throughout the flight envelope. Cockpit controls and displays are improved, and a wide-field-of-view (WFOV) HUD is included.

For low-altitude, high-speed penetration and precision attack on tactical targets at night and in adverse weather, the F-15E carries a high-resolution APG-70 radar which provides a high-resolution synthetic aperture radar (SAR) map and LANTIRN (Low-Altitude Navigation and Targeting Infrared for Night) pods, with wide-field FLIR. The APG-70 gives the F-15E, with its AMRAAM, AIM-7, and AIM-9 load, a true multirole capability with the inherent air-to-air capability of the F-15C. The triple-redundant digital flight-control system, in combination with the LANTIRN navigation pod and the WFOV HUD, permits automatic terrain following. Other improvements include an EGI and Link 16 data link. F-15E aircraft have been JDAM- and WCMD-capable since 2003. In addition, some F-15E aircraft have been equipped with Litening and Sniper targeting pods for improved precision attack capability. External CFTs have been fitted to increase combat range while carrying ordnance. System upgrades under way include programmable armament control sets (PACS), ready-installed software for delivery of JDAM and WCMD, and an enhanced night vision capability. New core processors ensuring increased capability and reliability are being retrofitted to allow employment of the GBU-39 SDB. A number of F-15Es are to receive an AESA radar to improve targeting and mapping capabilities.

During Desert Storm, 48 USAF F-15Es were deployed to the Persian Gulf where they operated mainly at night, hunting Scud missile launchers and artillery sites using the LANTIRN system. The Strike Eagle can operate in conjunction with E-8 Joint STARS ground surveillance aircraft and has taken on a CAS role for Afghanistan operations.

F-16 Fighting Falcon

Brief: A compact, versatile, and low-cost multirole fighter aircraft that is highly maneuverable and has repeatedly proved itself in air-to-air combat and air-to-surface attack.

Function: Multirole fighter.

Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG, AFRC.

First Flight: Dec. 8, 1976 (full-scale development).

Delivered: August 1978-2005.

IOC: October 1980, Hill AFB, Utah.

Production: 2,206.

Inventory: 1,248.

Unit Location: 13 active wings, 23 ANG, and two AFRC units (one associate).

Contractor: Lockheed Martin; Northrop Grumman.

Power Plant: one augmented turbofan. General Electric F110-GE-100 (27,600 lb thrust) and Pratt & Whitney F100-PW-220 (23,450 lb thrust) are alternative standard engines. Increased performance engines (IPEs) in aircraft delivered from late 1991: Block 50: F110-GE-129 (29,000 lb thrust); Block 52: F100-PW-229 (29,100 lb thrust).

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: wingspan with missiles 32.7 ft, length overall 49.4 ft, height 16.7 ft.

Weight: (F-16C) empty (F100-PW-229) 18,591 lb, (F110-GE-129) 18,917 lb; gross, with external load (Block 40/42) 42,000 lb.

Ceiling: 50,000 ft.

Performance: max speed Mach 2, radius of action: Block 40 with two 2,000-lb bombs, two AIM-9 missiles, and external fuel, hi-lo-lo-hi 852 miles; combat range 575 miles.

Armament: one M61A1 20 mm multibarrel cannon, with 511 rd, mounted in fuselage; wingtip-mounted missiles; seven other external stores stations for fuel tanks and a range of air-to-air and air-to-surface munitions.

F-16 Fighting Falcon (Rick Llinares)

***F-22A** Raptor* (Rick Llinares)

COMMENTARY

The F-16 is the workhorse of the USAF fighter fleet, supporting the majority of precision guided munitions taskings in combat operations. The 200+ USAF F-16 multimission fighters deployed to the Persian Gulf Theater flew more sorties than any other type during Desert Storm, with 13,500 missions. In the initial stages of Iraqi Freedom, the F-16 flew hundreds of missions helping to destroy the unit cohesion of the Republican Guard.

F-16A (single-seat) and **F-16B** (two-seat) versions, incorporated advanced technologies from the start, making these aircraft two of the most maneuverable fighters built. Equipment included a multimode radar with a clutter-free look-down capability, advanced radar warning receiver (RWR), HUD, internal chaff/flare dispensers, and a 500-rd 20 mm internal gun.

Production of the F-16A and B for USAF ended in 1985. A midlife update program, undertaken cooperatively by USAF and NATO operators, improved the radar, fire-control computer, stores-management computer, and avionics software, giving F-16A/Bs the ability to use next generation air-to-air and air-to-surface weapons. A new ring-laser gyro INS and installation of the upgraded F100-PW-220E turbofan engine improved reliability and maintainability.

The Multinational Staged Improvement Program, implemented in 1980, ensured the aircraft could accept systems under development, thereby minimizing retrofit costs. All F-16s delivered since November 1981 feature built-in structural and wiring provisions and systems architecture that expand the single-seater's multirole flexibility to perform precision strike, night attack, and beyond-visual-range intercept missions. USAF has retired almost all its F-16A/B aircraft, but the versions are still in use with many international operators.

F-16C (single-seat) and **F-16D** (two-seat) aircraft were introduced at production Block 25 with MSIP II improvements in the cockpit, airframe, and core avionics and an increased-range APG-68 radar. Block 30 and 40 aircraft incorporate the General Electric F110-GE-100 engine. Deliveries began in 1984. With the exception of AFMC, all of the active, Guard, and Reserve units have since converted to F-16C/Ds. Block 30/40 aircraft are now GBU-31/38 JDAM and AGM-158 JASSM capable.

ANG and AFRC Block 25/30/32 F-16s are receiving upgrades aimed at increasing throughput and memory for new weapon capabilities, including GBU-38 JDAM, plus Advanced Identification Friend/Foe (AIFF) to reduce the risk of fratricide. These aircraft also carry the Theater Airborne Reconnaissance System (TARS), a podded system with EO sensors and future high-capacity data link to move the imagery to users on the ground.

ANG F-16s are equipped with Litening II/Litening ER targeting pods.

F-16CG Block 40/42 aircraft specialize in night attack operations with precision guided weapons. Follow-on improvements include ALE-47 improved defensive countermeasures, ALR-56M advanced RWR (Block 40 only), Very High Speed Integrated Circuit (VHSIC) technology in the AFG-68(V5) fire-control radar, a ring-laser gyro INS, GPS, a LANTIRN nav/attack system, core avionics hardware, enhanced-envelope gunsight, digital flight controls, automatic terrain following, increased takeoff weight and maneuvering limits, an 8,000-hour airframe, IPEs, and expanded envelope nine-G capability.

F-16CJ designated Block 50/52 aircraft are equipped with the High-speed Anti-Radiation Missile (HARM) targeting system (HTS) for suppression of enemy air defenses (SEAD). Block 50/52 F-16CJs have MSIP Stage III improvements, which also show up in selected retrofits of earlier F-16 blocks. These aircraft incorporate the General Electric F110 and Pratt & Whitney F100 increased performance engines (IPEs), the latest cockpit control and display technology, including a wide-angle HUD. Weapons improvements include multishot AMRAAM compatibility, GBU-31/38 JDAM, AGM-154 JSOW, and Wind-Corrected Munitions Dispenser (WCMD).

Block 50/52 aircraft, followed by Block 40/42 from 2006-10, have been undergoing a program of retrofit with a new modular mission computer developed under an F-16 common configuration implementation program (CCIP), aimed at extending operational flexibility and maintenance commonality. The software effort includes the participating European governments of the F-16 Multinational Fighter Program. CCIP also includes new color displays, Sniper XR targeting pod, JHMCS, AIM-9X, Link 16, and improved weapons capabilities. First delivery was made January 2002, and modification of Block 50/52 aircraft was completed in 2006; the program is expected to finish by 2010. The Block 50/52 aircraft have dual/alternate carriage of HARM targeting system (HTS) and Smart Target ng and Identification via Networked Geolocation (STING) and advanced targeting pods (ATP). Planned future upgrades include enhanced GPS/INS (CG/CJ aircraft).

Under Falcon STAR (STructural Augmentation Roadmap), F-16 aircraft are undergoing a structural modification program to remedy fatigue problems caused by increased usage rates and heavier than forecast gross weights. Delivery of modified aircraft started October 2004.

F-22A Raptor

Brief: High-technology follow-on for the F-15C. An all-weather, multirole fighter that combines an extremely maneuverable airframe with stealth technologies, supercruise, and integrated sensors and avionics to penetrate advanced anti-air threats and achieve air dominance.

Function: Multirole fighter.
Operator: ACC, AETC, AFMC, PACAF, ANG, AFRC.
First Flight: Sept. 7, 1997.
Delivery: 2002 (first production representative aircraft).
IOC: Dec. 15, 2005.
Production: 183 (planned).
Inventory: 97.
Unit Location: Edwards AFB, Calif., Elmendorf AFB, Alaska, Langley AFB, Va. (first operational location), Nellis AFB, Nev., Tyndall AFB, Fla.
Contractor: Lockheed Martin; Boeing.
Power Plant: two Pratt & Whitney F119-PW-100 turbofans, each in 35,000-lb thrust class.
Accommodation: pilot only, on zero/zero ejection seat.
Dimensions: span 44.5 ft, length 62 ft, height 16.6 ft.
Weight: gross 50,000 lb.
Ceiling: above 50,000 ft.
Performance (design target): max level speed at S/L 900+ mph, range more than 2,000 miles.
Armament: one internal M61A2 20 mm gun, two AIM-9 Sidewinders stored internally in the side weapons bays; six AIM-120 AMRAAMs or two AIM-120 AMRAAMs and two GBU-32 JDAMs for ground attack, stored internally in the main weapons bay; beginning 2011, up to eight SDBs can replace two JDAMs.

COMMENTARY

Built to lead USAF's "kick down the door" force, by day and night and in adverse weather and across the spectrum of missions, the **F-22A** represents an unparalleled combination of stealth, supercruise (ability to cruise at supersonic speed without using its afterburners), maneuverability, and integrated avionics allowing it to counter multiple anti-access threats. Integrated avionics and intraflight data link permit simultaneous engagement of multiple targets. The combination of flight controls, structural strength, and high-performance engines with thrust vectoring nozzles results in exceptional maneuverability. The cockpit is fitted with six color LCDs. The Primary Multifunction Display provides a view of the air and ground tactical situation, including threat identity, threat priority, and tracking information, with two Secondary Multifunction Displays showing air and ground threats, stores management, and air threat information. Two additional displays give navigation, communication, identification, and flight information. A HUD displays target status, weapon status, weapon envelopes, and shoot cues. Other equipment includes AN/APG-77 radar, an electronic warfare system with radar warning receiver and missile launch detector, JTIDS, IFF, laser gyroscope inertial reference, and GPS.

The F-22A entered engineering and manufacturing development (EMD) in August 1991. Nine aircraft were built, three without avionics to explore flight characteristics, flutter, loads, propulsion, envelope expansion, and weapons separation, and six with avionics to complete integration work, refine the pilot vehicle interface, and fly guided weapons launch tests. In addition, one static and one fatigue test airframe were built. One de-engined aircraft is now used for ground maintenance training at Tyndall AFB, Fla.

Initial operational test and evaluation (IOT&E) examining the Raptor's air dominance mission concluded mid-September 2004. JDAM capability was demonstrated that same month. Follow-on OT&E (FOT&E) completed in 2005. The F-22A had proved its air-to-air and air-to-ground attack capability when it reached IOC in December 2005, and on Jan. 21, 2006, it flew its first operational sortie from Langley AFB, Va., as part of Noble Eagle.

Production aircraft have been delivered to operational units at Langley and Elmendorf. USAF also plans to put operational F-22s at Hickam AFB, Hawaii, and Holloman

***F-35** Lightning II* (Lockheed Martin photo)

AFB, N.M. All F-22 squadrons will involve Total Force integration with Guard and Reserve forces.

F-35 Lightning II

Brief: An affordable, highly common family of next generation strike aircraft.

Function: Multirole fighter.

Operator: ACC for USAF.

First Flight: Dec. 15, 2006 (F-35A prototype).

Delivery: 2009 (anticipated first production aircraft).

IOC: 2013 (USAF).

Production: planned: 1,763 (USAF), 680 total F-35B (USMC) and F-35C (USN), 150 (UK), more to eight development partner countries.

Inventory: TBD.

Unit Location: Planned: Edwards AFB, Calif.; Eglin AFB, Fla.; Hill AFB, Utah; Kadena AB, Japan; Nellis AFB, Nev.; Shaw AFB, S.C. ANG: McEntire ANGB, S.C.

Contractor: Lockheed Martin, with Northrop Grumman and BAE Systems; Pratt & Whitney is propulsion contractor; General Electric is second source engine contractor for the production phase.

Power Plant: currently one Pratt & Whitney F135, in 40,000-lb thrust class.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: approx. span 35 ft, length 50.5 ft, height 17.3 ft.

Weight: TBD.

Ceiling: TBD.

Performance (design targets): mil power level speed at S/L, 630 knots calibrated airspeed (KCAS) for the F-35A conventional takeoff and landing (CTOL) variant (Mach 1 max power for CTOL only) and the F-35C carrier variant (CV), and 600 KCAS for the F-35B short takeoff and vertical landing (STOVL) aircraft, combat radius more than 590 miles for CTOL variant, 600 miles for CV, and 450 miles for STOVL.

Armament: (main weapons bay): CTOL: one internal 25 mm gun, two AIM-120Cs, and two GBU-31 JDAMs. CV: two AMRAAMs and two GBU-31 JDAMs. STOVL: two AMRAAMs and two GBU-32 JDAMs. External carriage also will be available. (Note: Numerous other weapons capabilities will be added as system development continues.)

COMMENTARY: The F-35 Lightning II Joint Strike Fighter is a multinational cooperative development program aimed at developing and fielding an affordable, highly common family of next generation strike fighters. For US forces, these comprise the **F-35A** CTOL version, the F-35B STOVL version for USMC, and F-35C CV carrier version for USN. USAF's F-35A will replace its current force of F-16 and A-10 aircraft with a stealthy multirole fighter that will comprise the bulk of USAF's fighter fleet for up to 50 years. This advanced multimission fighter is designed to penetrate high-threat enemy airspace and engage all enemy targets in any conflict. In addition to its advanced stealth design, the F-35 incorporates maneuverability, long range, and highly advanced avionics to accomplish the bulk of USAF missions. Its fully integrated avionics and weapons systems will permit simultaneous engagement of multiple targets in enemy airspace.

The concept demonstration phase (CDP) of the program commenced November 1996, with competitive contract awards to Lockheed Martin (X-35A) and Boeing (X-32A). CDP concluded in fall 2001 with Lockheed Martin declared the winner. The system development and demonstration (SDD) phase, begun in October 2001, focuses on system development, test and evaluation, logistics support, and LRIP planning. A total of 18 test aircraft are being built, 12 for flight testing, six for nonairborne activities. Lockheed Martin completed assembly of the first F-35A flight-test aircraft in February 2006 and flight testing commenced Dec. 15, 2006. Flight testing was suspended for five months during 2007 following the discovery of an electrical fault in May. The first flight by a USAF test pilot took place on Jan. 30, 2008. The F-35 is powered by the F135, a derivative of the Pratt & Whitney F119 engine. General Electric has been under contract to develop an interchangeable power plant, the F136, but the future for the alternative production engine is currently unclear.

F-117 Nighthawk

Brief: World's first operational aircraft designed to exploit low observable (LO) stealth technology to expand the range of heavily defended critical targets that can be attacked.

Function: Attack aircraft.

Operator: ACC, AFMC.

First Flight: June 18, 1981.

Delivered: 1982-summer 1990.

IOC: October 1983.

Production: 59.

Inventory: 44.

Unit Location: Eglin AFB, Fla., Holloman AFB, N.M.

Contractor: Lockheed Martin; Raytheon.

Power Plant: two General Electric F404-GE-F1D2 nonafterburning turbojets, each 9,040 lb thrust.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: span 43.3 ft, length 65.9 ft, height 12.4 ft.

Weight: empty (estimated) 29,500 lb, max gross 52,500 lb.

Ceiling: 35,000 ft.

Performance: high subsonic, top speed 646 mph (0.9 Mach), mission radius, unrefueled (5,000-lb weapons load) 656 miles.

Armament: full internal carriage of a variety of tactical weapons, incl laser- and GPS-guided 2,000-lb munitions, unguided general-purpose bombs, and cluster munitions. JDAM capability being introduced.

COMMENTARY

F-117 was the Air Force's primary attack aircraft for penetrating high-threat target areas with precision weapons. Its small radar signature, LO technologies, and advanced targeting system allow the aircraft to penetrate dense threat environments and to deliver precision weapons against heavily defended, high-value targets with pinpoint accuracy. Primary missions include precision attack, air interdiction, SEAD, and special operations.

Acknowledged publicly in November 1988, the F-117's first operational deployment was to Panama in 1989 for Just Cause.

F-117A development and manufacture began simultaneously in November 1978 within a highly classified environment, using many parts either transferred or modified from existing aircraft. The F-117As were deployed with the 4450th Tactical Group (redesignated 37th TFW in 1989) at Tonopah Test Range Airfield, Nev., where operations were restricted mainly to night flying to maintain secrecy. In 1992, they were transferred to the 49th FW at Holloman AFB, N.M.

To achieve the aircraft's minimal radar signature, the skin panels of the arrowhead-shaped airframe are divided into many small, perfectly flat surfaces (facets), which deflect at a variety of angles all signals from probing hostile ground or airborne radars. In addition, much of the aircraft's external surface is made of composites and radar-absorbent materials. The F-117A's dull black finish reflects little light, and the engine air intakes and exhaust nozzles are above the wings and rear fuselage, respectively, to shield them from IR seekers below. The two nonafterburning turbofans give the aircraft low noise signature and high subsonic performance.

Key features include a state-of-the-art digital avionics suite integrating sophisticated navigation and attack systems, complemented by a specially developed automated mission-planning system. A high-precision INS coupled to GPS is installed. An upgraded dual-turret IR targeting system, combined with boresight laser designators and autotracker, ensures precision attack.

Other improvements since 1989 have included upgraded cockpit display and instrumentation and adverse weather capability via advanced weapons. USAF plans to retire the F-117 in the spring of 2008.

MQ-9 Reaper

Brief: A medium-to-high altitude, long-endurance remotely piloted UAV. Joint force commander multimission asset as a persistent hunter-killer against emerging targets.

Function: Unmanned attack and reconnaissance aircraft.

Operator: ACC.

First Flight: February 2001.

Delivered: November 2003.

IOC: FY07.

Production: 92 (planned).

Inventory: 13.

Unit Location: Creech AFB, Nev.

Contractor: General Atomics Aeronautical Systems.

Power Plant: one Honeywell TPE-331-10GDT turboprop engine.

Accommodation: unmanned system.

Dimensions: length 36.2 ft, span 66 ft.

Weight: empty 4,900 lb, gross 10,500 lb.

Ceiling: 30,000+ ft.

Performance: cruise speed 230 mph, endurance 14+ hours.

Armament: combination of AGM-114 Hellfire missiles, GBU-12, and GBU-38 JDAM.

COMMENTARY

Officially combat-operational in Afghanistan since September 2007, the MQ-9 Reaper is larger than the MQ-1, has eight times the range, and flies twice as high. The typical MQ-9 system consists of several aircraft, a GCS, communications equipment/links, spares, and

***F-117A** Nighthawk* (TSgt. James R. Hart Jr.)

***YAL-1A** Airborne Laser* (Bobbi Zapka, Boeing photo)

active duty and/or contractor personnel. The crew is one pilot and one sensor operator. To meet combatant commanders' requirements, the MQ-9 delivers tailored capabilities using mission kits that may contain various weapons and sensors payload combinations.

The sensor suite for targeting includes a color/monochrome daylight TV, infrared, image intensified TV with a laser rangefinder/designator to precisely designate targets for laser guided munitions. The SAR enables GBU-38 JDAM targeting. The sensor is capable of very fine resolution in both spotlight and strip modes. The SAR also has ground moving target indicator capability.

YAL-1A Attack Airborne Laser

Brief: The prototype YAL-1A, using a modified 747-400F platform, will be used to demonstrate the ability of an airborne high-energy laser to shoot down ballistic missiles in their boost phase.

Function: Airborne laser.

Operator: AFMC.

First Flight: July 18, 2002 (Block 04 test bed).

Delivered: 2002.

IOC: TBD.

Production: TBD.

Inventory: TBD.

Unit Location: Edwards AFB, Calif.

Contractor: Boeing (ABL platform; battle management (BM) system); TRW (now Northrop Grumman) (COIL and subsystems); Lockheed Martin (beam control system).

Power Plant: four GE CF6-80 turbofans, each 61,500 lb thrust.

Accommodation: flight crew of two, plus four mission specialists.

Dimensions: span 211.4 ft, length 228.8 ft, height 63.7 ft.

Weight: empty 423,882 lb, gross 800,000 lb.

Ceiling: 45,000 ft.

Performance: max operating speed Mach 0.83, max laser weapon range hundreds of miles, unrefueled endurance at 40,000 ft with operational laser weapon load approx six hr. Chemical fuel carried on board will enable more than 20 shots.

COMMENTARY

The Airborne Laser (ABL) has been projected as the first directed energy weapon in the US arsenal. However, the Fiscal 2007 defense budget downgraded the program to a demonstration project, culminating in a planned test destruction of a boosting ballistic missile over the Pacific in late 2009. Overall direction and budget authority for the program lies with the Missile Defense Agency (MDA), while USAF continues to man and develop the program through its Airborne Laser System Program Office at Kirtland AFB, N.M. Planning and engineering for future operational aircraft is on hold pending the results of the test.

Operational concepts call for ABLs to fly continuous patrols over deployed US forces, at an altitude of 40,000 ft. The aircraft would detect and shoot down any ballistic missiles launched at US forces or nearby allied nations. The ABL also would have the capability of determining hostile launch locations and passing that information to other US assets.

Central to the system is a Chemical-Oxygen Iodine Laser (COIL) system, running down the interior of the aircraft. Laser fire will emerge through a large ball turret in the nose. The system is designed to track ballistic missiles and maintain laser focus on their skin, which, when sufficiently heated, will cause the pressurized fuel within to explode.

The lightweight, megawatt-class COIL technology can deliver high energy over a great distance largely because of its IR wavelength. In addition to the COIL, the ABL houses three other lasers: the active ranger system, which provides preliminary tracking data; the track illuminator laser, which produces more refined data; and the beacon illuminator laser, which measures atmospheric disturbance.

Following a two-year structural modification, the ABL platform's first flight took place July 18, 2002 from Boeing's Wichita, Kan., facility. A 10-month laser module test was completed in 2002, and, in December 2002, the platform was flown to Edwards AFB, Calif., for system installation. With YAL-1A in the hangar, tests were conducted independently on the ABL optical system and the six laser modules that make up the complete COIL system. All six modules were successfully tested on Nov. 10, 2004. The aircraft resumed airworthiness flight testing in December 2004, following installation of the beam control/fire-control system; performance demonstration of these systems was completed in August 2005. The aircraft was modified during 2006 to prepare for installation of the COIL laser, which was completed in early 2008. The integrated system is slated to begin ground and flight testing this summer, working toward shootdown of a boosting ballistic missile in 2009.

***E-3** Sentry* (Richard VanderMeulen)

Reconnaissance and Surveillance Aircraft

E-3 Sentry

Brief: Heavily modified Boeing 707-320B aircraft, fitted with an extensive complement of mission avionics providing all-weather air surveillance and command, control, and communications for tactical and air defense forces.

Function: Airborne early warning, tactical battle management, and C2 of theater air forces.

Operator: ACC, PACAF, AFRC (assoc.).

First Flight: Oct. 31, 1975 (full avionics).

Delivered: March 1977-84.

IOC: 1977.

Production: 34.

Inventory: 32.

Unit Location: Elmendorf AFB, Alaska, Kadena AB, Japan, Tinker AFB, Okla. AFRC: (assoc.) Tinker AFB, Okla.

Contractor: Boeing; Northrop Grumman (radar); Lockheed Martin (computer).

Power Plant: four Pratt & Whitney TF33-PW-100/100A turbofans, each 21,000 lb thrust.

Accommodation: flight crew of four; 13-19 mission specialists.

Dimensions: span 145.8 ft, length 152.9 ft, height 41.5 ft.

Weight: gross 347,000 lb.

Ceiling: 38,000 ft.

Performance: optimum cruise Mach 0.78, endurance eight hr unrefueled.

COMMENTARY

The E-3 Airborne Warning and Control System (AWACS) aircraft is capable of surveillance from Earth's surface up to the stratosphere, over land or water, at more than 200 miles. During conflict it will coordinate the actions of hundreds of strike, support, and cargo aircraft. As an integrated Air Force command control battle management (C2BM) surveillance, target detection, and tracking platform, AWACS is directly subordinate to the joint air operations center. Its extensive range of mission avionics enables it to provide an accurate real-time battlespace picture of friendly, neutral, and hostile activity; command and control of an area of responsibility; battle management of theater forces; all-altitude/all-weather surveillance of the battlespace; and early warning of enemy actions.

AWACS may be employed alone or horizontally integrated with other C2BM and ISR elements. It provides the theater with the ability to find, fix, track, and target airborne or maritime threats and to locate and identify emitters. It can operate beyond the coverage of ground-based C2 and can exchange data with other C2 platforms and weapon systems.

E-3A. Of the 24 built for USAF in standard production configuration, 22 were later upgraded.

An improved US/NATO Standard E-3A configuration was initiated with the 25th USAF Sentry, delivered in December 1981, with a larger-memory computer and a maritime detection capability. Nine were built new for USAF, and one of the original E-3As was upgraded.

E-3B is the upgraded earliest version E-3A. Twenty-two product prototypes were produced. Improvements include much-enhanced computer capabilities, jam-resistant communications, austere maritime surveillance capability, additional radio communications, and five additional display consoles.

E-3C is an upgrade to the original 10 US/NATO Standard E-3A aircraft, with additional radio, console, and radar capabilities. Redelivered 1984.

A series of major sustainability, reliability, and availability upgrades for USAF E-3s has been undertaken to support the continuing demands on the system. Upgrades include new passive detection systems, known as electronic support measures (ESM), that complement the active beaming radar, enabling the aircraft to detect signals emitted by both hostile and friendly targets, improved Joint Tactical Information Distribution System (JTIDS), jam-resistant communications,

***E-8** Joint STARS* (USAF photo)

increased computer capacity, and GPS capability. Radar system improvements permit AWACS aircraft operating in the pulse-Doppler mode to detect smaller, stealthier targets. Installation begun in 2005 of new air traffic management systems, and advanced satellite communications permits use of optimum altitudes and flight routes. A single, long-term contract awarded in 2001 provides for ongoing improvement and management support.

E-8 Joint STARS

Brief: A modified Boeing 707 equipped with a large, canoe-shaped radome mounted under the forward part of the fuselage, housing long-range, air-to-ground radar capable of locating, classifying, and tracking vehicles moving on Earth's surface out to distances in excess of 124 miles. Such data are then transmitted via data link to ground stations or other aircraft.

Function: Ground surveillance, battle management (BM), C2 aircraft.

Operator: ACC and ANG, as the blended 116th Air Control Wing.

First Flight: December 1988.

Delivered: May 1996-present

IOC: Dec. 18, 1997.

Production: 18.

Inventory: 18.

Unit Location: Robins AFB, Ga.

Contractor: Northrop Grumman; Motorola; Cubic; Raytheon.

Power Plant: four Pratt & Whitney TF33-102C turbojets, each 19,200 lb thrust.

Accommodation: mission crew of 21 Air Force/Army operators (can be augmented to 34).

Dimensions: span 145.8 ft, length 152.9 ft, height 42.5 ft.

Weight: gross 336,000 lb.

Ceiling: 42,000 ft.

Performance: max operating speed Mach 0.84, endurance with one in-flight refueling 20 hr.

COMMENTARY

Joint STARS (Surveillance Target Attack Radar System) is a battle management (BM) platform capable of providing commanders with transformational C2 and near-real-time wide area surveillance ultimately passing targeting information to air and ground commanders. Joint STARS battle managers use the sensor and a robust communications suite to engage enemy forces in day, night, and adverse weather conditions. The radar subsystem features a multimode, side-looking, phased-array radar that provides interleaved moving target indicator (MTI) information, synthetic aperture radar (SAR) imagery, and fixed target indicator imagery. Joint STARS downlinks via a secure, jam-resistant digital data link and beyond-line-of-sight satellite radio communications. Multiple receivers are in use, predominantly the US Army's Common Ground Station and Joint Services Work Station.

As part of their operational test and evaluation, Joint STARS aircraft flew more than 150 operational missions during Desert Storm (with two E-8A development aircraft) and Joint Endeavor (with one E-8A and one test bed E-8C). During Iraqi Freedom, EC-8C Joint STARS aircraft were airborne 24 hours a day to help coalition forces maintain battlefield awareness. The E-8C's unique, long-dwell MTI capability is being used in increasingly creative ways, keeping it relevant to the joint force commander.

E-8A. Prototype version, with specialized equipment installed aboard two specially modified 707-300 airframes. One was converted to an in-flight pilot trainer in 1997, and the second was scrapped.

E-8C. Production version, based on former commercial 707-300 airframes. Equipped with 18 operations and control consoles, two of which double as communications stations, all the aircraft have been modified to the more capable Block 20 aircraft, featuring more powerful computers and an Internet protocol local area network. The first E-8C became operational in 1996, and these aircraft are expected to remain airworthy until at least 2034. System improvements under way include Link 16 upgrade for improved control and battle management; enhanced radar modes; new satellite communications radios; upgrades to allow Joint STARS to assume the Airborne Battlefield Command and Control Center (ABCCC) mission of attack support to ground force commanders; installation of the Force XXI Battle Command Brigade and Below (FBCB2) terminal, greatly enhancing situational awareness to friendly forces; IP connectivity; and communications navigation surveillance air traffic management upgrades to permit use of optimum altitudes and flight routes in increasingly congested commercial airspace in response to new stringent international navigation standards. USAF is now beginning the process of re-engining the E-8C to improve operational performance following cancellation of the E-10 program.

MQ-1 Predator (USAF photo)

MQ-1 Predator

Brief: A medium-altitude, long-endurance unmanned aerial vehicle (UAV), flown remotely, providing joint force commanders with a multimission asset, by combining imagery sensors with strike capability.

Function: Armed reconnaissance, airborne surveillance, target acquisition.

Operator: ACC; AFSOC; ANG.

First Flight: July 1994.

Delivered: July 1994 (USAF from 1996)-present.

IOC: 2003.

Production: 170 air vehicles (objective force).

Inventory: 131.

Unit Location: Cannon AFB, N.M. (planned), Creech AFB, Nev., Nellis AFB, Nev. ANG: Davis-Monthan AFB, Ariz., Ellington Field, Tex., Hector Arpt., N.D., March ARB, Calif.

Contractor: General Atomics Aeronautical Systems.

Power Plant: one Rotax 914F turbocharged engine.

Accommodation: unmanned system.

Dimensions: Block 5/10/15: length 27 ft, height 6.9 ft, span (Block 5) 48.7 ft, (Block 10/15), 55.2 ft.

Weight: empty 950 lb, gross 2,250 lb.

Ceiling: 25,000 ft.

Performance: cruise speed 80 mph, up to 138 mph, endurance 24 hr (460 miles with 16 hr on station).

Armament: Two Hellfire missiles.

COMMENTARY

Since its introduction in the mid-1990s, the Predator UAV has evolved into a vital component of USAF's warfighting inventory. A Predator system includes four air vehicles, a ground control station (GCS), satellite link, and about 55 personnel for 24-hour operations. The Predator crew comprises a pilot and two sensor operators.

DOD first used the advanced concept technology demonstration (ACTD) Predator in 1995 to support Provide Promise. In 1996, USAF took over the Predator program, and in 1999, while the UAV was still in development, the service deployed the system operationally for surveillance missions over Bosnia and Iraq. In February 2001, USAF successfully completed Phase 1 of the Hellfire demonstration. Since then, Predators armed with the Hellfire missiles have been used to attack targets in Afghanistan and Iraq. USAF changed the designation for Predator A to MQ-1 to denote its multimission capability for both reconnaissance and strike. Currently, the Predator performs remote split operations by forward deploying Launch and Recovery GCS (LRGCS) aircraft and support personnel for takeoff and landing operations, while the CONUS-based GCS conducts the mission via extended communication links.

MQ-1 designates the multimission weaponized Predator A. It carries an MTS A sensor ball supplied by Raytheon in place of the Wescam sensor ball. The MTS A provides a laser target designator with EO/IR sensors in a single package. The SAR must be removed to make room for some of the laser designator equipment. The MQ-1 can be controlled via direct line of sight or via satellite from a remote location.

RQ-1A. The ACTD version of Predator A.

RQ-1B. The reconnaissance-only version of Predator A, with an internal 450-lb surveillance payload, including two EO and one IR video cameras carried in a ball-shaped turret under the nose and produced by Wescam. The internal sensor payload includes a SAR still imagery camera for a day/night, all-weather reconnaissance capability. USAF has retrofitted RQ-1Bs to MQ-1 configuration.

OC-135 Open Skies

Brief: A modified C-135 aircraft that flies unarmed observation and verification flights over nations that are parties to the 1992 Open Skies Treaty.

Function: Reconnaissance aircraft.

Operator: ACC.

First Flight: 1993.

Delivered: 1993-96.

IOC: October 1993.

Production: three.

Inventory: two.

Unit Location: Offutt AFB, Neb.

Contractor: Boeing.

Power Plant: four Pratt & Whitney TF33-P-5 turbofans, each 16,050 lb thrust.

Accommodation: seating for 35, incl cockpit crew, aircraft maintenance crew, foreign representatives, and crew members from the Defense Threat Reduction Agency.

Dimensions: span 131 ft, length 135 ft, height 42 ft.

Weight: gross 297,000 lb.

Ceiling: 50,000 ft (basic C-135).

Performance: speed: 500+ mph, unrefueled range 3,900 miles.

COMMENTARY

A modified version of the WC-135, used for specialized arms control treaty observation and imagery collection missions with vertical-looking and panoramic optical cameras installed in the rear of the aircraft.

OC-135B modifications include one vertical and two oblique KS-87E framing cameras, used for photography approximately 5,000 ft above the ground, and one KA-91C panoramic camera, which pans from side to side to provide a wide sweep for each picture, used for high-altitude photography up to approximately 35,000 ft. Data is processed and recorded by a recording and annotation system.

RC-135

Brief: Specially configured variant of the Boeing C-135 Stratolifter, having an elongated nose and cheeks containing highly advanced electronic signal collection systems. Used to acquire real-time electronic and signals intelligence data for theater and tactical commanders.

Function: Electronic reconnaissance aircraft.

Operator: ACC.

First Flight: not available.

Delivered: circa 1973-99.

IOC: circa 1973 (Rivet Joint).

Production: (converted).

Inventory: 22.

Unit Location: Offutt AFB, Neb.

Contractor: Boeing (airframe); L3 Communications; Textron.

Power Plant: four CFM International F-108-CF-201 turbofans, each 24,000 lb thrust.

Accommodation: flight crew of three; 25-35 mission crew.

Dimensions: span 131 ft, length 140 ft, height 42 ft

Weight: max gross 299,000 lb.

Ceiling: 35,000 ft.

Performance: speed 500+ mph, range, with air refueling, unlimited.

COMMENTARY

The 55th Wing at Offutt AFB, Neb., operates a highly specialized fleet of RC-135s for worldwide reconnaissance missions. All are subject to ongoing modernization, with upgrade of avionics and primary mission equipment to expand capability and maintain effectiveness.

RC-135S Cobra Ball (CB). Three aircraft. Cobra Ball collects measurement and signature intelligence (Masint) data, providing the capability to monitor missile-associated signal activity and to track missiles during boost and re-entry phases of flight. Cobra Ball can deploy anywhere in the world in 24 hours and provide on-scene EO reconnaissance for treaty verification and theater ballistic missile proliferation. Equipment includes wide-area IR sensors, long-range optical cameras, and an advanced communications suite.

RC-135U Combat Sent (CS). Two aircraft. Each Combat Sent aircraft has a specifically designed signals intelligence (Sigint) suite used primarily to collect scientific and technical (S&T) electronic intelligence (Elint) data against air-, land-, and sea-based emitter systems. The accuracy of CS data is critical to the effective design, programming, and reprogramming of radar warning receivers as well as jammers, decoys, and anti-radiation missiles and to the development of effective threat simulators.

RC-135V/W Rivet Joint (RJ). Seventeen aircraft. Rivet Joint is a self-contained standoff airborne signals intelligence (Sigint) collection system. Its primary role is to exploit the "electronic" battlefield and deliver near-real-time (NRT) intelligence-surveillance-reconnaissance (ISR) information to tactical forces, combatant commanders, and national command authorities across the full spectrum of conflict. Onboard collection capabilities encompass rapid search, detection, measurement, identification, demodulation, geolocation, and fusion of data from potentially thousands of electronic emitters.

TC-135S/W. Used for training purposes.

***U-2** Dragon Lady* (A1C Chad Strohmeyer)

***RQ-4** Global Hawk* (Bobbi Zapka, Northrop Grumman photo)

RQ-4 Global Hawk

Brief: A high-altitude, long-range, long-endurance UAV.

Function: Unmanned surveillance and reconnaissance aircraft.

Operator: ACC.

First Flight: Feb. 28, 1998.

Delivered: seven ACTD (no longer in inventory); seven Block 10 production aircraft.

IOC: ACTD system used operationally from November 2001 in Afghanistan and Iraq. Block 10s currently employed in CENTCOM theater.

Production: 54 (planned).

Inventory: 12.

Unit Location: Beale AFB, Calif., Grand Forks AFB, N.D. (planned), three forward operating bases planned for AFCENT, PACAF, and USAFE.

Contractor: Northrop Grumman (prime); Raytheon.

Power Plant: one Rolls Royce-North American AE 3007H turbofan, 7,600 lb thrust.

Accommodation: unmanned system.

Dimensions: Block 10: length 44.4 ft, height 15.2 ft, span 116.2 ft; Block 20/30/40: length 47.6 ft, span 130.9 ft.

Weight: gross Block 10: 25,600 lb; Block 20/30/40: 32,250 lb.

Ceiling: Block 10: 60,000+ ft; Block 20/30/40: up to 60,000 ft.

Performance: Block 10/20/30/40 endurance at least 28 hr. Block 10 cruise speed 340 knots. Block 20/30/40 cruise speed projected at 310 knots.

Armament: none.

COMMENTARY

The RQ-4 provides high-altitude, persistent (28+ hours) remotely piloted ISR capability. The system consists of an aircraft, GCS, and a suite of highly capable sensors.

The RQ-4 Global Hawk is being fielded in four distinctive blocks. Block 10 is in an imagery intelligence (Imint) configuration (EO/IR/SAR) and is basically a derivative of the ACTD aircraft successfully employed in Afghanistan and Iraq. Two Block 10s are currently flying operational missions supporting the war on terror. Block 20s (Imint) are larger versions of the Block 10; the first of six is expected to be operational by the end of FY09. Block 30 multi-int aircraft will add a high- and low-band signals intelligence (Sigint) capability to Block 20 Imint capability; fielding of 26 is projected from early FY12. Fifteen Block 40 multimission aircraft will provide radar Imint and battle management and command and control (BMC2) support with the multiplatform radar technology improvement program (MP-RTIP) active electronically scanned array (AESA) sensor.

U-2 Dragon Lady

Brief: Single-seat, single-engine, high-altitude endurance reconnaissance aircraft carrying a wide variety of sensors and cameras, providing continuous day or night high-altitude, all-weather area surveillance in direct support of US forces.

Function: High-altitude reconnaissance.

Operator: ACC.

First Flight: Aug. 4, 1955 (U-2); 1967 (U-2R); October 1994 (U-2S).

Delivered: 1955-October 1989.

IOC: circa 1956.

Production: 35 (U-2S/ST).

Inventory: 33.

Unit Location: Beale AFB, Calif.

Contractor: Lockheed Martin.

Power Plant: F118-GE-101 turbojet.

Accommodation: one (two for trainer)

Dimensions: span 103 ft, length 63 ft, height 16 ft.

Weight: gross 40,000 lb.

Ceiling: above 70,000 ft.

Performance: speed 475 mph; range more than 4,500 miles; max endurance 10+ hr.

COMMENTARY

The U-2 is the Air Force's premier high-altitude reconnaissance platform, capable of carrying multi-int sensors simultaneously, making it USAF's only truly operational multi-intelligence platform and a key performer in combat operations.

Although the U-2 was designed initially in the 1950s, current aircraft were produced primarily in the 1980s when the production line was reopened to produce the TR-1, a significantly larger and more capable version than the earlier aircraft. Deliveries ended in October 1989.

U-2R (single-seat) and **U-2RT** (two-seat) aircraft. In 1992, all existing U-2s and tactical TR-1s were consolidated under the designation U-2R.

U-2S (single-seat) and **TU-2ST** (two-seat). The current designations of all aircraft in the inventory. Conversion to S model configuration began in October 1994. Included in the ongoing $1.5 billion improvement program are new F118-GE-101 engines. Each current operational U-2 is now the Block 20 version with a new glass cockpit using multifunction displays (MFDs), a digital autopilot, and a new electronic warfare system. Sensor upgrades include the ASARS-2A SAR sensor, which provides enhanced imaging modes and improves geolocation accuracy; the SYERS-2 EO imagery system providing DOD's only multispectral and IR capability; enhanced RF-intelligence capability and new data links, enabling the U-2 to connect in near real time with network-centric hubs as well as line-of-sight ground stations, airborne data relays, and beyond-line-of-sight satellite data relays simultaneously.

NASA has two ER-2 versions of the U-2 used for high-altitude scientific experiments and atmospheric research, including investigation of global ozone depletion.

Special Duty Aircraft

E-4B National Airborne Operations Center

Brief: A four-engine, swept-wing, long-range, high-altitude airplane providing a highly survivable C3 center allowing national/defense leaders to direct US forces, execute emergency war orders, and coordinate actions by civil authorities.

Function: Airborne operations center.

Operator: ACC.

First Flight: June 13, 1973 (E-4A); June 10, 1978 (E-4B).

Delivered: December 1974-85.

IOC: December 1974 (E-4A); January 1980 (E-4B).

Production: four.

Inventory: four.

Unit Location: Offutt AFB, Neb.

Contractor: Boeing; Rockwell; Raytheon E-Systems.

Power Plant: four General Electric CF6-50E2 turbofans, each 52,500 lb thrust.

Accommodation: up to 114 (63 crew/battle staff; 51 passengers.

Dimensions: span 195.7 ft, length 231.3 ft, height 63.4 ft.

Weight: gross 800,000 lb.

Ceiling: above 40,000 ft.

Performance: 6,900+ miles; unrefueled endurance in excess of 12 hr; with aerial refueling up to 72 hr.

COMMENTARY

A militarized version of the Boeing 747-200, **E-4B** aircraft perform the National Airborne Operations Center (NAOC) mission. The E-4B fleet provides a survivable C3 platform throughout the full threat spectrum, including sustained operations in a nuclear environment. First operational mission was flown in March 1980.

E-4Bs are hardened against the effects of nuclear explosions, including electromagnetic pulse, and have in-flight refueling capability. A 1,200-kVA electrical system supports advanced system electronics as well as state-of-the-art communications and data processing equipment such as EHF Milstar satellite terminals and six-channel International Maritime Satellite (Inmarsat). A triband radome also houses the E-4B's superhigh frequency (SHF) frequency division multiple access (FDMA) communications antenna, the only such system on an airborne platform.

The E-4B system is capable of linking with commercial telephone and radio networks and could be used for radio broadcasts to the general population. E-4Bs also support the Federal Emergency Management Agency (FEMA).

In October 2006, the E-4B entered a new era when the first Modernization Block 1 (MB 1) upgrade aircraft reached

IOC. MB 1 updates the electronic infrastructure supporting the aircraft's primary mission equipment and increases the bandwidth of external communications and onboard data transfer. These updates, along with changes to the aircraft's interior configuration, internal noise reduction modifications, BM improvements, and Global Air Traffic Management (GATM) avionics modifications, ensure the E-4B effectiveness for the foreseeable future. Two E-4B aircraft have received the MB 1 upgrade and a third is undergoing modification.

EC-130 Commando Solo
Brief: A heavily modified C-130 used for EW and electronic combat.
Function: psychological warfare.
Operator: ANG.
First Flight: January 1990.
Delivered: March 1990 (J model from 2003).
IOC: December 1990.
Production: (no new-build E); seven (J).
Inventory: seven (J).
Unit Location: ANG: Harrisburg Arpt., Pa.
Contractor: Lockheed Martin; Raytheon; General Dynamics.
Power Plant: (EC-130E) T-56-A-1S turboprops, each 4,200 shp; (EC-130J) four Rolls Royce-Allison AE2100D turboprops, each 4,591 shp.
Accommodation: three flight crew, six mission (J).
Dimensions: EC-130J: span 132.6 ft, length 97.8 ft, height 38.9 ft.
Weight: EC-130J: gross 175,000 lb.
Ceiling: EC-130J: 30,500 ft.
Performance: speed 299 mph, range in excess of 2,100 miles; (C-130J) 393 mph, range 4,140 miles.
COMMENTARY
EC-130E ABCCC Airborne Battlefield Command and Control Center. Seven aircraft were updated by Unisys to ABCCC III standard. The advanced JTIDS received data transmitted by AWACS aircraft and other systems, enabling the crew to see a real-time picture of air operations over a combat area. Now retired.
EC-130E Commando Solo. Version used by the ANG as a broadcasting station for psychological warfare operations. Specialized modifications include enhanced navigation systems, self-protection equipment, and worldwide color television configuration. Replaced by EC-130J version.
EC-130J Commando Solo II. Specialized versions of the latest-model C-130 aircraft, ordered to replace E models, with current mission equipment transferred from the older E model Commando Solo aircraft. Entered service in 2004 with the 193rd SOW (ANG). Modifications include enhanced navigation systems, additional self-protection equipment, air refueling, and the ability to broadcast radio and color TV on all worldwide standards.
Commando Solo aircraft have been used in every war and most contingency operations since 1980, supporting a broad spectrum of information operations and psychological operations missions.

EC-130H Compass Call
Brief: A heavily modified C-130 for electronic combat.
Function: Electronic warfare.
Operator: ACC.
First Flight: 1981.
Delivered: 1982.
IOC: 1983; (Block 30) February 1999.
Production: (converted).
Inventory: 14.
Unit Location: Davis-Monthan AFB, Ariz.
Contractor: Lockheed Martin.
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: standard crew 13, incl 9 mission.
Dimensions: span 132.6 ft, length 99 ft, height 38 ft.
Weight: 155,000 lb.
Ceiling: 25,000 ft.
Performance: speed 374 mph at 20,000 ft.
COMMENTARY
A variant used as an airborne communications jamming and information warfare platform. The system disrupts enemy C2 communications. Modifications include electronic attack (EA) system and air refueling capability. Programmed upgrades will expand the EC-130H's mission by procuring a secondary EA capability against early warning and acquisition radars. Completion expected FY11.

WC-130 Hercules
Brief: A high-wing, medium-range aircraft flown by AFRC for weather reconnaissance missions. It flies into the eye of tropical cyclones or hurricanes, collecting weather data from within the storm's environment.
Function: Weather reconnaissance aircraft.
Operator: AFRC.
First Flight: circa 1959.
Delivered: October 1999-2002.
IOC: 1959.
Production: no new-build WC-130H; 10 WC-130J.
Inventory: 10 (H); 10 (J).
Unit Location: AFRC: Keesler AFB, Miss.
Contractor: Lockheed Martin.
Power Plant: WC-130J: four Rolls Royce AE2100D3 turboprops, each 4,500 shp.
Accommodation: six.
Dimensions: WC-130J: span 132.6 ft, length 97.8 ft, height 38.9 ft.
Weight: WC-130J: gross 175,000 lb.
Ceiling: WC-130J: 30,500 ft.
Performance: speed 374 mph at 20,000 ft.
COMMENTARY
The WC-130 is flown by AFRC's "Hurricane Hunters." The hurricane reconnaissance area includes the Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and central Pacific Ocean areas.
WC-130B/E. Early version C-130 modified for weather reconnaissance. Now retired.
WC-130H. Later version C-130s modified for weather reconnaissance duties, equipped with two external 1,400-gallon fuel tanks, an internal 1,800-gallon fuel tank, and uprated Allison T56-A-15 turboprops, each 4,910 shp. The 10 WC-130H aircraft still counted in the inventory have been recycled for other operational uses.
WC-130J. Weather reconnaissance version of the most recent C-130 model, operated by the 53rd WRS for weather reconnaissance duties, including penetration of tropical storms, to obtain data for forecasting storm movements. Features include improved radar, four Rolls Royce AE2100D3 turboprops, and Dowty 391 six-bladed composite propellers.
An average weather reconnaissance mission might last 11 hours and cover almost 3,500 miles while the crew collects and reports weather data every minute. Results are transmitted via satellite to the National Hurricane Center, Miami.

***EC-130J** Commando Solo II* (SSgt. Tia Schroeder)

Tanker Aircraft

HC-130N/P
Brief: An extended-range, combat search and rescue (CSAR)-configured C-130 that extends the range of rescue helicopters through in-flight refueling and performs tactical delivery of pararescue jumper (PJ) specialists and/or equipment in hostile environments.
Function: Aerial refueling/transport.
Operator: ACC, AETC, ANG, AFRC.
First Flight: Dec. 8, 1964 (as HC-130H).
Delivered: from 1965.
IOC: 1986.
Production: (converted).
Inventory: 10 (N); 23 (P).
Unit Location: Active: Davis-Monthan AFB, Ariz., Kirtland AFB, N.M., Moody AFB, Ga. ANG: Francis S. Gabreski Arpt., N.Y., Kulis ANGB, Alaska. AFRC: Patrick AFB, Fla.
Contractor: Lockheed Martin.
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: four flight crew, plus mission crew.
Dimensions: span 132.6 ft, length 98.8 ft, height 38.5 ft.
Weight: gross 155,000 lb.
Ceiling: 33,000 ft.
Performance: speed 289 mph, range more than 4,000 miles.
COMMENTARY
The HC-130 can perform extended visual/electronic searches over land or water and operate from unimproved airfields. A three-man PJ team, trained in emergency trauma medicine, harsh environment survival, and assisted evasion, is part of the normal mission crew complement.
Combat air forces' HC-130 aircraft are equipped with an integrated GPS/INS navigation package, radar/missile warning receivers, and chaff/flare countermeasures dispensers. Some aircraft have FLIR systems and personnel locating systems (PLS) compatible with aircrew survival radios. Additional modifications include an improved digital low-power color radar, integrated satellite communications radio, NVG-compatible interior/exterior lighting, and cockpit armor. The C-130 avionics modernization program (AMP)

***KC-135** Stratotanker* (Lt. Peter Scheu, USN)

***MC-130P** Combat Shadow* (MSgt. Michael Farris)

provides for complete update of the HC-130 avionics. Four retired EC-130E ABCCC and 10 WC-130H aircraft are being converted to HC-130 standard.

KC-10 Extender

Brief: A modified McDonnell Douglas DC-10 that combines in a single aircraft the operations of aerial refueling and long-range cargo transport.

Function: Aerial refueling/transport.

Operator: AMC, AFRC (assoc.).

First Flight: April 1980.

Delivered: March 1981-April 1990.

IOC: August 1982.

Production: 60.

Inventory: 59.

Unit Location: Active and AFRC assoc.: McGuire AFB, N.J., Travis AFB, Calif.

Contractor: McDonnell Douglas (now Boeing).

Power Plant: three General Electric CF6-50C2 turbofans, each 52,500 lb thrust.

Accommodation: crew of four; additional seating possible for up to 75 persons with 17 pallets; max 27 pallets; max cargo payload 169,409 lb.

Dimensions: span 165.4 ft, length 181.6 ft, height 58.1 ft.

Weight: gross 593,000 lb.

Ceiling: 42,000 ft.

Performance: cruising speed Mach 0.825, range with max cargo 4,400 miles.

COMMENTARY

The KC-10 combines the tasks of tanker and cargo aircraft in a single unit, enabling it to support worldwide fighter deployments, strategic airlift, strategic reconnaissance, and conventional operations.

The KC-10 can be air refueled by a KC-135 or another KC-10, increasing its range and diminishing the need for forward bases, leaving vital fuel supplies in the theater of operations untouched.

KC-10A is a DC-10 Series 30CF, modified to include fuselage fuel cells, an air refueling operator's station, aerial refueling boom and integral hose reel/drogue unit, a receiver refueling receptacle, and military avionics. Wing-mounted pods enhance the aircraft's capabilities. Other modifications include the addition of communications, navigation, and surveillance equipment to meet civil air traffic control requirements.

Because it has both types of tanker refueling equipment installed, the KC-10A can service USAF, USN, USMC, and allied aircraft on the same mission. Special lighting permits night operations.

KC-135 Stratotanker

Brief: A short- to medium-range tanker aircraft, meeting the air refueling needs of USAF bomber, fighter, cargo, and reconnaissance forces. It also supports USN, USMC, and allied aircraft.

Function: Aerial refueling/airlift.

Operator: AETC, AFMC, AMC, PACAF, USAFE, ANG, AFRC.

First Flight: August 1956.

Delivered: January 1957-65.

IOC: June 1957, Castle AFB, Calif.

Production: 732.

Inventory: 88 (B/E); 363 (R); 54 (T).

Unit Location: Altus AFB, Okla., Fairchild AFB, Wash., Grand Forks AFB, N.D., Kadena AB, Japan, MacDill AFB, Fla., McConnell AFB, Kan., RAF Mildenhall, UK, Robins AFB, Ga. ANG: 19 units. AFRC: nine units.

Contractor: Boeing.

Power Plant: KC-135R/T: four CFM International F108-CF-100 turbofans, each 22,224 lb thrust; KC-135E: four Pratt & Whitney TF33-PW-102 turbofans, each 18,000 lb thrust.

Accommodation: crew of four; up to 80 passengers.

Dimensions: span 130.8 ft, length 136.2 ft, height 38.3 ft.

Weight: empty 119,231 lb, gross 322,500 lb (KC-135E 301,600 lb).

Ceiling: 50,000 ft.

Performance: max speed at 30,000 ft 610 mph, range with max fuel 11,015 miles.

COMMENTARY

Mainstay of the USAF tanker fleet, the long-serving KC-135 is similar in size and appearance to commercial 707 aircraft but was designed to military specifications, incorporating different structural details and materials. The KC-135 fuel tanks are located in the "wet wings" and in fuel tanks below the floor in the fuselage.

KC-135A. Original version with J57 turbojets. USAF built 732, since modified to other standards.

KC-135E. The JT3D re-engining program upgraded USAF, AFRC, and ANG KC-135As to KC-135E standard with JT3D turbofans and related components removed from surplus commercial 707s; fuel carrying capacity increased by 20 percent. The KC-135Es in service with ANG represent some of the oldest aircraft in the USAF inventory. USAF plans to retire E model aircraft in 2008.

KC-135R/T. Designation of re-engined KC-135A/Es with F108 turbofans. They embody modifications to 25 major systems and subsystems and not only carry more fuel farther but have reduced maintenance costs, are able to use shorter runways, and meet Stage III (noise abatement) requirements. The first KC-135R flight was in October 1982, and deliveries began in July 1984. KC-135T aircraft (formerly KC-135Q) were capable of refueling the now-retired SR-71s and retain the capability to carry different fuels in the wing and body tanks. Eight KC-135Rs are air refuelable. Twenty KC-135Rs have wing-mounted refueling pods for enhanced refueling of USN and NATO aircraft.

Ongoing modifications are extending the capability and operational utility of the KC-135 well into the 21st century. The Pacer CRAG avionics modernization program, completed in 2002, installed a new compass, radar, and GPS navigation systems, a traffic alert and collision avoidance system (TCAS), and new digital multifunctional cockpit displays. The Global Air Traffic Management (GATM) modification further improves the avionics, adding communications, navigation, and surveillance equipment ensuring access to reduced horizontal and vertical global airspace. Forty KC-135R/T aircraft are outfitted with the capability to relay Link 16 tactical information beyond line of sight of other aircraft.

MC-130P Combat Shadow

Brief: Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide air refueling for special operations forces (SOF) helicopters or to air-drop small special operations teams, small bundles, and zodiac and combat rubber raiding craft.

Function: Air refueling for SOF helicopters/airdrop.

Operator: AETC, AFSOC, ANG, AFRC.

First Flight: Dec. 8, 1964 (as HC-130H).

Delivered: from 1965.

IOC: 1986.

Production: (converted).

Inventory: 27.

Unit Location: Active: Eglin AFB, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK. ANG: Moffett Field, Calif. AFRC: Duke Field, Fla.

Contractor: Lockheed Martin (airframe); Boeing.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: four flight crew, plus four mission crew.

Dimensions: span 132.6 ft, length 98.8 ft, height 38.5 ft.

Weight: gross 155,000 lb.

Ceiling: 33,000 ft.

Performance: speed 290 mph, range with max normal payload 1,208 miles, unlimited with air refueling.

COMMENTARY

MC-130P Combat Shadow aircraft fly clandestine formation or single-ship intrusion of hostile territory missions to provide aerial refueling of special operations vertical-lift and tilt-rotor assets and the infiltration, exfiltration, and resupply of SOF by airdrop or air-land operations.

Recent modifications to the MC-130P feature improved navigation, communications, threat detection, and countermeasures systems. The Combat Shadow fleet has a fully integrated inertial navigation and Global Positioning System and night vision goggle-compatible interior and exterior lighting. It also has FLIR, radar and missile warning receivers, chaff and flare dispensers, NVG-compatible HUD, satellite and data-burst communications, as well as in-flight refueling capability as a receiver. Secondary capabilities include the ability to air-drop small teams, bundles, and rubber raiding craft. The aircraft are programmed to be modified with a cargo handling system by 2011 to provide the ability to handle palletized cargo and heavy equipment.

MC-130W

Brief: Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide air refueling for special operations forces (SOF) helicopters or to air-drop

***C-5M** Galaxy* (Lockheed Martin photo)

small special operations teams, small bundles, and zodiac and combat rubber raiding craft.

Function: Air refueling for SOF vertical lift assets/airdrop.
Operator: AFSOC.
First Flight: Dec. 8, 1964 (as HC-130H).
Delivered: June 2006.
IOC: 2006.
Production: 12 (converted).
Inventory: three.
Unit Location: Cannon AFB, N.M.
Contractor: Boeing.
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: four flight crew, plus three mission crew.
Dimensions: span 132.6 ft, length 98.8 ft, height 38.5 ft.
Weight: gross 155,000 lb.
Ceiling: 33,000 ft.
Performance: speed 290 mph, range with max normal payload 1,208 miles, unlimited with air refueling.

COMMENTARY

Transferred from the 1st SOW at Hurlburt Field, Fla., in October 2007, the **MC-130W** is operated by the 73rd SOS at the redesignated 27th SOW at Cannon. The aircraft is a C-130H(2) airframe significantly modified to include an electronic warfare capability, low-light-level operational capability, and a strengthened tail to permit high-speed, low-level airdrop operations. The MC-130W is equipped with technically advanced refueling pods, providing the ability to refuel SOF helicopters and the CV-22. It also is capable of supporting limited command and control operations. The aircraft itself can be air refueled to extend its mission range. The MC-130Ws supplement AFSOC MC-130Hs lost in combat since the beginning of Operation Enduring Freedom.

C-17 Globemaster III (Jim Dunn)

Strategic Transports

C-5 Galaxy

Brief: A heavy-lift, air refuelable cargo transport for massive strategic airlift over long ranges, including outsize cargo. Supports special operations missions.

Function: Cargo and troop transport.
Operator: AETC, AFMC, AMC, ANG, AFRC.
First Flight: June 30, 1968.
Delivered: October 1969-April 1989.
IOC: September 1970.
Production: 131.
Inventory: 59 (A), 47 (B), two (C).
Unit Location: Active: Altus AFB, Okla., Dover AFB, Del., Travis AFB, Calif. ANG: Eastern West Virginia Arpt., W.Va., Memphis Arpt., Tenn., Stewart Arpt., N.Y. AFRC: Dover AFB (assoc.), Del., Lackland AFB, Tex., Travis AFB (assoc.), Calif., Westover ARB, Mass., Wright-Patterson AFB, Ohio.
Contractor: Lockheed.
Power Plant: four General Electric TF39-GE-1C turbofans, each 41,000 lb thrust. C-5M: four General Electric CF6-80C2 turbofans.
Accommodation: normal crew of six (two pilots, two engineers, and two loadmasters), plus rest area for 15 (relief crew, etc.) and seating for 73. There is no piece of Army combat equipment the C-5 can't carry. Possible loads: six Apache helicopters, two M1 main battle tanks (each weighing 135,400 lb), six Bradley vehicles, three CH-47 helicopters, the 74-ton mobile bridge, a quarter-million pounds of relief supplies, or a maximum of 340 passengers in an airbus configuration. Airdrop capability for single platforms weighing up to 42,000 lb.
Dimensions: span 222.8 ft, length 247.9 ft, height 65.1 ft.
Weight: empty 374,000 lb, gross 769,000 (wartime 840,000) lb.
Ceiling: 45,000 ft.
Performance: max speed at 25,000 ft 571 mph, T-O run at S/L 8,300 ft, landing run, max landing weight at S/L 2,380 ft, range with max payload 3,434 miles, range with max fuel 7,245 miles. Normal cruising speed at altitude 518 mph (Mach 0.77).

COMMENTARY

One of the world's largest aircraft, the C-5 is able to carry unusually large and heavy cargo for intercontinental ranges at jet speeds. It can take off and land in relatively short distances and taxi on substandard surfaces during emergency operations. Front and rear cargo openings permit simultaneous drive-through loading and off-loading.

C-5A. USAF took delivery of 81 of these basic models between December 1969 and May 1973. A major wing modification was subsequently undertaken, extending the aircraft's service life by 30,000 flight hours. Additionally, the avionics subsystems developed for the C-5B have been incorporated into the C-5A fleet. USAF has proposed retiring the C-5As but is pursuing a reliability and maintainability assessment.

C-5B. Generally similar to the C-5A but embodies all the improvements introduced since completion of C-5A production, including the strengthened wings, improved turbofans, and updated avionics, with color weather radar and triple INS. The first C-5B flew for the first time in September 1985 and was delivered to Altus AFB, Okla., in January 1986. To enhance force protection, a number of C-5Bs have been equipped with an aerial defense system.

C-5C. Two C-5As assigned to Travis AFB, Calif., were modified to carry outsize space cargo for NASA by extending the cargo bay and modifying the aft doors.

C-5M. All USAF Galaxys are slated to undergo the avionics modernization program (AMP), installing a state-of-the-art cockpit and ensuring global access navigation safety compliance; first upgraded aircraft flew December 2002. Additionally, the Air Force plans to conduct the reliability enhancement and re-engining program (RERP) for B and C model C-5 aircraft to include the General Electric CF6-80C2 turbofan. The first of three production representative C-5Ms made its debut flight on June 16, 2006 at Dobbins ARB, Ga. Program completion is currently scheduled for 2020.

C-17 Globemaster III

Brief: A heavy-lift, air refuelable cargo transport for intertheater (strategic) and intratheater (tactical) direct delivery airlift of all classes of military cargo, including outsize items.

Function: Cargo and troop transport.
Operator: AETC, AFMC, AMC, ANG, AFRC, PACAF.
First Flight: Sept. 15, 1991.
Delivered: June 1993-ongoing.
IOC: Jan. 17, 1995.
Production: 190 (contractual).
Inventory: 169.
Unit Location: Active: Altus AFB, Okla., Charleston AFB, S.C., Dover AFB, Del., Edwards AFB, Calif., Elmendorf AFB, Alaska, Hickam AFB, Hawaii, McChord AFB, Wash., McGuire AFB, N.J., Travis AFB, Calif. ANG: Allen C. Thompson Field, Miss., Elmendorf AFB (assoc.), Alaska, Hickam AFB (assoc.), Hawaii. AFRC: Charleston AFB (assoc.), S.C., Dover AFB (assoc.), Del., March ARB, Calif., McChord AFB (assoc.), Wash., McGuire AFB (assoc.), N.J., Travis AFB (assoc.), Calif.
Contractor: Boeing.
Power Plant: four Pratt & Whitney F117-PW-100 turbofans, each 40,440 lb thrust.
Accommodation: normal flight crew of three (two pilots plus loadmaster); additional pilot may be carried. Provisions for full range of military airlift missions, incl capacity for up to 189 passengers, 102 paratroops, or 36 litters; range of military cargo incl tanks and up to three AH-64A helicopters; three Bradley vehicles; one M1A2 main battle tank with other equipment; airdrop capability for single platforms weighing up to 60,000 lb; palletized passenger seats.
Dimensions: span over winglet tips 169.8 ft, length 173.9 ft, height 55.1 ft.
Weight: empty 277,000 lb, max payload 170,900 lb, gross 585,000 lb (extended range).
Ceiling: 45,000 ft.
Performance: normal cruising speed 484 mph at 35,000 ft or 518 mph (Mach .77) at 28,000 ft, unrefueled range with 160,000-lb payload 2,760 miles, additional 690 miles with extended-range fuel containment system (ERFCS), unlimited with refueling.

COMMENTARY

As the US military's core airlifter, the C-17 is able to operate routinely into small, austere airfields (3,000 ft x 90 ft) previously limited to C-130s and provides the only capability to air-land or air-drop outsize cargo directly to the tactical environment. C-17 aircraft have assumed the special operations low level (SOLL) mission previously supported by the C-141. They have flown numerous operational and humanitarian missions, including aeromedical evacuation since their introduction into the USAF inventory. The C-17 has been the only aircraft capable of delivering outsize cargo into austere operations in Afghanistan and Iraq. The first C-17 operational strategic brigade airdrop occurred in March 2003, when a formation of 15 aircraft delivered a US Army brigade, complete with equipment, directly into northern Iraq.

C-17 is the first military transport to feature a full digital fly-by-wire control system and two-person cockpit, with two full-time, all-function HUDs and four multifunction electronic displays. Defensive systems include Large Aircraft Infrared Countermeasures (LAIRCM) and flares. Ongoing modernization, both through new block configuration to production aircraft and block upgrades to fielded aircraft, continues to improve C-17 operational capability. Significant improvements since 2001 include: (Block 12) ERFCS upgrade, a terrain awareness warning system (TAWS), and Mobility 2000 (M2K) C2 modernization program; (Block 15) a new Communications Open System Architecture (COSA) radio system; and (Block 16) a weather radar replacement. Block 17 marks the last block upgrade for the fleet; improvements include NVG-friendly combat lighting, upgraded electronic flight-control system, high frequency data link (HFDL), and formation flight system (FFS). Full retrofit up to Block 17 of previously delivered aircraft will take approximately 11 years.

Theater and Special Use Transports

C-9 Nightingale

Brief: A twin-engine, medium-range, swept-wing jet aircraft used for DV duties.

Function: DV duties.
Operator: AFRC.
First Flight: August 1968.
Delivered: August 1968-February 1975.
IOC: circa 1968.
Production: 24.
Inventory: three (C).
Unit Location: Scott AFB, Ill.
Contractor: Boeing (McDonnell Douglas).
Power Plant: two Pratt & Whitney JT8D-9A turbofans, each 14,500 lb thrust.
Accommodation: crew of three.
Dimensions: span 93.2 ft, length 119.2 ft, height 27.4 ft.

Weight: gross 108,000 lb.
Ceiling: 35,000 ft.
Performance: max cruising speed at 25,000 ft 565 mph, range 2,500 miles.
COMMENTARY
C-9A. A derivative of the DC-9 Series 30 commercial airliner, the C-9A was the only USAF aircraft modified specifically for the aeromedical evacuation mission, a role now undertaken by C-130 and C-17 aircraft.
C-9C. Three specially configured C-9s, delivered to Andrews AFB, Md., in 1975 for the special air mission (SAM) supporting the President and other US government officials, are now in use by AFRC. Upgrades included improvements to the passenger communications equipment, GATM, TAWS, and vertical separation equipment.

C-12 Huron
Brief: Aircraft to provide airlift support for attache and military advisory groups worldwide.
Function: Special airlift.
Operator: AFMC, PACAF.
First Flight: Oct. 27, 1972 (Super King Air 200).
Delivered: 1974-late 1980s.
IOC: c rca 1974.
Production: 88.
Inventory: 28.
Unit Location: Elmendorf AFB, Alaska, Yokota AB, Japan, various overseas embassies.
Contractor: Beech.
Power Plant: (C-12J) two Pratt & Whitney Canada PT6A-65B turboprops, each 1,100 shp.
Accommodation: crew of two; C-12C: up to eight passengers; C-12J: up to 19 passengers.
Dimensions: (C-12J) span 54.5 ft, length 43.8 ft, height 15 ft.
Weight: (C-12J) empty 9,850 lb, gross 16,600 lb.
Ceiling: (C-12J) 25,000 ft.
Performance: (C-12J) max cruising speed at 16,000 ft 307 mph, range with 10 passengers 1,806 miles.
COMMENTARY
The C-12 is a military version of the Beechcraft King Air A200 series.
C-12C. Re-engined C-12As, with PT6A-41 turboprops, deployed to overseas embassies.
C-12D. Similar to C model and also deployed to overseas embassies.
C-12F. With uprated PT6A-42 engines, can support medical airlift.
C-12J. A military version of the larger Beechcraft Model 1900, operated by PACAF.

C-20 Gulfstream
Brief: A twin-engine turbofan aircraft acquired to provide airlift for high-ranking government and DOD officials.
Function: Operational support airlift; special air missions.
Operator: AMC, USAFE.
First Flight: December 1979.
Delivered: September 1983-89.
IOC: circa 1983.
Production: not available.
Inventory: 10.
Unit Location: Andrews AFB, Md., Ramstein AB, Germany.
Contractor: Gulfstream.
Power Plant: C-20A/B: two Rolls Royce-Spey MK511-8 turbofans, each 11,400 lb thrust; C-20H: two Rolls Royce-Tay MK611-8 turbofans, each 13,850 lb thrust.
Accommodation: crew of five; 12 passengers.
Dimensions: span 77.8 ft; length (C-20A/B) 83.1 ft, (C-20H) 88.3 ft; height 24.3 ft.
Weight: C-20A/B gross 69,700 lb; C-20H gross 74,600 lb.
Ceiling: 45,000 ft.
Performance: max cruising speed 576 mph, range 4,800 m les.
COMMENTARY
C-20A. Three Gulfstream III transports were acquired to replace aging C-140B aircraft. They provided USAFE's operational support airlift fleet with intercontinental range and ability to operate from short runways. Retired in September 2002.
C-20B. Five C-20B versions, with advanced mission communications equipment and revised interior, were acquired in the late 1980s.
C-20H. Two Gulfstream IV SP aircraft, with advanced-technolcgy flight-management systems and upgraded Rolls Royce engines, were acquired by USAF to meet expanding SAM requirements. The two C-20H aircraft were reassigr ed to USAFE to replace retired C-20As.
Upgrade for C-20B/H aircraft includes GPS, vertical separation equipment, GATM, and TCAS.

C-21
Brief: Aircraft designed to provide cargo and passenger airlift and transport litters during medical evacuations.
Function: Pilot seasoning, passenger and cargo airlift.
Operator: AETC, AMC, PACAF, USAFE, ANG.
First Flight: January 1973.
Delivered: April 1984-Octobe- 1985.
IOC: April 1984.
Production: 84.
Inventory: 57.
Unit Location: Keesler AFB, Miss., Peterson AFB, Colo., Ramstein AB, Germany, Scott AFB, Ill. ANG: Bradley Arpt., Conn., Hector Arpt., N.D.
Contractor: Gates Learjet.
Power Plant: two AlliedSignal TFE731-2 turbofans, each 3,500 lb thrust.
Accommodation: crew of two and up to eight passengers or 3,153 lb cargo. Convertible to aeromedical evacuation configuration.
Dimensions: span 39.5 ft, length 48.6 ft, height 12.2 ft.
Weight: empty, equipped 10,119 lb, gross 18,300 lb.
Ceiling: 51,000 ft.
Performance: max level speed at 25,000 ft 542 mph, range with max passenger load 2,306 miles, with max cargo load 1,653 miles.
COMMENTARY
C-21A aircraft provide operational support airlift for time-sensitive movement of people and cargo throughout the US and the Pacific and European Theaters, including aeromedical missions if required. Upgrades include GATM and TCAS. Older aircraft are being retired.

C-27J Spartan
Brief: A small tactical transport capable of carrying heavy loads into a wide range of airfields, including unprepared strips at high altitude.
Function: Tactical airlift.
Operator: USAF/USA.
First Flight: September 1999 (developmental aircraft).
Delivery: 2010 (USAF, planned).
IOC: TBD.
Production: 78 under contract: 24, USAF; 54, USA.
Inventory: TBD.
Unit Location: TBD.
Contractor: L-3 Communications.
Power Plant: two Rolls Royce AE 2100-D2 turboprops, rated at 4,637 shp.
Accommodation: two flight crew; up to 68 troops or 24 paratroops, plus two loadmasters, or 36 litters plus six attendants; up to 25,353 lb cargo; 19,842 lb low velocity airdrop.
Dimensions: (basic G.222 airframe) span 94.1 ft, length 74.5 ft, height 32.1 ft.
Weight: gross 70,000 lb.
Ceiling: 30,000 ft.
Performance: T-O run 1,903 ft; range, with 22,046 lb payload 1,000 nm.
COMMENTARY
In June 2007, the Air Force and Army selected the **C-27J** Spartan, a derivative of the Alenia G.222, to fulfill the Joint Cargo Aircraft (JCA) requirement. Plans call initially for 78 aircraft. USAF will use its aircraft to support ground forces served only by the most basic airstrips, often at high altitude, or for missions where the C-130 is currently operating at half-load capacity.
The Air Force also is considering purchasing additional C-27s to function in a gunship role with AFSOC. The currently planned buy would go primarily to ANG units.

C-32
Brief: A modified Boeing 757-200 used to provide backup transportation for the President. It is the primary means of travel for the vice president, Cabinet, Congressional members, and other high-ranking US and foreign officials.
Function: VIP air transport.
Operator: AMC.
First Flight: Feb. 19, 1982 (USAF Feb. 11, 1998).
Delivery: June-December 1998.
IOC: 1998.
Production: six.
Inventory: six.
Unit Location: Andrews AFB, Md.
Contractor: Boeing.
Power Plant: two Pratt & Whitney PW2040 turbofans, each 41,700 lb thrust.
Accommodation: 16 crew and 45 passengers.
Dimensions: span 124.8 ft, length 155.2 ft, height 44.5 ft.
Weight: empty 127,800 lb, gross 255,000 lb.
Ceiling: 41,000 ft.
Performance: cruise speed Mach 0.8-0.86 (530 mph), range 5,750 miles.
COMMENTARY
A military version of the commercial Boeing 757-200, four new **C-32A**s were purchased as replacements for C-137B/C aircraft. The commercial DV interior includes a crew rest area, DV stateroom, conference area, and general passenger area. The passenger communications system provides worldwide clear and secure voice and data communications. Modern flight deck avionics allow operations to any suitable airfield in the world and provide an upgrade path as new capabilities become available. Upgrades include installation of a digital communications management system and broadband data transmit and receive, providing an office-in-the-sky capability.

C-37A
Brief: A modified Gulfstream V utilized as part of the executive fleet, providing transportation for the vice president, Cabinet, Congressional members, Secretary of Defense, service Secretaries, and other prominent US and foreign officials.
Function: VIP air transport.
Operator: AMC, PACAF, USAFE.
First Flight: USAF October 1998.
Delivery: October 1998-present.
IOC: Dec. 9, 1998.
Production: 10.
Inventory: nine.
Unit Location: Andrews AFB, Md., Chievres, Belgium, Hickam AFB, Hawaii, MacDill AFB, Fla.
Contractor: Gulfstream.
Power Plant: two BMW-Rolls Royce BR710A1-10 turbofans, each 14,750 lb thrust.
Accommodation: five crew and 12 passengers.
Dimensions: span 93.5 ft, length 96.4 ft, height 25.8 ft.
Weight: empty 47,601 lb, gross 90,500 lb.
Ceiling: 51,000 ft.
Performance: cruise speed Mach 0.8 (530 mph), range 6,095 miles.
COMMENTARY
The **C-37A** is a military version of the Gulfstream V. Two C-37As, along with the C-32s, were purchased as replacements for the VC-137B/C aircraft. The interior includes separate DV and passenger areas and a communications system capable of worldwide clear and secure voice and data. Aircraft are capable of operations at any suitable civilian or military airfield worldwide. A third C-37A was purchased for combatant commander support airlift and was based at Chievres, Belgium. It has since been reassigned to Andrews AFB, Md. One C-37 was purchased for crisis response support. Five C-37As are being leased from Gulfstream Aerospace as combatant commander support aircraft; three are assigned to MacDill AFB, Fla.; one to Chievres; and one to Hickam AFB, Hawaii. Upgrades include GATM and continuing passenger communications system upgrades to the Andrews-based aircraft.

C-38A
Brief: A twin-engine transcontinental aircraft used to provide transportation for DVs such as Congressional or high-ranking military members. It can also be configured for medevac and a wide range of special missions including C3 in time of war.
Function: VIP air transport and operational support.
Operator: ANG.
First Flight: 1998.
Delivered: April-May 1998.
IOC: 1998.
Production: two.
Inventory: two.
Unit Location: Andrews AFB, Md.
Contractor: Tracor (Israel Aircraft Industries Ltd).
Power Plant: two AlliedSignal TFE731-40R-200G, each 4,250 lb thrust.
Accommodation: typically two crew and eight passengers. In medevac role: two Spectrum 500 Life Support Units and two medical attendants. All seats removable for cargo.
Dimensions: span 54.6 ft, length 55.6 ft, height 18.2 ft.
Weight: gross 24,800 lb.
Ceiling: cruise, 33,000 ft.
Performance: cruise speed Mach 0.87.
COMMENTARY
The **C-38A** is a military version of the Astra SPX produced by IAI and supported worldwide by Galaxy Aerospace. Equipment includes the most up-to-date navigation, communication, vertical separation, and safety equipment as well as state-of-the-art avionics.

C-40
Brief: A Boeing 737-700 used for medium-range airlift of personnel.
Function: Passenger transportation.
Operator: AMC, PACAF, USAFE, ANG, AFRC.
First Flight: USN C-40A: April 14, 1999.
Delivered: 2002.
Production: 10.
Inventory: nine.
Unit Location: Andrews AFB, Md., Hickam AFB, Hawaii, Ramstein AB, Germany. ANG: Andrews AFB, Md. AFRC: Scott AFB, Ill.
Contractor: Boeing.

***C-130** Hercules* (SSgt. Tia Schroeder)

Power Plant: two General Electric CFM56-7 turbofans, each 24,000 lb thrust.

Accommodation: flight crew of four, plus three or four cabin crew; up to 89 passengers.

Dimensions: span 112 ft 7 in, length 110 ft 4 in, height 41 ft 2 in.

Weight: gross 171,000 lb.

Ceiling: 41,000 ft.

Performance: cruise speed 0.78-0.82 Mach, range 3,450 miles.

COMMENTARY

The C-40 is the military version of the commercial Boeing 737-700 increased gross weight aircraft. C-40s are used for transporting senior government officials and regional combatant commanders.

C-40B. The B model is equipped with a DV suite, staff work area, conference area, and worldwide secure communications and data capability. USAF purchased three and leased one C-40B. Two are assigned to Andrews and one each to Hickam and Ramstein.

C-40C. The C model has a DV seating area, general passenger seating area, and secure communications capability. Three leased C-40Cs operate from Andrews. The new C-40s allocated to AFRC's 932nd AW at Scott feature upgraded avionics and auxiliary fuel tanks to allow nonstop flight to Hickam and Ramstein.

C-130 Hercules

Brief: A rugged aircraft capable of operating from rough dirt strips to provide theater airlift and paradropping of troops and equipment into hostile areas.

Function: Inter- and intratheater airlift.

Operator: AETC, AMC, PACAF, USAFE, ANG, AFRC.

First Flight: August 1954 (C-130A).

Delivered: December 1956-present (C-130J).

IOC: circa 1958.

Production: more than 2,200.

Inventory: 120 (E); 284 (H); 44 (J).

Unit Location: Active: Dyess AFB, Tex., Elmendorf AFB, Alaska, Little Rock AFB, Ark., Pope AFB, N.C., Ramstein AB, Germany, Yokota AB, Japan. ANG: 22 units. AFRC: nine units. AFRC/ANG assoc.: one.

Contractor: Lockheed Martin.

Power Plant: (C-130H) four Rolls Royce-Allison T56-A-15 turboprops, each 4,300 shp. (C-130J) four Rolls Royce-Allison AE2100D3 turboprops, each 4,591 shp.

Accommodation: (C-130H) crew of five; up to 92 ground troops, 64 paratroops, 74 litter patients plus attendants, 54 passengers on palletized seating, or up to five 463L standard freight pallets, etc.; max load, 45,000 lb.

Dimensions: span 132.6 ft, length 97.8 ft, height 38.1 ft.

Weights: C-130H: empty 81,000 lb, fuel/cargo max gross 155,000 lb; C-130J: gross 175,300 lb.

Ceiling: 33,000 ft at 100,000 lb T-O weight.

Performance: (C-130H) max cruising speed 430 mph, T-O run 3 585 ft, landing run (at 130,000 lb) 1,700 ft range with 40,000-lb payload 2,240 miles; range 3,450 miles.

COMMENTARY

First delivered more than 50 years ago, the C-130 Hercules transport continues in production and has been delivered to more than 60 countries. Basic and specialized versions operate throughout USAF, performing diverse roles in both peace and war situations, including airlift support, Arctic ice cap resupply, aeromedical missions, aerial spray missions (AFRC), fire-fighting duties (AFRC and ANG) for the US Forest Service, and natural disaster and humanitarian relief missions.

C-130A, B, and D. Early versions, now retired. The initial production C-130A had four Allison T56-A-11 or -9 turboprop engines. USAF ordered a total of 219. The C-130B had improved range and higher weights and introduced Allison T56-A-7 turboprops; 134 were produced, with delivery from April 1959. Twelve were modified beginning 1961 as **JC-130Bs** for air-snatch satellite recovery together with three early H models. Twelve C-130Ds were modified As for Arctic operations.

C-130E is an extended-range development of the C-130B, with large under-wing fuel tanks; 389 were ordered, with deliveries beginning in April 1962. A wing modification to correct fatigue and corrosion extended the life of the aircraft well into this century. Other modifications include a self-contained navigation system, with an integrated communications/navigation management suite, GPS capability, and a state-of-the-art autopilot that incorporates a ground collision avoidance system. USAF is retiring some of the older aircraft.

C-130H is generally similar to the E model but has updated turboprops, a redesigned outer wing, and improved pneumatic systems; delivery began in July 1974. Subsequent improvements include updated avionics, improved low-power color radar, and other minor modifications. Night vision instrumentation system was introduced from 1993, TCAS II in new aircraft from 1994. ANG **LC-130H** aircraft are modified with wheel-ski gear to support Arctic and Antarctic operations. Two **DC-130Hs** were modified for UAV control duties.

A major AMP for the C-130 includes digital displays, flight-management systems, multifunction radar, new communications systems, and a single air data computer. Planned completion is for 2016. The AMP upgrade includes all C-130 models except the C-130E, older or worn-out C-130Hs, and the new C-130J aircraft. In addition, work has begun to replace wing boxes on 155 C-130s in a move to alleviate/pre-empt operational restrictions; completion is planned for 2020. Some 600 C-130s will also receive landing gear modifications beginning in 2010.

C-130J. Most recent model featuring a three-crew flight operation system, 6,000 shp Rolls Royce-Allison AE2100D engines, all composite six-blade Dowty Aerospace R391 propeller system, digital avionics, and mission computers. Compared to earlier production C-130Es, its speed is up 21 percent, cruising altitude is 40 percent higher, and range 40 percent longer. The J also features improved reliability and maintainability. ANG and AFRC units began receiving J models in 1999. First active duty unit, the 48th AS at Little Rock AFB, Ark., received its first C-130J aircraft in March 2004. First wartime deployment occurred December 2004, although official IOC was only declared in October 2006. The stretch version of the C-130J (**C-130J-30**), with an additional 15 feet of fuselage and capable of carrying up to 128 ground troops or 92 paratroops, is replacing the oldest 1960s-vintage C-130Es. Deliveries to ANG began in 2001 and to USAF and AFRC in 2004.

CV-22

Brief: A tilt-rotor, multimission transport aircraft designed to have the maneuverability and lift capability of a helicopter and the speed of a fixed-wing aircraft.

Function: Multimission airlift.

Operator: AETC, AFSOC.

First Flight: March 19, 1989 (V-22).

Delivery: 2006.

IOC: 2009 (planned).

Production: 50 (planned).

Inventory: seven.

Unit Location: Hurlburt Field, Fla., Kirtland AFB, N.M.

Contractor: Bell Boeing; Raytheon.

Power Plant: two Rolls Royce-Allison AE1107C turboshafts, each 6,200 shp.

Accommodation: four (two pilots, two flight engineers); additional pilot for extended duration missions; up to 18 troops or 8,000 lb internal cargo.

Dimensions: proprotor diameter 38 ft, width, rotors turning 84.6 ft, fuselage length 57.3 ft, height 22 ft.

Weight: gross weight 34,900 lb, max VTO 52,870 lb; STO 57,000 lb, self-deploy T-O 60,500 lb.

Ceiling: 26,000 ft.

Performance: typically will carry troops or cargo over a 500-mile combat radius at 265 mph. Self-deployment range with one air refueling 2,417 miles.

COMMENTARY

CV-22 is the designation for the US Special Operations Command variant of the V-22 Osprey. The CV-22 is a multi-engine, dual-piloted, self-deployable, medium-lift vertical takeoff and landing (VTOL) tilt-rotor aircraft for the conduct of special operations, including nuclear, biological, and chemical (NBC) warfare conditions. It will operate from land bases and austere forward operating locations, as well as air capable ships without reconfiguration or modification. An in-flight refueling capability extends combat mission range when required, and the aircraft will be self-supporting to the maximum practical extent. The CV-22's mission is long-range clandestine penetration of denied areas in adverse weather and low visibility to infiltrate, exfiltrate, and resupply SOF.

CV-22 avionics include a fully integrated precision navigation suite, with GPS and INS; a digital cockpit management system oriented around four multifunction displays (MFDs); FLIR; an integrated NVG HUD; terrain-following/terrain-avoidance (TF/TA) radar; and digital map system. Additionally, it is equipped with robust self-defensive avionics and secure

CV-22 (Ted Carlson)

anti-jam, redundant communications compatible with current and planned systems used by command and control agencies and ground forces. The CV-22 unrefueled combat range satisfies current and emergent major theater war (MTW) requirements, as well as national mission tasking. The aircraft is capable of completing most assigned missions during one period of darkness.

A third aircraft joined the two test aircraft based at Edwards AFB, Calif., in February 2005. The first production example was delivered to USAF in September 2005 and the first combat-configured aircraft in March 2006. Operational utility evaluation was completed in summer 2006 and flight crew training began in late 2006 at Kirtland AFB, N.M. The first operational CV-22 squadron, the 8th SOS at Hurlburt Field, Fla., received its first aircraft in January 2007. IOT&E was scheduled for completion by April 2008, with IOC expected at Hurlburt in early 2009. USAF may place detachments of CV-22s in US European Command and US Pacific Command theaters.

MC-130E/H Combat Talon

Brief: A modified C-130 able to provide global, day, night, and adverse weather capability to air-drop personnel and to deliver personnel and equipment to support US and allied SOF.

Function: SOF infiltration, exfiltration, and resupply.

Operator: AETC, AFSOC, AFRC.

First Flight: circa 1965 (E); January 1990 (H).

Delivered: initially 1966.

IOC: 1966 (E); June 1991 (H).

Production: 22 new-build Hs.

Inventory: 14 (E); 20 (H).

Unit Location: Active (assoc.) and AFRC MC-130Es at Duke Field, Fla. Active: MC-130H at Hurlburt Field, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK.

Contractor: Lockheed Martin (airframe); Boeing integrated weapons system support.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: E: crew of nine; 53 troops or 26 paratroops; H: crew of seven; 77 troops, 52 paratroops, or 57 litters.

Dimensions: span 132.7 ft, height 38.6 ft, length 100.8 ft (E), 99.8 ft (H).

Weight: empty 72,892 lb, gross 155,000 lb.

Ceiling: 30,000 ft.

Performance: max speed 289 mph, range 3,110 miles, unlimited with refueling.

COMMENTARY

MC-130 Combat Talon aircraft are equipped with terrain following and terrain-avoidance radars, precision navigation systems using INS/GPS, and electronic and infrared countermeasures for self-protection. Both E and H aircraft are capable of in-flight refueling, are NVG-compatible, and have a modified tail empennage for their high-speed aerial delivery system. The primary mission of the aircraft is to conduct infiltration, resupply, and exfiltration of special operations forces (SOF). They are also capable of supporting psychological operations. Combat Talons are able to air-drop or to land on austere unmarked landing or drop zones.

MC-130E Combat Talon I. Fourteen modified C-130E aircraft were additionally equipped with a pod-based system to air refuel SOF helicopters and tilt-rotor aircraft.

MC-130H Combat Talon II. C-130H(2) aircraft modified with an integrated glass cockpit were acquired in the late 1980s and early 1990s to supplement the Combat Talon Is. All are modified with a state-of-the-art pod-based aerial refueling system to augment the MC-130E and MC-130P aerial refueling fleet. The 1st, 7th, and 15th SOSs provide support to SOF in Europe, the Pacific, and CONUS, respectively. The 58th SOS at Kirtland AFB, N.M., is responsible for MC-130H mission qualification training.

VC-25 Air Force One

Brief: A specially configured Boeing 747-200B used for air transport of the President and his entourage. When the President is aboard, it has the radio call sign "Air Force One."

Function: Air transport of the President.

Operator: AMC.

First Flight: first flown as Air Force One Sept. 6, 1990.

Delivered: August-December 1990.

IOC: circa 1990.

Production: two.

Inventory: two.

Unit Location: Andrews AFB, Md.

Contractor: Boeing.

Power Plant: four General Electric CF6 turbofans, each 56,700 lb thrust.

Accommodation: crew of 26; up to 76 passengers.

Dimensions: span 195.7 ft, length 231.8 ft, height 63.4 ft.

Weight: long-range mission T-O weight 803,700 lb., gross 833,000 lb.

Ceiling: 45,000 ft.

***MC-130E** Combat Talon I* (USAF photo)

Performance: speed 630 mph (Mach 0.92), normal cruising speed Mach 0.84, unrefueled range 7,820 miles.

COMMENTARY

Based on the Boeing 747-200B airframe, two **VC-25As** assigned to Andrews AFB, Md., support the President. Aircraft are equipped with staff work areas, a conference room, a general seating area, and an executive office. Communications capability includes worldwide secure and clear communications equipment. Upgrades include GATM and installation of a broadband data transmit and receive capability to provide video teleconferencing and office-in-the-sky capability.

Trainer Aircraft

T-1A Jayhawk

Brief: A medium-range, twin-engine jet trainer version of the Beechcraft 400A. It is used by the Air Force to train student airlift and tanker pilots and student combat systems operators.

Function: Advanced pilot training.

Operator: AETC, AFRC, USN.

First Flight: Sept. 22, 1989 (Beechcraft 400A).

Delivered: Jan. 17, 1992-July 1997.

IOC: January 1993.

Production: 180.

Inventory: 179.

Unit Location: Active: Columbus AFB, Miss., Laughlin AFB and Randolph AFB, Tex., Vance AFB, Okla., NAS Pensacola, Fla. (forward operating station). AFRC: (assoc.) Randolph AFB, Tex.

Contractor: Raytheon.

Power Plant: two Pratt & Whitney Canada JT15D-5B turbofans, each 2,900 lb thrust.

Accommodation: two, side by side, and one to the rear; rails are fitted to accommodate an extra four seats to permit transport of maintenance teams.

Dimensions: span 43.5 ft, length 48.4 ft, height 13.9 ft.

Weight: empty 5,200 lb, gross 16,100 lb.

Ceiling: 41,000 ft.

Performance: max speed at 27,000 ft 538 mph, range 2,400 miles.

COMMENTARY

The swept-wing **T-1A** Jayhawk is a military version of the Beech 400A used in the advanced phase of joint specialized undergraduate pilot training (JSUPT) for students selected to go on to fly tanker, transport, and electronic warfare aircraft. It is also used to train student combat systems operators (CSO) and naval flight officers in the intermediate stages of their training.

The T-1A has cockpit seating for an instructor and two students. Special mission equipment includes GPS, an electronic flight instrument system (EFIS) avionics system, a single-point refueling system, an additional fuselage fuel tank, and increased bird-strike protection in the windshield and leading edges for sustained low-level operation. T-1As typically log 100,000 flying hours a year, supporting all-weather training operations at high and low altitudes.

T-6A Texan II

Brief: A single-engine turboprop aircraft used for training student pilots, combat systems officers, and naval flight officers in fundamentals of aircraft handling and instrument, formation, and night flying.

Function: Primary trainer.

Operator: AETC, AFRC, USN.

First Flight: July 15, 1998.

Delivery: May 2000-present (operational aircraft).

IOC: November 2001.

Production: Planned: USAF 372, USN 328.

Inventory: 320 (USAF).

Unit Location: USAF: Active: Columbus AFB, Miss., Laughlin AFB and Randolph AFB, Tex., Vance AFB, Okla. Planned: Sheppard AFB, Tex. USN: NAS Corpus Christi, Tex., NAS Whiting, Fla.

Contractor: Hawker Beechcraft (formerly Raytheon).

Power Plant: one Pratt & Whitney Canada PT6A-68 turboprop, 1,100 shp.

Accommodation: two, in tandem, on zero/zero ejection seats.

Dimensions: span 33.5 ft, length 33.4 ft, height 10.7 ft.

Weight: empty (approx) 4,707 lb; gross 6,500 lb.

Ceiling: 31,000 ft.

Performance: max speed 368 mph, range 920 miles.

COMMENTARY

The Joint Primary Aircraft Training System (JPATS) **T-6A** Texan II is based on the Swiss Pilatus PC-9 aircraft, modified to include a strengthened fuselage, zero/zero ejection seats, increased aircrew accommodation, upgraded engine, increased fuel capacity, pressurized cockpit, larger, bird-resistant canopy, and new digital avionics. The JPATS replaces USAF's T-37Bs and USN's T-34Cs in primary pilot training, as well as supporting undergraduate naval flight officer and USAF combat systems officer training.

T-37 Tweet

Brief: A twin-engine jet aircraft used for training undergraduate pilots in fundamentals of aircraft handling and instrument, navigation, formation, and night flying.

Function: Primary trainer.

Operator: AETC.

First Flight: September 1955.

Delivered: December 1956-68.

IOC: 1957.

Production: 985.

Inventory: 87.

Unit Location: Active: Columbus AFB, Miss., and Sheppard AFB, Tex.

Contractor: Cessna.

Power Plant: two Continental J69-T-25 turbojets, each 1,025 lb thrust.

Accommodation: two, side by side, on ejection seats.

Dimensions: span 33.7 ft, length 29.2 ft, height 9.1 ft.

Weight: empty 3,870 lb, gross 6,625 lb.

Ceiling: 35,000 ft.

Performance: max speed at S/L 315 mph, range 460 miles.

COMMENTARY

USAF's first purpose-built jet trainer, the T-37 has been AETC's standard two-seat primary trainer for several decades. Its distinctive blue-and-white finish is intended to help formation training and ease maintenance.

T-37A, with J69-T-9 turbojets; all have been modified to T-37B standards.

***T-38** Talon* (SrA. Matthew C. Simpson)

T-37B. The original T-37A was superseded in November 1959 by the T-37B, with improved radio navigational equipment, UHF radio, and upgraded instruments. Kits were subsequently produced to extend the capability of the T-37 by modifying or replacing critical structural components. AETC has been replacing the T-37B with the T-6A Texan II since 2000.

T-38 Talon

Brief: A twin-engine, high-altitude, supersonic jet trainer used in a variety of roles, primarily for undergraduate pilot, pilot instructor training, and introduction to fighter fundamentals training.

Function: Trainer.
Operator: ACC, AETC, AFMC, AFRC.
First Flight: April 1959.
Delivered: 1961-72.
IOC: March 1961.
Production: more than 1,100.
Inventory: 462.
Unit Location: Active: Beale AFB and Edwards AFB, Calif., Columbus AFB, Miss., Holloman AFB, N.M., Laughlin AFB, Randolph AFB, and Sheppard AFB, Tex., Vance AFB, Okla., Whiteman AFB, Mo. AFRC: (assoc.) Randolph AFB, Tex.
Contractor: Northrop Grumman.
Power Plant: two General Electric J85-GE-5A turbojets, each 2,680 lb thrust dry, 2,900 lb thrust with afterburning.
Accommodation: two, in tandem, on ejection seats.
Dimensions: span 25.3 ft, length 46.3 ft, height 12.8 ft.
Weight: empty 7,164 lb, gross 12,500 lb.
Ceiling: above 55,000 ft.
Performance: max level speed 812 mph, range 1,000 miles.
COMMENTARY

Most of the T-38s in service are used by AETC for advanced bomber-fighter training track in JSUPT and IFFT. Capabilities are being enhanced through an ongoing program of modifications and structural renewal, including a full avionics upgrade with a HUD and integrated GPS/INS, and a propulsion modernization. As a result of the reduction in the T-38's workload through introduction of the T-1A and JSUPT, the service life of the T-38s should extend well beyond 2020.

T-38A. Close in structure to the F-5A export tactical fighter, the T-38A was the world's first supersonic trainer aircraft. It is used to teach supersonic techniques, aerobatics, formation, night and instrument flying, and cross-country and low-level navigation. The aircraft is also used by AFMC to train test pilots and flight-test engineers at Edwards AFB, Calif., in experimental techniques, and by ACC as a companion trainer to maintain pilot proficiency.

AT-38B. A slightly different version, with a gunsight and practice bomb dispenser, the AT-38B is used by AFMC for test and evaluation.

T-38C. C model T-38s are rewinged A and B airframes with modifications of the avionics systems to include a HUD. The first T-38C was delivered late summer 2002; last delivery was made in summer 2007. The propulsion system is also being upgraded to improve performance and reliability. In addition, the Escape System Upgrade Program is under way to further improve safety and sustainability of the aircraft and improve aircrew accommodation.

T-41 Mescalero

Brief: Short-range, high-wing trainer used primarily for aerodynamic and navigation courses.

Function: Training, support.
Operator: AETC.
Delivered: 1969.
Inventory: four.
Unit Location: USAFA, Colo.
Contractor: Cessna.
Power Plant: one Continental IO-360-DB piston engine, 210 hp.
Accommodation: two, side by side.
Dimensions: span 36.1 ft, length 26.5 ft, height 8.9 ft.
Weight: gross 2,550 lb.
Ceiling: 16,000 ft.
Performance: speed 182 mph, range 690 miles.
COMMENTARY

The **T-41D,** a military version of the Cessna 172, is an all-metal, strut-braced high-wing monoplane. The aircraft is equipped with modern avionics, GPS, and other equipment appropriate to its mission. It is used for Aero 456 flight testing, USAFA flying team support, and orientation flights.

T-43

Brief: A medium-range, swept-wing jet aircraft equipped with navigation and communications equipment to train navigators for strategic and tactical aircraft.

Function: Navigation trainer.
Operator: AETC.
First Flight: April 1973.
Delivered: September 1973-July 1974.
IOC: 1974.
Production: 19.
Inventory: eight.
Unit Location: Randolph AFB, Tex.
Contractor: Boeing.
Power Plant: two Pratt & Whitney JT8D-9 turbofans, each 14,500 lb thrust.
Accommodation: crew of two; 12 students and six instructors.
Dimensions: span 93 ft, length 100 ft, height 37 ft.
Weight: gross 115,500 lb.
Ceiling: 37,000 ft.
Performance: econ cruising speed 535 mph (Mach 0.7), operational range 2,995 miles.
COMMENTARY

T-43A. The T-43A was derived from the commercial Boeing Model 737-200 and was equipped with the same onboard avionics as most USAF operational aircraft, including mapping radar, VHF omnidirectional radio and Tacan radio systems, INS, radar altimeter, all required communications equipment, and celestial navigation capability. A number of T-43s are configured for passengers and provide operational support to assigned commands.

T-51

Brief: A light aircraft used by USAFA flying team for training and competition.

Function: Training, competition.
Operator: AETC.
Inventory: three.
Unit Location: USAFA, Colo.
Contractor: Cessna.
Power Plant: one Lycoming 0-320 E2D piston engine, 150 hp.
Accommodation: two, side by side.
Dimensions: span 33.3 ft, length 24.8 ft, height 8.5 ft.
Weight: (Cessna 150M) gross 1,600 lb.
Ceiling: 14,000 ft plus.
Performance: speed 124 mph, range 475 miles.
COMMENTARY

The T-51 is a military version of the Cessna 150 used by students at USAFA for training and competition.

TG-10B Merlin

Brief: Two-seat medium-performance sailplane used for introductory glider training, instructor upgrade training, spin training, and basic cross-country soaring training.

Function: Trainer.
Operator: AETC.
Delivered: May 2002.
IOC: December 2002.
Production: 12.
Inventory: 12.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: two.
Dimensions: span 55.4 ft, length 27.9 ft, height 6.2 ft.
Weight: 1,168 lb.
Performance: speed 142.6 mph, glide ratio 28:1.
COMMENTARY

The **TG-10B** is an L-23 Super Blanik dual sailplane, produced in the Czech Republic and used by USAFA to introduce cadets to flight through the Basic Soaring program.

TG-10C Kestrel

Brief: Two-seat medium-performance sailplane used for spin and aerobatic training.

Function: Trainer.
Operator: AETC.

TG-14A (USAF photo)

Delivered: May 2002.
IOC: December 2002.
Production: five.
Inventory: five.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: two.
Dimensions: span 46.6 ft, length 27.6 ft, height 6.9 ft.
Weight: 1,100 lb.
Performance: speed 146.1 mph, glide ratio 26:1.
COMMENTARY
The **TG-10C** is an L-13AC Blanik dual sailplane, produced in the Czech Republic and used primarily for spin and aerobatic training.

TG-10D Peregrine
Brief: Single-seat medium-performance sailplane used for cross-country soaring training and high-altitude wave flight.
Function: Trainer.
Operator: AETC.
Delivered: May 2002.
IOC: December 2002.
Production: four.
Inventory: four.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: single.
Dimensions: span 46.3 ft, length 21.7 ft, height 4.7 ft.
Weight: 750 lb.
Performance: speed 149.5 mph, glide ratio 33:1.
COMMENTARY
The **TG-10D** is an L-33 Solo Blanik sailplane produced in the Czech Republic. It is a medium-performance sailplane that allows students to master basic flight maneuvers while solo, before progressing to a more advanced sailplane. It is primarily used for cross-country training and high-altitude wave flight.

TG-14A
Brief: A two-place, side-by-side motorized glider for use by USAFA in its Introductory Flight Training Program (IFTP) flight screening/primary training program.
Function: Trainer.
Operator: AETC.
Delivered: September 2002.
IOC: December 2002.
Production: 14.
Inventory: 14.
Unit Location: USAFA, Colo.
Contractor: Grupo Aeromot, Brazil.
Power Plant: one Rotax 912A, 81 hp engine.
Accommodation: two, side by side.
Dimensions: span 57.3 ft, length 26.4 ft, height 6.3 ft.
Weight: gross 1,874 lb.
Performance: cruise speed 110 mph, glide ratio 31:1, range 690 miles at high-speed cruise, max endurance seven hr.
COMMENTARY
The **TG-14A** is a version of the Ximango AMT-200S Sport Grupo Aeromot selected for use at USAFA in IFTP, replacing the Enhanced Flight Screening Program performed by civilian flying schools since the grounding of the T-3A Firefly in 1997. Cockpit and avionics are arranged for military use. Students use it to practice multiple pattern, aerial maneuvers, and landing procedures, reducing by half the number of sorties needed to achieve a solo flight.

TG-15A
Brief: A two-seat high-performance advanced training/cross-country sailplane for use by USAFA cadets in support of glider competition events nationwide.
Function: Trainer/cross-country competition sailplane.
Operator: AETC.
Unit Location: USAFA, Colo.
Inventory: two.
Contractor: Schempp-Hirth, Germany.
Accommodation: two-seat.
Dimensions: span 65.6 ft, length 28.3 ft.
Weight: gross 1,543 lb.
Performance: max permitted speed 155 mph, aspect ratio 24:4.
COMMENTARY
The **TG15A** is a high-performance advanced training/cross-country sailplane manufactured by Schempp-Hirth of Germany under the civilian designation Duo Discus. This world-class competition glider is dual seated and is intended for use nationwide by USAFA cadets for glider competition events.

TG-15B
Brief: A single-seat high-performance advanced training/cross-country sailplane for use by USAFA cadets for glider competition events nationwide.

***HH-60G** Pave Hawk* (TSgt. Parker Gyokeres)

Function: Trainer/cross-country competition sailplane.
Operator: AETC.
Unit Location: USAFA, Colo.
Inventory: three.
Contractor: Schempp-Hirth Germany.
Accommodation: single seat.
Dimensions: span 49.2 ft, length 32.3 ft.
Weight: gross 1,157 lb.
Performance: max permitted speed 155 mph, aspect ratio 22:2.
COMMENTARY
The **TG15B** is a high-performance advanced training/cross-country sailplane manufactured by Schempp-Hirth of Germany under the civilian designation Discus 2b. This world-class competition glider is single seated and is intended for use nationwide by USAFA cadets for glider competition events.

UV-18 Twin Otter
Brief: Modified utility transport used for parachute jump training.
Function: Paradrop.
Operator: AETC.
First Flight: May 1965 (commercial version).
Delivered: 1977.
IOC: 1977.
Production: three.
Inventory: three.
Unit Location: USAFA, Colo.
Contractor: de Havilland Aircraft of Canada.
Power Plant: two Pratt & Whitney Canada PT6A-27 turboprops, each 620 ehp.
Accommodation: crew of two and up to 20 passengers.
Dimensions: span 65 ft, length 51.8 ft, height 19.5 ft.
Weight: gross 12,500 lb.
Ceiling: 26,700 ft.
Performance: max cruising speed 210 mph, range with 2,500 lb payload 806 miles.
COMMENTARY
The **UV-18B** is a military version of the DHC-6 Twin Otter STOL utility transport used for parachute jump training at USAFA.

Helicopters

HH-60G Pave Hawk
Brief: Specially modified helicopters used primarily for combat search and rescue; also aeromedical evacuation, civil SAR, and other support missions.
Function: CSAR medium-lift helicopter.
Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG, AFRC.
First Flight: October 1974.
Delivered: from 1982.
IOC: circa 1982.
Production: 105.
Inventory: 101.
Unit Location: Davis-Monthan AFB, Ariz., Kadena AB, Japan, Kirtland AFB, N.M., Moody AFB, Ga., Nellis AFB, Nev., RAF Lakenheath, UK. ANG: Francis S. Gabreski Arpt., N.Y., Kulis ANGB, Alaska, Moffett Field, Calif. AFRC: Davis-Monthan AFB, Ariz., Patrick AFB, Fla.
Contractor: Sikorsky.
Power Plant: two General Electric T700-GE-700/701C turboshafts, each 1,560-1,940 shp.
Accommodation: crew of six; 8-12 troops, two litters, or internal or external cargo.

***MH-53** Pave Low* (SrA. Julianne M. Showalter)

Dimensions: rotor diameter 53.6 ft, length of fuselage 64.7 ft, height 16.7 ft.
Weight: max gross 22,000 lb.
Ceiling: 14,200 ft.
Performance: max speed 173 mph, max range 373 miles (internal fuel), 500 miles (auxiliary tank).
Armament: two 7.62 mm miniguns, with provision for two .50-caliber machine guns in cabin doors.
COMMENTARY
Black Hawk helicopters were modified to **HH-60G** Pave Hawk configuration in the early 1980s. Since that time, they have been in continuous use by active duty, ANG, and AFRC air rescue units for CSAR, humanitarian, and medevac mission activities worldwide. The Pave Hawk is a highly modified version of the Army Black Hawk helicopter, featuring an upgraded communications/navigation suite that includes INS/GPS/Doppler navigation systems, satellite communications (SATCOM), secure/anti-jam communications, and a PLS that provides range/steering data to compatible survivor radios.
Additional modifications include an automatic flight-control system, NVG lighting, FLIR, color weather radar, engine/rotor blade anti-ice system, retractable in-flight refueling probe, internal auxiliary fuel tanks, and an integral rescue hoist. Combat enhancements include RWR, IR jammer, flare and chaff countermeasures dispensing system, and two 7.62 mm or .50-caliber machine guns.

MH-53 Pave Low
Brief: Specially outfitted heavy-lift helicopters used by Air Force special operations forces for infiltration/exfiltration as well as CSAR missions.
Function: SOF heavy-lift helicopter.
Operator: AFSOC.
First Flight: March 1967.
Delivered: from July 1987 (MH-53J).
IOC: 1988 (MH-53J).
Production: not available.
Inventory: two (J); 20 (M).
Unit Location: Hurlburt Field, Fla.
Contractor: Sikorsky; Texas Instruments.
Power Plant: two General Electric T64-GE-100 turboshafts, each 4,330 shp.
Accommodation: crew of six; up to 38 troops.
Dimensions: rotor diameter 72.2 ft, length of fuselage (without refueling probe) 67.2 ft, height 25 ft.
Weight: gross 50,000 lb.
Ceiling: 16,000 ft.
Performance: speed 164 mph, max range 630 miles, unlimited with air refueling.
Armament: mounts for any combination of three 7.62 miniguns and .50-caliber machine guns.
COMMENTARY
MH-53H. Older version of the helicopter, all of which, together with all HH/CH-53B/Cs, were upgraded to MH-53J Pave Low III "Enhanced" standard from 1986.
MH-53J. A long-range deep penetration helicopter, adverse weather capable and equipped for extended operations when air refueled. Equipped with a nose-mounted FLIR, an integrated digital avionics suite that includes TF/TA radar, Kalman filtered navigation suite (GPS, INS, Doppler), projected map display, secure UHF, VHF, FM, HF communications, PLS, SATCOM, hover coupler, rescue hoist, mission commander's C2 panel, armor plating, and an ECM suite with radar and IR missile jammers, flare/chaff dispensers, RWR, and missile launch detectors.
A service life extension program (SLEP) upgraded the aircraft's hydraulics, wiring, and basic airframe structure for increased gross weight, and an automated blade/pylon fold system optimized for shipboard compatibility. All aircraft modified to support aircrew eye/respiratory protection system.
MH-53M. MH-53J helicopters upgraded to Pave Low IV standard, delivered from 1999. Upgrades include the interactive defensive avionics suite/multimission advanced tactical terminal capability which integrates onboard EW systems with off-board, over-the-horizon, near-real-time intelligence, and mission software improvements. Cockpit modifications include three MFDs, integrated digital map, and mission commander situation awareness panel in the cabin area.
The remaining aircraft in the inventory are scheduled for retirement by the end of September 2008.

UH-1
Brief: Modified Bell helicopter used to support Air Force ICBM facilities, undergraduate pilot training, aviation advisory aircrew flight proficiency, and administrative airlift.
Function: Utility and training helicopter.
Operator: AETC, AFMC, AFSOC, AFSPC, AMC, PACAF.
First Flight: 1956.
Delivered: from September 1970.
IOC: circa 1970.
Production: 79 (USAF).
Inventory: 27 (H); 62 (N).
Unit Location: Andrews AFB, Md., Fairchild AFB, Wash., F.E. Warren AFB, Wyo., Ft. Rucker, Ala., Hurlburt Field, Fla., Kirtland AFB, N.M., Malmstrom AFB, Mont., Minot AFB, N.D., Robins AFB, Ga., Yokota AB, Japan.
Contractor: Bell.
Power Plant: UH-1H: one Lycoming T53-L-13B turboshaft, 1,400 shp. UH-1N: Pratt & Whitney Canada T400-CP-400 Turbo "Twin-Pac," 1,290 shp.
Accommodation: two pilots and 14 passengers or cargo, or external load of 4,000 lb.
Dimensions: UH-1H: rotor diameter 48.3 ft, fuselage length 57.1 ft, height 13 ft. UH-1N: rotor diameter (with tracking tips) 48.1 ft, fuselage length 42.3 ft, height 14.3 ft.
Weight: UH-1H: gross 9,500 lb. UH-1N: gross 11,200 lb.
Ceiling: UH-1H: 15,000 ft. UH-1N: 13,000 ft.
Performance: max cruising speed at S/L 115 mph, max range, no reserves, 261 miles.
Armament: (optional) two General Electric 7.62 mm miniguns or two 40 mm grenade launchers; two seven-tube 2.75-in rocket launchers.
COMMENTARY
UH-1H is a former Army-owned training helicopter transferred to USAF in 2004 for use by the 23rd Flying Training Squadron at Ft. Rucker, Ala., for Air Force undergraduate helicopter pilot training. It is a single-engine version of the UH-1 utility helicopter (Bell Model 205) equipped with a rescue hoist. Two UH-1H helicopters are maintained by AFSOC for aviation advisory aircrew flight proficiency.
UH-1N is a twin-engine version of the UH-1 utility helicopter (Bell Model 212), most of which are allocated for AFSPC missile security and for administrative/DV airlift. The UH-1N is also used by AETC's 58th SOW, Kirtland AFB, N.M., for training purposes and by the 336th TRG, Fairchild AFB, Wash., for aircrew survival training. Two UH-1N helicopters are maintained by AFSOC for aviation advisory aircrew flight proficiency.
TH-1H is the modified version of the UH-1H slated to be the Air Force's newest undergraduate helicopter pilot trainer. The TH-1H is a "zero-time" aircraft that includes upgraded power train components and a "glass" cockpit. Student training is scheduled to begin in October 2008.

Strategic Missiles

AGM-86 Air Launched Cruise Missile
Brief: A small, subsonic, winged air vehicle, deployed on B-52H aircraft, which can be equipped with either a nuclear or conventional warhead and can be used to help destroy/defeat air defenses and complicate an enemy's air defense task.
Function: Strategic air-to-surface cruise missile.
Operator: ACC.
First Flight: June 1979 (full-scale development).
Delivered: from 1981.
IOC: December 1982, Griffiss AFB, N.Y.
Production: 1,700+.
Unit Location: Barksdale AFB, La., Minot AFB, N.D.
Contractor: Boeing.
Power Plant: Williams/Teledyne CAE F107-WR-10 turbofan, 600 lb thrust.
Guidance: AGM-86B: inertial plus Terrain Contour Matching (TERCOM); AGM-86C: inertial plus GPS.
Warhead: AGM-86B: W80-1 nuclear; AGM-86C: blast/fragmentation conventional; AGM-86D: hard target penetrating warhead.
Dimensions: length 20.8 ft, body diameter 2 ft, wingspan 12 ft.
Weight: 3,150 lb (B), 3,277 lb (C).
Performance (approx): speed 550 mph (Mach 0.6), range 1,500+ miles (AGM-86B).
COMMENTARY
AGM-86A. A prototype cruise missile, developed in the mid-1970s. Slightly smaller than the later versions, it never entered production.
AGM-86B. First production version, the B is programmed for strategic attack on surface targets. Small radar signature and low-level flight capability enhance the missile's effectiveness. The last of 1,715 production models was delivered in October 1986. A SLEP has been ongoing to extend service life to 2030; however, USAF now plans to retire all but 528.
AGM-86C. A conventional warhead version, developed from June 1986, the Conventional Air Launched Cruise Missile (CALCM) was first used operationally during Gulf War I and has since been used widely in combat operations. CALCM provides an adverse weather, day/night, air-to-surface, accurate, standoff outside theater defenses strike capability, with a range greater than 500 miles and a 3,000-lb class warhead. CALCM has proved equally effective for stand-alone, clandestine/punitive strikes and fully integrated theater warfare. From 1986, Boeing converted 622 Bs to the conventional configuration, the first of which was delivered in December 1987. The remaining CALCMs feature Block 1A enhancements with improved accuracy and increased immunity to electronic jamming. Since Iraqi Freedom, few CALCMs remain.
AGM-86D. CALCM penetrator version with a Lockheed Martin AUP-3(M) warhead. The CALCM penetrator provides a standoff outside theater defenses capability against a wide range of hardened, deeply buried targets. The CALCM penetrator was used with success in Iraqi Freedom.

AGM-129 Advanced Cruise Missile
Brief: A stealthy, long-range, winged air vehicle equipped with a nuclear warhead and designed to evade enemy air and ground-based defenses in order to strike hard, heavily defended targets at standoff distances.
Function: Strategic air-to-surface cruise missile.
Operator: ACC.
First Flight: July 1985.
Delivered: June 1990-August 1993.
IOC: circa 1991.
Production: 461.
Unit Location: Barksdale AFB, La., Minot AFB, N.D.
Contractor: General Dynamics (now Raytheon); McDonnell Douglas (now Boeing).
Power Plant: Williams International F112-WR-100 turbofan.
Guidance: inertial, with TERCOM update.
Warhead: W80-1 nuclear.
Dimensions: length 20.8 ft, body width 2.2 ft, wingspan 10.2 ft.
Weight: 3,700 lb.
Performance (approx): range 2,300+ miles, speed 550 mph.
COMMENTARY
AGM-129A. Embodying stealth technology, the AGM-129A is an air-launched strategic cruise missile, carried externally on B-52H aircraft, with significant improvements over the AGM-86B in range, accuracy, and survivability. Despite modification to extend its service life to 2030, USAF now plans to retire its entire ACM inventory.

LGM-30 Minuteman
Brief: A solid-fuel ICBM capable of being fired from silo launchers and delivering a thermonuclear payload of one to three warheads with high accuracy over great distances.
Function: Strategic surface-to-surface ballistic missile.
Operator: AFSPC.
First Flight: February 1961.
Delivered: 1962-December 1978.
IOC: December 1962, Malmstrom AFB, Mont.
Production: 1,800.

***LGM-30** Minuteman III*
(USAF photo)

AGM-88 HARM (DOD photo)

Unit Location: F.E. Warren AFB, Wyo., Malmstrom AFB, Mont., Minot AFB, N.D.
Contractor: Boeing.
Power Plant: stage 1: Thiokol M-55 solid-propellant motor, 210,000 lb thrust; stage 2: Aerojet General SR19-AJ-1 solid-propellant motor, 60,300 lb thrust; stage 3: Thiokol SR73-AJ-1 solid-propellant motor, 34,400 lb thrust.
Guidance: inertial guidance system.
Warheads: one-three Mk 12/12A MIRVs (downloaded to one).
Dimensions: length 59.8 ft, diameter of first stage 5.5 ft.
Weight: launch weight (approx) 78,000 lb.
Performance: speed at burnout more than 15,000 mph, highest point of trajectory approx 700 miles, range with max operational load more than 6,000 miles.
COMMENTARY
A key element in the US strategic deterrent posture, Minuteman is a three-stage, solid-propellant ICBM, housed in an underground silo.
LGM-30A/B. Minuteman I version deployed in the early 1950s. The last Minuteman I missile was removed from its silo at Malmstrom AFB, Mont., in February 1969. USAF had deployed 150 A and 650 B models in 16 squadrons.
LGM-30F. Minuteman II version incorporated a larger second stage, an improved guidance package, greater range and payload capability, and hardening against the effects of nuclear blast. IOC was reached in October 1965 at Grand Forks AFB, N.D. USAF deployed 450 in nine squadrons.
LGM-30G. The Minuteman III became operational in June 1970, providing improved range, rapid retargeting, and the capability to place three MIRVs on three targets with a high degree of accuracy. USAF initially deployed 550 in 11 squadrons, later reducing to 500 based at F.E. Warren, Malmstrom, and Minot. Deactivation of a further 50 Minuteman IIIs began in June 2007 at Malmstrom. Components of the dismantled missiles are to be used for flight-test operations programs.
In accordance with strategic arms control negotiations, all the three-warhead Minuteman III missiles at F.E. Warren have been downloaded to single re-entry vehicles.
An extensive life extension program is ensuring Minuteman III's viability to 2020. Major upgrades include refurbishment of liquid propulsion post-boost rocket engine, remanufacture of the solid-propellant rocket motors, replacement of the environmental control system, repair of launch facilities, installation of updated, survivable communications equipment, and a C2 sustainment program. Further proposed incremental upgrades from 2020 are intended to maintain the ICBMs' viability to 2040 and beyond.

Tactical Missiles and Weapons

AGM-65 Maverick
Brief: A tactical, TV- or imaging infrared (IIR)-guided air-to-surface missile carried by fighters and designed for use in CAS, interdiction, and defense suppression missions, having standoff capability and high probability of strike against a wide range of targets.
Function: Air-to-surface guided missile.
First Flight: August 1969.
Delivered: from August 1972
IOC: February 1973.
Production: sustainment phase.
Contractor: Raytheon.
Power Plant: Thiokol TX-481 solid-propellant rocket motor.
Guidance: self-homing, EO guidance system (IIR on D and G models).
Warhead: AGM-65A/B/D/H 125-lb high-explosive, shaped charge; AGM-65G/K 298-lb blast fragmentation.
Dimensions: length 8.2 ft, body diameter 1 ft, wingspan 2.3 ft.
Weight: launch weight (AGM-65A) 462 lb, (AGM-65G) 670 lb.
Performance: range about 9.2 miles.
COMMENTARY
Maverick missiles have a long and distinguished combat record. They were first employed by USAF in Vietnam and were used extensively during Gulf War I and II. The weapon is integrated with A-10, F-15E, and F-16 aircraft for use against tanks and columns of vehicles and in the SEAD role.
AGM-65A. The basic Maverick is a launch-and-leave, TV-guided air-to-surface missile that enables the pilot of the launch aircraft to seek other targets or leave the target area once the missile has been launched. Production was initiated in 1971, following successful test launches over distances ranging from a few thousand feet to many miles and from high altitudes to treetop level.
AGM-65B. A version with a "scene magnification" TV seeker that enables the pilot to identify and lock on to smaller or more distant targets.
AGM-65D. System developed to overcome limitations of the TV Maverick, which can be used only in daylight and clear-weather conditions. This version has an IIR seeker as well as a lower-smoke motor. IIR Maverick became operational in February 1986 on A-10 aircraft.
AGM-65E. A laser guided version ordered by USN and USMC. To meet short-term operational requirements, USAF has used missiles from the Navy's inventory in combat operations, beginning June 2007. A new production state-of-the-art version of the laser guided Maverick for the Navy and Air Force is anticipated for 2009
AGM-65G. Uses the IIR seeker with an alternate 298-lb blast fragmentation warhead for use against hardened targets. Software is modified to include options for targeting ships and large land targets as well as mobile armor. This version also has a digital autopilot and a pneumatic, rather than hydraulic, actuation system. USAF received its first G model in 1989.
AGM-65H. AGM-65B modified with an upgraded TV seeker providing significant reliability, maintainability, and performance improvements over the AGM-65B seeker and double the standoff range.
AGM-65K. AGM-65G modified with the same upgraded TV seeker as in the AGM-65H to provide a TV-guided version of the Maverick with the 298-lb blast fragmentation warhead.

AGM-88 HARM
Brief: An air-to-surface tactical missile designed to seek and destroy enemy radar-equipped air defense sites, using an advanced guidance system that senses and homes in on enemy radar emissions.
Function: Air-to-surface anti-radiation missile.
First Flight: April 1979.
Delivered: 1982-98.
IOC: circa 1984.
Production: sustainment phase.
Contractor: Raytheon.
Power Plant: Thiokol smokeless, dual-thrust, solid-propellant rocket motor.
Guidance: passive homing guidance system, using seeker head that homes on enemy radar emissions.
Warhead: high-explosive fragmentation, weighing 145 lb.
Dimensions: length 13.7 ft, body diameter 10 in, wingspan 3.7 ft.
Weight: 795 lb.
Performance: cruising speed supersonic, altitude limits S/L to 40,000 ft, range more than 10 miles.
COMMENTARY
The High-speed Anti-Radiation Missile (HARM) exhibits great velocity along with an ability to cover a wide range of frequency spectrums through the use of programmable digital processors in both the carrier aircraft's avionics equipment and in the missile. The combination gives this second generation anti-radiation missile (ARM) greatly improved capability over first generation Shrikes and Standard ARMs. The AGM-88 proved highly effective against enemy ground radar in Gulf War I and in subsequent operations. HARMs equip F-16 Block 50/52s (F-16CJ) dedicated to the SEAD mission.
AGM-88A. A factory-programmed version used to equip the now-retired F-4G Wild Weasel to increase its lethality in electronic combat. No longer operational.
AGM-88B. Incorporated erasable electronically programmable read-only memory, permitting changes to missile memory in the field. Older versions of the AGM-88B have software upgrades to satisfy current-standard capability requirements.
AGM-88C. This current production version has a more lethal warhead, containing tungsten alloy cubes, rather than steel, and the enhanced-capability AGM-88C-1 guidance head.
Upgrade initiatives are aimed at increasing capability of both B and C versions against target shutdown, blanking, and blinking and at reducing potential damage to friendly radars in the target area. Further upgrades being evaluated include GPS precision navigation capability through a modification of the control section known as the HARM Destruction of Enemy Air Defenses (DEAD) Attack Module, or HDAM.

AGM-154 Joint Standoff Weapon
Brief: Joint USAF and Navy family of low-cost, glide weapons with a standoff capability.
Function: Air-to-surface guided missile.
First Flight: December 1994.
Delivered: from 2000.
IOC: 2000 (USAF).
Production: 6,114 (originally planned).
Contractor: Raytheon.
Guidance: INS/GPS.
Dimensions: length 13.3 ft.
Weight: 1,065-1,500 lb.
Performance: range: low-altitude launch 17 miles, high-altitude launch 40+ miles.
COMMENTARY
A medium-range, INS/GPS-guided, standoff air-to-ground weapon designed to attack a variety of soft and armored area targets (fixed, relocatable, and mobile) during day/night/adverse weather conditions. JSOW enhances aircraft survivability by providing the capability for launch aircraft to stand off outside the range of enemy point defenses. JSOW accuracy and launch-and-leave capability allows several target kills per aircraft sortie. JSOW arms B-2 and F-16 aircraft. Production for USAF terminated FY05.
AGM-154A. The baseline BLU-97 variant for use against area targets.
AGM-154B. The BLU-108 variant provides anti-armor capability; development complete, production deferred.
AGM-154C. The third variant (used by Navy only), JSOW/Unitary integrates an IIR terminal seeker and a 500-lb unitary warhead.

AGM-158A Joint Air-to-Surface Standoff Missile
Brief: An advanced weapon designed to attack heavily defended targets with high precision at great standoff range.
Function: Air-to-surface guided weapon.
First Flight: April 8, 1999.
Delivered: through FY19 (planned).
IOC: September 2003. JASSM-ER projected 2010.
Production: 2,400, plus 2,500 JASSM-ER (planned).
Contractor: Lockheed Martin; Raytheon; Honeywell.
Guidance: INS, GPS, and IIR terminal seeker.
Power Plant: Teledyne Continental Motors.
Dimensions: length 14 ft.
Weight: 2,250 lb.
Performance: 1,000-lb class penetrator and blast-

fragmentation warheads; standoff range greater than 200 miles.

COMMENTARY

JASSM is a next generation missile that enables Air Force fighters and bombers to destroy the enemy's war-sustaining capabilities from outside the ranges of enemy air defenses. This autonomous precision strike weapon has a range greater than 200 miles and can attack both fixed and relocatable targets, ranging from nonhardened above ground to moderately hardened buried targets. JASSM is equipped with INS/GPS guidance, an IIR terminal seeker, and a stealthy LO airframe. The system also offers low operational support costs. IOC has been declared on the B-1B, B-2, B52H, and F-16. Integration on F-15E aircraft is in progress. The B-1B is the only aircraft capable of redirecting a JASSM route prior to launch. An extended-range version **(JASSM-ER)**, with a range of more than 500 miles, entered development in FY04; flight testing began in 2005. USAF expected in late spring 2008 to make a decision regarding the future of the JASSM, following a series of earlier test failures.

AIM-7 Sparrow

Brief: A supersonic, medium-range, semiactive radar-guided air-to-air missile with all-weather, all-altitude, and all-aspect offensive capability and a high-explosive warhead, carried by fighter aircraft.

Function: Air-to-air guided missile.

First Flight: December 1983 (AIM-7M).

Delivered: from 1956.

IOC: April 1976 (AIM-7F).

Production: sustainment phase.

Contractor: Hughes; General Dynamics (now Raytheon).

Power Plant: Hercules Mk 58 Mod 0 4.5 sec boost-11 sec sustain rocket motor.

Guidance: AIM-7M: monopulse semiactive radar.

Warhead: high-explosive, blast fragmentation, weighing 86 lb.

Dimensions: length 12 ft, body diameter 8 in, wingspan 3.3 ft.

Weight: launch weight 504 lb.

Performance (estimated): max speed more than 2,660 mph (Mach 3.5), range more than 34 miles.

COMMENTARY

Early versions. Production of Sparrow has been under way for nearly half a century. Approximately 34,000 early models (AIM-7A/B/C/D/E) were produced. Compared to the earlier versions, the advanced solid-state AIM-7F, introduced into USAF service in 1976, had a larger motor, Doppler guidance, improved ECM, and better capability over both medium and "dogfight" ranges. USAF produced approximately 5,000, but none are now in USAF service.

AIM-7M. A joint Navy-USAF project aimed at producing a monopulse version of Sparrow at reduced cost and with improved performance in the ECM and look-down clutter regions. It began operational service in FY83. This version provides all-weather, all-altitude, all-aspect capability and equips USAF F-15s and F-16s (ADF) and Navy F-18s.

AIM-7P. Block 1 retrofit to AIM-7M guidance and control sections (GCSs), providing low-altitude guidance and fuzing capability. Block 2 provides new-build for AIM-7P GCSs.

AIM-9 Sidewinder

Brief: A supersonic, short-range, IR-guided air-to-air missile carried by fighter aircraft, having a high-explosive warhead.

Function: Air-to-air missile.

First Flight: September 1953.

Delivered: 1957-present. First production AIM-9X delivered May 1, 2002.

IOC: circa 1983 (AIM-9M).

Production: sustainment phase (AIM-9M); LRIP from November 2000, with full rate from November 2004 (AIM-9X).

Contractor: Raytheon; Loral.

Power Plant: Thiokol Mk 36 Mod 11 solid-propellant rocket motor.

Guidance: solid-state IR homing guidance.

Warhead: high-explosive, weighing 20.8 lb.

Dimensions: length 9.4 ft, body diameter 5 in, fin-span 2.1 ft.

Weight: launch weight 190 lb.

Performance: max speed Mach 2+, range 10+ miles.

COMMENTARY

Early versions. AIM-9A was the prototype version. The AIM-9B, initial production version, entered the inventory in 1957 and was effective only at close range during day. These shortcomings were eliminated on subsequent AIM-9E/H/J/P versions. The third generation Sidewinder, AIM-9L, added a more powerful solid-propellant rocket motor as well as tracking maneuvering ability. Production and delivery began in 1976; production ended in 1981.

AIM-9M. A joint Navy-USAF project aimed at producing an improved version of AIM-9L with all-altitude, all-aspect, launch-and-leave intercept capability. Can equip: A-10, F-15, F-16, F-16 ADF, and F-18 aircraft. This version has increased infrared counter-countermeasures (IRCCM) capability, improved background discrimination, and a reduced-smoke rocket motor. First flight of prototype was in February 1978. Full production began in FY81.

AIM-9M-9. A modification to improve IRCCM capability of early missiles. Complete.

AIM-9X. Deriving from a jointly funded Navy-USAF project, the AIM-9X entered LRIP in November 2000. In November 2003, USAF's F-15-equipped 12th and 19th FS, part of the 3rd Wing at Elmendorf AFB, Alaska, were the first operational units to receive AIM-9Xs. Full-rate production was contracted in November 2004. USAF plans to buy 5,097 missiles.

The AIM-9X incorporates advanced technologies such as a focal plane array imaging seeker, high off-boresight sensor (HOBS), and a highly maneuverable jet-vane control system. The missile utilizes the existing AIM-9M rocket motor, warhead, and fuze. Carrier aircraft include the F-15, F-16, F-22, F-35, and F/A-18.

***AIM-9** Sidewinder* (TSgt. Jeffrey Allen)

AIM-120 AMRAAM

Brief: A next generation supersonic, medium-range, active radar-guided air-to-air missile with a high-explosive warhead.

Function: Air-to-air guided missile.

First Flight: December 1984.

Delivered: 1988-July 2010 (planned).

IOC: September 1991.

Production: 10,917+ planned for USAF/USN.

Contractor: Raytheon.

Power Plant: Alliant boost-sustain solid-propellant rocket motor.

Guidance: inertial/command, inertial with active radar terminal homing.

Warhead: high-explosive directed fragmentation weighing 48 lb.

Dimensions: (A/B models) length 12 ft, body diameter 7 in, span of tail control fins 2.1 ft.

Weight: 335 lb.

Performance: cruising speed approx Mach 4, range more than 23 miles.

COMMENTARY

A joint project between the Navy and USAF, the AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) is a replacement for the AIM-7 Sparrow. The AIM-120 equips F-15, F-16, F-22, F-35, and F/A-18 fighters. Inertial and command inertial guidance and active radar terminal homing provide launch-and-maneuver capability. Significant improvements in operational effectiveness over the AIM-7 include increased average velocity, reduced miss distance, improved fuzing, increased warhead lethality, multiple target engagement capability, improved clutter rejection in low-altitude environments, enhanced electronic protection capability, increased maximum launch range, a reduced-smoke motor, and improved maintenance and handling.

AIM-120A was the first production version, delivered by Hughes in 1988 to the 33rd TFW at Eglin AFB, Fla.

AIM-120B/C/D are upgraded, reprogrammable variants of the AIM-120. The AIM-120C currently in production has smaller, clipped control surfaces to provide for internal carriage in the F-22A and F-35, and involves HOBS launch capability. The latest development effort (AMRAAM Phase 4) adds GPS to improve navigational accuracy and enhanced data link capabilities in the AIM-120D version. Production began 2006.

CBU-87/103 Combined Effects Munition

Brief: The CBU-87 CEM is an area munition effective against light armor, materiel, and personnel and used by USAF and Navy fighters and bombers for interdiction.

Function: Area munition.

Production: sustainment phase.

Contractor: Aerojet General; Honeywell; Alliant Tech.

Guidance: none (CBU-87).

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 949 lb.

Performance: dispenses 202 BLU-97 combined effects bomblets over an area roughly 800 ft by 400 ft.

COMMENTARY

The CBU-87 Combined Effects Munition dispenses BLU-97 shaped charge anti-personnel/anti-materiel fragmentary/incendiary bomblets over the target in a rectangular pattern. It is currently delivered by USAF and Navy aircraft as an unguided gravity weapon. Density and size of the area covered depends on release parameters and spin rates.

CBU-103. Unguided CBU-87 CEMs retrofitted with the Wind-Corrected Munitions Dispenser (WCMD) tail kit. The WCMD improves the munitions delivery accuracy when released from medium to high altitude.

CBU-89/104 Gator

Brief: The CBU-89 Gator is an anti-armor/anti-personnel mine dispenser used by USAF and Navy fighters and bombers for interdiction.

Function: Scatterable mines.

Production: sustainment phase.

Contractor: Honeywell; Aerojet General; Olan; Alliant Tech.

Guidance: none (CBU-89).

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 705 lb.

Performance: dispenses 72 BLU-91 anti-armor and 22 BLU-92 anti-personnel mines.

COMMENTARY

The CBU-89 Gator dispenser holds 94 mines, of which 72 are anti-tank and 22 are anti-personnel. The mines are dispersed over the target in a circular pattern. The anti-tank mines, which can be fuzed for three different time delay settings, have a magnetic influence fuze to sense armor.

CBU-104. Gators retrofitted with the WCMD tail kit, improving the munitions delivery accuracy when released from medium to high altitude.

CBU-97/105 Sensor Fuzed Weapon

Brief: The CBU-97 SFW is an anti-armor munition used by fighters and bombers for multiple kills per pass against moving and stationary land combat vehicles.

Function: Wide-area munition.

First Flight: circa 1990.

Delivered: 1994-2013 (planned).

IOC: 1997.

Production: 6,500 (planned).

Contractor: Textron Systems.

Guidance: IR sensors in each warhead search for targets, then detonate over them.

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 920 lb.

Performance: delivers 40 lethal projectiles over an area of about 500 ft by 1,200 ft.

COMMENTARY

The **CBU-97** Sensor Fuzed Weapon (SFW) comprises an SUU-66/B tactical munitions dispenser with an FZU-39 fuze and a payload of 10 BLU-108 submunitions. Each tactical munitions dispenser contains 10 BLU-108 submunitions, and each submunition contains four "skeet" projectiles that, upon being thrown out, seek out their target and deliver an explosively formed penetrator. Each SFW can

deliver a total of 40 lethal projectiles. The skeet's active laser and passive IR sensors can detect a vehicle's shape and IR signature; if no target is detected, the warhead detonates after a preset time. The SFW's primary targets are massed tanks, armored personnel carriers, and self-propelled targets. It also provides direct attack capability and interdiction against C2 centers.

The CBU-97 SFW is delivered as an unguided gravity weapon from the A-10, B-1, B-2, B-52H, F-15E, and F-16. The initial baseline SFW systems contained the BLU-108/B and BLU-108A/B submunition. A preplanned product improvement SFW submunition, the BLU-108B/B, entered production in 2001, incorporating improvements such as an active laser sensor, multimission warhead, and increased footprint.

CBU-105. Designation of an unguided CBU-97 equipped with a Wind-Corrected Munitions Dispenser (WCMD) tail kit. The CBU-105 can be delivered accurately from high altitude and in adverse weather from the B-1, B-52H, F-15E, and F-16. Combat debut for the CBU-105 occurred April 2003, during Iraqi Freedom, from a B-52H.

CBU-107 Passive Attack Weapon

Brief: The CBU-107 Passive Attack Weapon (PAW) provides the capability to attack nonhardened surface targets, with a minimum of collateral and environmental damage.

Function: Wide-area munition.
First Flight: 2002.
Delivered: 2002-03.
IOC: December 2002.
Production: not available, but completed March 2003.
Contractor: General Dynamics (kinetic energy penetrator payload and cannister); Lockheed Martin (WCMD); Textron (tactical munition dispenser kit).
Guidance: via WCMD.
Dimensions: length 7.7 ft; diameter 1.3 ft.
Weight: 1,000 lb.
Performance: delivers a high-speed volley of 3,000+ metal "arrows" projected from a single canister; three types of projectiles: 350 x 15 in-long rods, 1,000 x 7 in-long rods, and 2,400 small-nail size.

COMMENTARY

The CBU-107 Passive Attack Weapon (PAW) was developed from September 2002 to provide USAF aircraft with a new weapon that destroys targets with kinetic energy rods rather than explosives, thereby minimizing collateral and environmental damage. Following release from an aircraft, the WCMD-equipped weapon glides toward its target. Before impact, the inner chamber containing the rods begins to rotate and the "arrows" are ejected in rapid succession by centrifugal force, penetrating a target within a 200-ft radius. Two CBU-107s were used during Iraqi Freedom. CBU-107s are intended for use on B-52, F-15E, and F-16 aircraft.

GBU-10 Paveway II

Brief: An unpowered laser guided bomb (LGB) used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface guided munition.
First Flight: early 1970s.
Delivered: from 1976.
IOC: 1976.
Production: 10,000; continuing.
Contractor: Lockheed Martin; Raytheon.
Guidance: semiactive laser.
Warhead: GBU-10C/D/E/F: Mk 84 bomb (2,000-lb unitary); GBU-10G/H/J: BLU-109.
Dimensions: length GBU-10C/D/E/F: 14.1 ft; GBU-10G/H/J: 14 ft, body diameter GBU-10C/D/E/F: 1.5 ft; GBU-10G/H/J: 1.2 ft, wingspan 5.5 ft.
Weight: 1,985 lb.
Performance: circular error probable (CEP) 29.7 ft; range 9.2 miles.

COMMENTARY

Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The GBU-10 is used primarily for precision bombing against nonhardened targets but is capable of greater penetration than previous versions. It can operate in cloud ceilings down to 2,500 ft. GBU-10 platforms include A-10, B-52, F-15E, F-16, and F-117 aircraft.

GBU-12 Paveway II

Brief: An unpowered LGB used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface guided munition.
First Flight: early 1970s.
IOC: 1976.
Production: about 30,000; continuing.
Contractor: Lockheed Martin; Raytheon.
Guidance: semiactive laser.
Warhead: Mk 82 (500 lb) blast/fragmentation bomb.
Dimensions: length 10.9 ft, body diameter 10.7 in, wingspan 4.4 ft.
Weight: 603 lb.
Performance: CEP 29.7 ft; range about 6 miles.

COMMENTARY

Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The LGB is used primarily to strike fixed armor. It can operate in cloud ceilings down to 2,500 ft. GBU-12 platforms include A-10, B-52, F-15E, F-16, and F-117 aircraft.

GBU-15

Brief: An unpowered bomb carried by the F-15E and used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface guided munition.
First Flight: 1975.
Delivered: 1983-complete.
IOC: 1983.
Production: more than 2,000.
Contractor: Boeing; Raytheon.
Guidance: TV or IIR seeker.
Warhead: Mk 84 bomb (2,000-lb unitary) or BLU-109.
Dimensions: length 12.8 ft, body diameter 1.5 ft, wingspan 4.9 ft.
Weight: 2,500 lb.
Performance: cruising speed subsonic; range about 17 miles; CEP about 10 ft.

COMMENTARY

GBU-15 is an air-launched, cruciform-wing glide bomb fitted with a guidance system designed to give it pinpoint accuracy from low or medium altitudes. It also has a standoff capability. Development began in 1974, based on experience gained in Vietnam with the earlier Pave Strike GBU-8 modular weapon program. The GBU-15 is intended for tactical use to suppress enemy defenses and to destroy heavily defended targets. The target-detecting device is carried on the front of the warhead. The control module, with autopilot and data link module, attaches to the rear.

The weapon has two modes of attack. In direct attack, the weapon is locked on to the target before launch and flies a near-line-of-sight profile to impact. In the indirect mode, the seeker can be locked on to the target after launch, or the operator can fly the weapon manually to impact, using guidance updates provided through the data link. A "buddy" system may be operated whereby the weapon is launched from one aircraft and controlled by another. The GBU-15 is deployed with the F-15E.

GBU-15(V)1/B. A TV-guided variant, qualified for operational service in 1983.

GBU-15(V)2/B. IIR version entered service in 1987.

GBU-15-I. Combines accuracy of GBU-15 with the penetration capability of the improved 2,000-lb BLU-109/B penetrator bomb.

EGBU-15. GPS-guided variant, allowing pilot to select either TV, IR, or GPS guidance over the target, depending on weather and/or threat conditions. USAF had 100 initially produced for Allied Force, in addition to the field-level upgrade of over 1,200 existing GBU-15s.

GBU-16 Paveway II

Brief: An unpowered LGB used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface glide munition.
First Flight: early 1970s.
IOC: 1976.
Production: not available.
Contractor: Lockheed Martin; Raytheon.
Guidance: semiactive laser.
Warhead: Mk 83 (1,000 lb) bomb.
Dimensions: length 12.1 ft, body diameter 1.2 ft, wingspan 5.5 ft.
Weight: approx 1,000 lb.
Performance: CEP about 29 ft; range 9.2 miles.

COMMENTARY

Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The GBU-16 LGB is used primarily to strike fixed armor. Its platforms include A-10, F-15E, and F-16 aircraft.

GBU-24 Paveway III

Brief: A precise air-to-ground low-level LGB (LLLGB) equipped with an advanced guidance kit.

Function: Air-to-surface penetrating glide bomb.
First Flight: GBU-24A/B (USAF) in service May 1985; GBU-24B (Navy) June 1992.
Delivered: from 1986.
IOC: 1986.
Production: USAF 14,000; Navy 12,000.
Contractor: Raytheon.
Guidance: semiactive laser.
Warhead: BLU-109 (A/B); BLU-116 (C/D).
Dimensions: length 14.2 ft.
Weight: 2,350 lb.
Performance: range more than 11.5 miles.

COMMENTARY

GBU-24A/B. An air-to-ground weapon equipped with the third generation Paveway III guidance kit, integrated with a BLU-109 penetrating warhead. The kit consists of an advanced guidance section and high-lift airframe. It is extremely precise and highly effective against a broad range of high-value hard targets. The system can be employed from low, medium, and high altitudes, providing operational flexibility through the use of an adaptive digital autopilot and large field-of-regard, highly sensitive scanning seeker. The GBU-24A/B was highly successful during Desert Storm.

GBU-24C/D. Variant integrated with the BLU-16 advanced unitary penetrator (AUP). The GBU-24 adapts to conditions of release, flies an appropriate midcourse, and provides trajectory shaping for enhanced warhead effectiveness. The weapon is deployed on USAF F-15E, F-16, and F-117 and Navy F/A-18 aircraft.

GBU-27

Brief: A precise air-to-ground penetrating LGB equipped with an advanced guidance kit.

Function: Air-to-surface guided glide bomb.
First Flight: not available.
Delivered: from 1988.
IOC: 1988 (unconfirmed).
Production: approx 3,000.
Contractor: Raytheon.
Guidance: semiactive laser.
Dimensions: span 5.5 ft, length 13.9 ft.
Weight: 2,170 lb.
Performance: range more than 11.5 miles.

COMMENTARY

To meet the unique requirements of the F-117A, the GBU-24A/B was adapted to GBU-27 standard, incorporating specific guidance features to accomplish this mission. The GBU-27 is extremely precise and was used to great effect in Desert Storm.

EGBU-27. Integrates GPS/INS guidance into the existing GBU-27 laser seeker to provide adverse weather capability and improved target location. Entered production in FY98. First operational use was in Iraqi Freedom.

GBU-28

Brief: A large 5,000-lb class air-to-ground penetrating warhead (BLU-113/B) equipped with an advanced laser guidance kit, used for striking and destroying hard and deeply buried targets.

Function: Air-to-surface guided glide bomb.
First Flight: February 1991.
Delivered: circa 1991.
IOC: 1991.
Production: approx 500.
Contractor: Raytheon.
Guidance: laser.
Dimensions: length 19.2 ft, diameter 1.2 ft.
Weight: 4,676 lb.
Performance: range more than 5.75 miles.

COMMENTARY

Under USAF's rapid-response program, the GBU-28 bunker-busting LGB was developed for Desert Storm for use against deeply buried, hardened C2 facilities. Four of the GBU-28 weapons were used during the war: two for testing and two by F-111Fs against a bunker complex Feb. 27, 1991. Guidance is by a modified GBU-27 system.

GBU-28B/B. Integrates GPS/INS guidance into the existing GBU-28 guidance control unit to provide adverse weather capability and improved target location. Entered production in FY99.

GBU-28C/B. Utilizes the improved BLU-122/B warhead for increased penetration, lethality, and survivability. Guidance and control is provided by an Enhanced Paveway III system with GPS/INS and laser capability. Entered production in FY05.

GBU-31/32/38 Joint Direct Attack Munition

Brief: A joint USAF-Navy INS/GPS-guided weapon, carried by fighters and bombers, that provides highly accurate, autonomous, all-weather conventional bombing capability.

Function: Air-to-surface guided bomb.
First Flight: Oct. 22, 1996.
Delivered: 1998-2013 (planned).
IOC: 1998.
Production: 213,521 (planned).
Contractor: Boeing; Textron; Honeywell.
Guidance: INS/GPS.
Dimensions: Mk 84 with JDAM 12.8 ft; BLU-109 with JDAM 12.4 ft; Mk 83 with JDAM 10 ft; Mk 82 with JDAM 8 ft.
Weight: Mk 84 2,036/2,056 lb (USAF/USN); BLU-109 2,115/2,135 lb; Mk 83 1,013/1,028 lb; Mk 82 552/558 lb.
Performance: range up to 17 miles, CEP with GPS 16.4 ft; CEP with INS only 98 ft.

COMMENTARY

JDAM upgrades the existing inventory of general-purpose bombs by integrating them with a GPS/INS guidance kit to provide accurate all-weather attack from medium/high altitudes. While still aboard the launch aircraft, JDAM is passed target information through the

***GBU-32** Joint Direct Attack Munition* (MSgt. Michael Ammons)

aircraft's avionics system. Once released, the inertial guidance kit takes over and, with periodic GPS updates to the INS, guides the weapon to its target. JDAM is integrated on A-10, AV-8B, B-1, B-2, B-52, F-15E, F-16, F-22, F-117A, F/A-18C/D/E/F, and MQ-9 aircraft, with future integration on F-35 aircraft.

GBU-31. Variant that adds an INS/GPS guidance kit to the 2,000-lb general-purpose Mk 84 bomb or the 2,000-lb BLU-109 penetrator. First used in combat March 24, 1999.

GBU-32. Variant that adds an INS/GPS guidance kit to the 1,000-lb general-purpose Mk 83 bomb or the 1,000-lb BLU-110 thermal coated bomb.

GBU-38. Variant that adds an INS/GPS guidance kit to the 500-lb general-purpose Mk 82 bomb or the 500-lb BLU-111 thermal coated bomb. First production deliveries were in 2004 for the B-2.

GBU-39B Small Diameter Bomb

Brief: Extended range all-weather, day/night 250-lb class near-precision guided munition. Provides increased loadout to achieve multiple kills per sortie and decreases collateral damage.

Function: Air-to-surface guided munition.

First Flight: May 23, 2003 (guided).

Delivered: from 2006.

IOC: 2007.

Production: 24,000 munitions and 2,000 carriages (planned).

Contractor: Boeing.

Guidance: GPS/INS augmented by Differential GPS.

Dimensions: length 70.8 in (munition); 126.4 in (carriage); 143.1 in (carriage with four munitions).

Weight: 285 lb (munition); 320 lb (carriage); 1,460 lb (carriage with four munitions).

Performance: near-precision capability at standoff range up to 46 miles.

COMMENTARY

The Small Diameter Bomb (SDB) system employs a BRU-61/A smart carriage capable of carrying four 250-lb class GBU-39/B near-precision guided air-to-surface munitions.

SDB I is capable of destroying high-priority fixed and stationary targets from both fighters and bombers in internal bays or on external hardpoints. SDBs can be targeted and released against single or multiple targets. Target coordinates are loaded in the weapon prior to release either on the ground or in the air by aircrew. Once the weapon is released, it relies on GPS/INS augmented by Differential GPS to self-navigate to the impact point. SDB increases loadout, decreases collateral damage, and improves aircraft sortie generation times. GBU-39 went operational in July 2006 on the F-15E. Objective aircraft include the A-10, B-1, B-2, B-52, F-16, F-22, F-35, and MQ-9. Boeing was awarded the contract to develop the SDB in October 2003. A focused lethality munition (FLM) warhead for the SDB I is being developed under a joint capability technology demonstration (JTCD) program, aimed at providing pinpoint strike capability with low collateral damage.

SDB II. Increment 2 under development in a joint interest program between a Boeing/Lockheed Martin team and Raytheon, providing a capability to attack mobile targets from standoff in all weather. One contractor will be selected following the risk reduction phase, expected to run through late 2009.

Massive Ordnance Air Blast (MOAB) Bomb

Brief: A massive precision guided munition (PGM) designed to be dropped by B-1, B-2, or B-52 bombers.

Function: Massive bomb.

Guidance: GPS/INS.

Warhead: 18,000 lb, high explosive.

Dimensions: length 30 ft, diameter 3.3 ft.

Weight: 21,500 lb.

COMMENTARY

On March 11, 2003, USAF live-tested the largest PGM developed to date. Unlike the earlier unguided "Daisy Cutter" bomb, the MOAB does not require a parachute.

Wind-Corrected Munitions Dispenser (WCMD)

Brief: A tail kit fitted to various dispenser weapons that provides inertial guidance system corrections for launch transients and wind effects to enhance accuracy.

Function: Guidance tail kit.

First Flight: February 1996.

Delivered: from 2000.

IOC: FY00.

Production: WCMD: 27,700 (planned). WCMD-ER: 100.

Contractor: Lockheed Martin.

Dimensions: length 1.4 ft, diameter 1.3 ft.

Weight: WCMD: 100 lb. WCMD-ER: about 200 lb.

Performance: WCMD: range about eight miles. WCMD-ER: about 40 miles.

COMMENTARY

WCMD. USAF is modifying standard SUU-64/65/66 tactical munition dispensers with guidance kits to compensate for wind drift on downward flight from high altitudes. The combat-proven WCMD kits include an INS guidance unit, movable tail fins that pop out in flight, and a signal processor. The kits when fitted on CBU-87/89/97 inventory cluster weapons are designated: CEM (CBU-103), Gator (CBU-104), SFW (CBU-105), and PAW (CBU-107). Successful flight testing began in February 1996; WCMDs are now operational on A-10, B-1, B-52, F-15E, and F-16 aircraft. Objective aircraft include B-2 and F-35.

Satellite Systems

Advanced EHF (AEHF)

Brief: Joint service satellite communications system that provides global, secure, protected, and jam-resistant communications for high priority air, ground, and sea assets.

Function: Near-worldwide, secure, survivable satellite communications.

Operator: AFSPC.

First Launch: late 2008 (planned).

IOC: June 2010 (planned).

Constellation: three satellites.

Design Life: 14 years.

Launch Vehicle: SV 1: Atlas V; SV 2 and 3, TBD.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 22,000+ miles (geosynchronous).

Contractor: Lockheed Martin, Northrop Grumman team for system development and demonstration.

Dimensions: length 32 ft (across payload axis), width 75.8 ft (across solar array axis).

Weight: approx 14,500 lb at launch, 9,000 lb on orbit.

Performance: 10 times the capability of the Milstar Block II satellite.

COMMENTARY

The Advanced Extremely High Frequency (AEHF) system comprises three geosynchronous Earth orbit (GEO) satellites that will provide 10 times the capacity of the 1990s-era Milstar satellites. Advanced EHF allows the President, Secretary of Defense, and combat forces to control their tactical and strategic forces at all levels of conflict through general nuclear war and supports the attainment of information superiority. AEHF will provide connectivity across the spectrum of mission areas, including air, land, and naval warfare; special operations; strategic nuclear operations; strategic defense; theater missile defense; and space operations and intelligence.

Defense Meteorological Satellite Program

Brief: Satellites that collect air, land, sea, and space environmental data to support worldwide strategic and tactical military operations. Also shares data with civil agencies.

Function: Environmental monitoring satellite.

Operator: National Polar-orbiting Operational Environmental Satellite System (NPOESS) integrated program office.

First Launch: May 23, 1962.

IOC: 1965.

Constellation/on-orbit: two.

Design Life: 48 months.

Launch Vehicle: Delta IV and Atlas V.

Unit Location: Suitland, Md. (operations); Schriever AFB, Colo. (AFRC-manned backup operations center).

Orbit Altitude: approx 527 miles.

Contractor: Lockheed Martin; Northrop Grumman.

Power Plant: solar arrays generating 1,200-1,300 watts.

Dimensions: length 25 ft (with array deployed), width 4 ft.

Weight: 2,545 lb (including 772-lb sensor).

Performance: DMSP satellites orbit Earth in polar orbits and primary sensor scans an area 1,800 miles wide. Each system covers the Earth in about 12 hr.

COMMENTARY

For the last 40-plus years, the DMSP constellation has provided high-quality, timely weather information to strategic and tactical warfighters worldwide. The operational linescan sensor "sees" visible and IR cloud-cover imagery to analyze cloud patterns. Secondary instruments include microwave imagers and sounders and a suite of space environment sensors that provide critical land, sea, and space environment data required by US forces across the globe. This data is also shared with civil agencies. The DMSP constellation will be replaced by the tri-agency NPOESS late in this decade.

Block 5D-2. The last Block 5D-2 satellite was launched in December 1999.

Block 5D-3. Two operational DMSP Block 5D-3 satellites survey the entire Earth four times a day. DMSP F16, the first Block 5D-3 satellite, was launched successfully on Oct. 18, 2003. (DMSP F15, which used a 5D-3 satellite bus but 5D-2 sensors, was launched Dec. 12, 1999 and is credited as the first 5D-3 launch.) Block 5D-3 satellites have an improved spacecraft bus and sensors that provide for longer and more capable missions. The SLEP planned for F19 and F20, and the successful flyout of the DMSP Block 5D-3 satellites, will help ensure a seamless transition to the NPOESS program.

Defense Satellite Communications System

Brief: A spacecraft traveling in geosynchronous orbit used to transmit SHF high-priority C2 communication.

Function: Communications satellite.

Operator: AFSPC.

First Launch: 1971 (DSCS II); 1982 (DSCS III); 2000 (DSCS III/SLEP).

IOC: Dec. 13, 1978 (DSCS II).

Constellation: five (III).

Design Life: 10 yr (III).

Launch Vehicle: Atlas II.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 22,000+ miles in geosynchronous orbit.

Contractor: Lockheed Martin.

Power Plant: solar arrays generating 1,269 watts, decreasing to 980 watts after 10 yr; 1,500 watts (SLEP).

Dimensions: rectangular body 6 x 6 x 7 ft; 38-ft span with solar arrays deployed.

Weight: 2,580 lb; 2,716 lb (SLEP).

Performance: DSCS satellites orbit Earth at about 22,000 miles altitude and employ six SHF transponder channels for secure voice and high-rate data communications.

COMMENTARY

DSCS III satellites support globally distributed DOD and national security users. The final four of 14 satellites received SLEP modifications, providing substantial capacity improvements through higher power amplifiers, more sensitive receivers, and additional antenna connectivity options. The DSCS communications payload includes six independent super high frequency (SHF) transponder channels that cover a 500 MHz bandwidth.

Three receive and five transmit antennas provide selectable options for Earth coverage, area coverage, and/or spot beam coverage. A special-purpose single channel transponder is also on board.

The DSCS III system provides the capabilities needed for effective implementation of worldwide military communications. It can adapt to dynamic operating conditions and perform under stressed environments, providing nuclear hardened, anti-jam, high data rate, long-haul communications to military users globally. The final DSCS III satellite was launched in August 2003. The modernization of satellite communications will continue with the deployment of the Wideband Global SATCOM (WGS).

Defense Support Program

Brief: An early warning spacecraft that travels in geosynchronous orbit and provides alert of possible ballistic missile attack on US forces or homeland.

Function: Strategic and tactical launch detection system.

Operator: AFSPC.

First Launch: November 1970.

IOC: circa 1972.

Constellation: classified.

Design Life: three yr requirement and five yr goal.

Launch Vehicle: Titan IV with inertial upper stage; Delta IV Heavy EELV.

Unit Location: Buckley AFB, Colo.

Orbit Altitude: 22,000+ miles in geosynchronous orbit.

Contractor: TRW (now Northrop Grumman); Aerojet.

Power Plant: solar arrays generating 1,485 watts.

Dimensions: diameter 22 ft, height 32.8 ft, with solar paddles deployed.

Weight: 5,000 lb (approx).

Performance: orbits at approx 22,000 miles altitude in geosynchronous orbit; uses IR sensors to sense heat from missile and booster plumes against Earth's background.

COMMENTARY

The incredibly flexible Defense Support Program (DSP) satellite system was used extensively in Desert Storm to detect theater missile launches against coalition forces. Though not designed to spot and track smaller missiles, the system was highly successful in detecting launches, enabling timely warnings of Iraqi Scud attacks. The Space Based Infrared System (SBIRS) mission control station (MCS), located at Buckley AFB, Colo., became operational in December 2001 and now performs both the strategic and theater missile warning missions.

DSP satellites are a key part of the North American and theater early warning systems, capable of detecting missile launches and nuclear detonations. Warning data are fed to NORAD and US Strategic Command early warning centers at Cheyenne Mountain AFS, Colo. Since the first launch, DSP satellites have provided an uninterrupted early warning capability to the US. The 23rd and final DSP launched in November 2007. America's early warning capability will be modernized with the introduction of the new SBIRS to be phased in at a future date.

Global Positioning System

Brief: A space-based radio-positioning system that provides 24-hour worldwide highly accurate three dimensional location information and precision velocity and timing services to military and civilian users.

Function: Worldwide navigation satellite constellation.

Operator: AFSPC.

First Launch: Feb. 22, 1978.

IOC: Dec. 9, 1993.

Constellation: Nominal 24 satellites in six orbital planes; max 30 sats; currently 28 operational.

Design Life: 7.5 yr (II/IIA); 10 yr (IIR/IIR-M); 12 yr (IIF).

Launch Vehicle: Delta II, Delta IV, Atlas V.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 10,988 miles.

Contractor: Boeing (II, IIA, IIF); Lockheed Martin (IIR, IIR-M).

Power Plant: solar panels generating 700 watts (II/IIA); 1,136 watts (IIR/IIR-M); up to 2,500 watts (IIF).

Dimensions: IIR/IIR-M: 5 x 6.3 x 6.25 ft, span incl solar panels 38 ft; IIF: 9.6 ft x 6.5 ft x 12.9 ft (span incl solar panels 43.1 ft.

Weight: on orbit: 2,370 lb (IIR/IIR-M); 3,439 lb (IIF).

Performance: GPS satellites orbit the Earth every 12 hr, emitting continuous navigation signals. The signals are so accurate that time can be figured to within one-millionth of a second, velocity within a fraction of a mile per hr, and location to within a few ft. Receivers are used in aircraft, ships, and land vehicles and can also be handheld.

COMMENTARY

Worldwide military operations such as precision bombing, CSAR, mapping, and rendezvous, are successful in part due to the 24-hour, worldwide position navigation and timing service provided by the Global Positioning System (GPS) navigation satellite constellation. Accurate three-dimensional (latitude, longitude, and altitude) position, velocity, and precise time are provided continuously in real time to support an unlimited number of users around the globe, both civilian and military. Concern over potential enemy denial of GPS is being addressed under GPS modernization efforts. The modified Block IIR-M satellites, launched beginning September 2005, offers a variety of enhanced features for the GPS user, such as two new signals, enhanced encryption and anti-jamming capabilities for the military user, as well as a second civil signal. Block IIF satellites will have an extended design life, faster processors, and a new civil signal on a third frequency. Launch is scheduled for August 2008. Future generation GPS satellites are slated for launch 2013.

Milstar Satellite Communications System

Brief: A joint service satellite communications system that provides global, secure, protected, and jam-resistant strategic and tactical communications at all levels of conflict for high-priority air, ground, and sea assets.

Function: Communications satellite.

Operator: AFSPC.

First Launch: Feb. 7, 1994.

IOC: July 1997 (Milstar I).

Constellation: five.

Design Life: 10 yr.

Launch Vehicle: Titan IV/Centaur.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 22,300 miles.

Contractor: Lockheed Martin; Boeing; TRW (now Northrop Grumman).

GPS (Boeing illustration)

Power Plant: solar arrays generating 8,000 watts.

Dimensions: length 51 ft, width 116 ft with full solar array extension.

Weight: 10,000 lb.

Performance: constellation consists of five satellites in low-inclined geosynchronous orbit, providing worldwide coverage between 65° north and 65° south latitude. The oldest two satellites are still working beyond their 10-yr design life.

COMMENTARY

The backbone of strategic-tactical communications, Milstar is a joint service communications system that provides secure, jam-resistant worldwide communications through crosslinked satellites, eliminating the need for ground relay stations. Worldwide operations are made possible by this 24-hour, all-weather capability, ready to support any deployment at a moment's notice. The Milstar inventory was fully deployed in 2003, and modernization of satellite communications will continue with the Advanced EHF (AEHF) constellation deployment.

Polar MILSATCOM

Brief: Payload on a classified satellite that provides secure, survivable communications, supporting peacetime, contingency, and wartime operations in the North Pole region, above 65° north latitude.

Function: Communications satellite.

Operator: USN.

First Launch: late 1997.

IOC: 1997.

Constellation: three.

Design Life: host satellite dependent.

Launch Vehicle: not available.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 25,300 miles.

Contractor: classified.

Power Plant: 410 watts consumed by payload (power from host solar array).

Dimensions: numerous items integrated throughout host.

Weight: 470 lb (payload).

COMMENTARY

Augmenting the Milstar constellation, the Polar MILSATCOM payload is a cost-effective means of providing secure communications for the northern polar region. The system enables northern latitude operations by linking forces with secure, jam-resistant EHF communication links. Polar 2 availability occurred in 2006, with Polar 3 due in 2008. An improved next generation polar system is planned.

Space Based Infrared System High

Brief: Advanced surveillance system for missile warning, missile defense, battlespace characterization, and technical intelligence. System includes satellites in geosynchronous Earth orbit (GEO) and highly elliptical orbit (HEO).

Function: IR space surveillance.

Operator: AFSPC.

First Launch: (planned) GEO: October 2008.

IOC: TBD.

Constellation: four GEO sats, two HEO sensors.

Design Life: not available.

Launch Vehicle: GEO: Atlas V.

Unit Location: Buckley AFB, Colo.

Orbit Altitude: High at approx 22,300 miles.

Contractor: Lockheed Martin; Northrop Grumman.

Power Plant: solar array, 2,435 watts.

Dimensions: 6 x 7 x 17 ft.

Weight: 5,442 lb.

COMMENTARY

The follow-on to the DSP is the Space Based Infrared System (SBIRS). The system includes GEO satellites, HEO payloads, and ground assets.

SBIRS is being fielded incrementally. Increment 1 consolidated all DSP ground processing in one CONUS master control station at Buckley AFB, Colo. IOC was declared Dec. 18, 2001. Increment 2 will field the space and ground assets. SBIRS is in the EMD phase led by a Lockheed Martin team. HEO-1 initial early on-orbit checkout of the first SBIRS payload was announced in November 2006. The payload operating in HEO is the first component of the Increment 2 constellation.

Space Based Surveillance System (SBSS)

Brief: Planned replacement for the Midcourse Space Experiment/Space Based Visible (MSX/SBV) satellite that undertakes tracking and optical signature collection of Earth-orbiting objects.

Function: Space surveillance.

Operator: AFSPC.

First Launch: December 2008 (planned).

IOC: TBD.

Constellation: none.

Design Life: not available.

Launch Vehicle: Minotaur IV.

Unit Location: not available.

Orbit Altitude: 528 miles.

Contractor: Northrop Grumman; Boeing subcontractor for Pathfinder satellite.
Power Plant: not available.
Dimensions: not available.
Weight: not available.
COMMENTARY
SBSS is a planned follow-on to the experimental MSX/SBV satellite and will track and collect optical signatures of Earth-orbiting objects. One Pathfinder satellite is due to be launched late 2008 and four operational satellites are planned for around 2014.

Space Tracking and Surveillance System
Brief: Advanced surveillance system with IR and visible sensors for detecting and tracking ballistic missiles. STSS (formerly SBIRS Low) will have satellites in low Earth orbit (LEO) that work in concert with SBIRS High and other missile defense systems.
Function: Missile defense.
Operator: Missile Defense Agency.
First Launch: 2008 (planned).
IOC: TBD.
Constellation: two demonstration sats; operational sats TBD.
Design Life: not available.
Launch Vehicle: Delta II.
Unit Location: Colorado Springs, Colo.
Orbit Altitude: 830+ miles.
Contractor: Northrop Grumman (completion and launch of two R&D satellites); Raytheon (payload).
Power Plant: TBD.
Dimensions: not available.
Weight: not available.
COMMENTARY
The Missile Defense Agency manages the Space Tracking and Surveillance System (STSS), which, in December 2002, replaced the program known as SBIRS Low. In April 2002, MDA ended the SBIRS Low program definition and risk reduction competition and named TRW (now Northrop Grumman) as prime contractor for a redefined space-based sensor R&D element of MDA's integrated Ballistic Missile Defense System (BMDS). The initial STSS contract calls for completion and launch of two LEO satellites under Block 2006. New technologies will be inserted into subsequent R&D satellites, leading to an operational system.

Wideband Global SATCOM (WGS)
Brief: Satellites that provide high-capacity communications for deployed forces (air, land, and sea).
Function: Communications satellite.
Operator: AFSPC.
First Launch: October 2007.
IOC: January 2009 (planned).
Constellation: six satellites.
Design Life: 14 years.
Launch Vehicle: Atlas V, Delta IV.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: GEO.
Contractor: Boeing.
Power Plant: solar arrays generating 9,934 watts.
Dimensions: based on Boeing 702 Bus.
Weight: 13,000 lb at launch.
Performance: approx 12 times the capability of a DSCS satellite.
COMMENTARY
Wideband Global SATCOM, previously known as the Wideband Gap-filler System, will augment DSCS III and the Navy's Global Broadcast System (GBS) Phase II. WGS is a fully duplexed communications platform offering warfighters a significant increase in capacity, connectivity, and interoperability. It will provide two-way services for national leaders, Diplomatic Telecommunications Service, Defense Information System Network, and all military ground fixed and mobile users. In addition, it will provide direct broadcast of digital multimedia, high-bandwidth imagery, and video information directly from global and theater sites to deployed warfighters. Primarily a commercial product, the satellites will have X-band (DSCS III-like), Ka-band broadcast (GBS Phase 2-like), two-way Ka-band services, and cross-channelization between its X- and Ka-band services.

Aerial Targets

BQM-34 Firebee
Brief: A jet-powered, variable speed, recoverable target drone.
Function: Aerial target.
Operator: ACC.
First Flight: 1951; 1958 (BQM-34A).
Delivered: from 1951.
IOC: circa 1951.
Production: 1,800+.
Inventory: 33.

BQM-34 Firebee (Northrop Grumman photo)

Unit Location: Tyndall AFB, Fla.
Contractor: Teledyne Ryan.
Power Plant: one General Electric J85-GE-100 turbojet, 2,850 lb thrust.
Guidance and Control: remote-control methods incl choice of radar, radio, active seeker, and automatic navigator developed by Teledyne Ryan; the current model of the BQM-34A is configured to accommodate the Gulf Range Drone Control Upgrade System (GRDCUS), which allows multiple targets to be flown simultaneously.
Dimensions: length 22.9 ft, body diameter 3.1 ft, span 12.9 ft.
Weight: launch weight 2,500 lb.
Performance: max level speed at 6,500 ft 690 mph, operating height range 10 ft to more than 60,000 ft, max range 796 miles, endurance (typical configuration) 30 min.
COMMENTARY
Current BQM-34As, with an upgraded General Electric J85-100 engine that provides a thrust-to-weight ratio of 1:1, offer higher climb rates and six-G maneuvering capability. A new microprocessor flight-control system provides a prelaunch and in-flight self-test capability. BQM-34s are used for research, development, test, and evaluation and the Weapon System Evaluation Program.

BQM-167 Skeeter
Brief: A jet-powered, variable speed, recoverable target drone.
Function: Aerial target.
Operator: ACC.
First Flight: Jan. 3, 2005.
Production: initial production began 2004.
Unit Location: Tyndall AFB, Fla.
Contractor: Composite Engineering Inc.
Power Plant: Microturbo Tri 60-5+ turbojet.
Guidance and Control: remote piloting methods.
Dimensions: length 20 ft, body diameter 2 ft, span 11 ft.
Weight: not available.
Performance: max level speed Mach 0.9 mph, operating height range 20,000-50,000 ft, endurance 3 hr.
COMMENTARY
BQM-167A is replacing both the aging MQ-107 and BQM-34A as the Air Force's subscale aerial target. It features an increased load capability, higher speeds and G-loads, a digital architecture for avionics, and a composite airframe making it significantly lighter than the earlier platforms. Development on this target will take it to supersonic speeds, internalize and miniaturize many countermeasures systems, and expand the flight envelope beyond any target system in the inventory today.

MQM-107 Streaker
Brief: A jet-powered, variable speed, recoverable target drone.
Function: Aerial target.
Operator: ACC.
First Flight: not available.
Delivered: from 1984 (B).
IOC: 1987.
Production: 70 (B); 221 (D); 78 (E).
Unit Location: Tyndall AFB, Fla.
Contractor: Raytheon (D model); Marconi (formerly Tracor) (E model).
Power Plant: initially on D model, one Teledyne CAE 373-8 engine, 950 lb thrust; MQM-107Ds delivered since 1989 have 950 lb thrust TRI 60-5 turbojets. Microturbo TRI 60-5 engine, 1,061 lb thrust or TCAE 373-8B (E model).
Guidance and Control: analog or digital, for both ground control and preprogrammed flight (D model); high-G autopilot provisions; digital autopilot and remote control by the Gulf Range Drone Control Upgrade System (GRDCUS), a multifunction C2 multilateration system (E model).
Dimensions: length 18.1 ft, body diameter 1.3 ft, span 9.8 ft.
Weight: max launch weight (excl booster) 1,460 lb.
Performance: operating speed 207-630 mph, operating height 50-40,000 ft, endurance 2 hr 15 min.
COMMENTARY
MQM-107D. A third generation version of the MQM-107 Streaker, recoverable, variable-speed target drone used for research, development, test, and evaluation and the Weapon System Evaluation Program.
MQM-107E. Improved performance follow-on to the MQM-107D. In operational service, it replaces the MQM-107D and expands the flight envelope.
MQM-107 Streakers are being replaced by the BQM-167 Skeeter.

QF-4
Brief: A converted, remotely piloted F-4 Phantom fighter used for full-scale training or testing.
Function: Aerial target.
Operator: ACC.
First Flight: August 1993.
IOC: not available.
Unit Location: Tyndall AFB, Fla. (detachment at Holloman AFB, N.M.)
Contractor: Marconi (formerly Tracor).
Power Plant: two General Electric J79-GE-17 turbojets, each with approx 17,000 lb thrust with afterburning.
Guidance and Control: remote-control methods incl the GRDCUS (Tyndall) and the Drone Formation and Control System (Holloman); will also accommodate the triservice Target Control System currently under development.
Dimensions: length 63 ft, height 16.5 ft, wingspan 38.4 ft.
Weight: mission operational weight 49,500 lb.
Performance: max speed Mach 2+, ceiling 55,000 ft, range (approx) 500 miles.
COMMENTARY
The QF-4 replaced the QF-106 Full-Scale Aerial Target (FSAT) in 1998 when the F-106 inventory was depleted. The QF-4 provides for a larger operational performance envelope (maneuvering) and greater payload capability compared with its predecessors.
More than 160 F-4 surplus aircraft have been converted to QF-4 FSATS since 1995. QF-4s are used for research, development, test, and evaluation and the Weapon System Evaluation Program. ▪

Verbatim

By John T. Correll, Contributing Editor

Just Some German Dude

"Nearly a quarter cannot identify Adolf Hitler, with 10 percent thinking Hitler was a munitions manufacturer."***—Survey of 1,200 high school students by Common Core, a nonprofit educational research organization, Feb. 26.***

Losing in Afghanistan

"Make no mistake. NATO is not winning in Afghanistan. Unless this reality is understood and action is taken promptly, the future of Afghanistan is bleak. ... If NATO cannot provide new forces to fight in the south, its credibility will be dealt a powerful blow, throwing into doubt its future cohesion and, hence, viability."***—"Saving Afghanistan," Atlantic Council report, January.***

Second Opinion

"No one can return from the battlefields in Iraq and Afghanistan, as I recently did, without believing that these are wars that can still be won. They are also clearly wars that can still be lost, but visits to the battlefield show that these conflicts are very different from the wars being described in American political campaigns and most of the debates outside the United States."***—Anthony H. Cordesman, Center for Strategic and International Studies, op-ed column,*** **Washington Post,** ***Feb. 24.***

Hands Across the Ocean

"China's limited armed forces are totally for the purpose of safeguarding independence, sovereignty, and territorial integrity. China will not pose a threat to any country."***—Jiang Enzhu, spokesman for the Chinese Parliament, announcing a 17.6 percent increase in China's military budget for 2008,*** **International Herald Tribune,** ***March 4.***

Capability Missing

"Although our conventional forces are second to none, we no longer have these forces forward deployed permanently throughout the world. Therefore, it is prudent to have the ability to defeat attacks and eliminate high value targets at global ranges on short notice. We have a prompt global strike delivery capability on alert today, but it is configured only with nuclear weapons, which limits the options available to the President and may in some cases reduce the credibility of our deterrence. The capability we lack is the means to deliver prompt, precise, conventional kinetic effects at intercontinental ranges."***—Gen. Kevin P. Chilton, commander, US Strategic Command, House Armed Services Committee, Feb. 27.***

On Course for More Trouble

"This past November, one of our 666 F-15s literally fell out of the sky from structural failure. Last week we lost another one. Only 73 percent of those fighters have been returned to flight and we do not know how many of the remaining 182 aircraft will fly again. Beginning in 2008, 764 aircraft—nearly 14 percent of the Air Force—are grounded or operating under restricted flying conditions. The Air Force that prevented death to any American soldier from enemy aircraft for over half a century may not be up to the task in the years ahead due to lack of adequate investment."***—Col. Mace Carpenter and Lt. Gen. David A. Deptula, op-ed column,*** **Washington Times,** ***Feb. 21.***

Jammed Up in Space

"During Operation Iraqi Freedom, we experienced GPS jamming and since then we have witnessed a worldwide proliferation of technology that can be used against our space systems. Our space capabilities face a wide range of threats including radio frequency jamming, laser blinding, and anti-satellite systems. The emergence of these threats requires a broad range of capabilities, from diplomatic to military, to protect our interest in space."***—Gen. C. Robert Kehler, commander, Air Force Space Command, Senate Armed Services strategic forces subcommittee, March 4.***

Can't Fool Her

"Did a man really walk on the moon? I saw plenty of documentaries on it, and I really wondered. And in any case I don't believe all they tell me, that's for sure."***—Academy Award-winning actress Marion Cotillard of France,*** **London Sunday Telegraph,** ***March 2.***

Percentages

"It cost almost 50 percent of the nation's gross domestic product (GDP) to pay for World War II. Fighting the Korean War consumed about 14 percent of GDP, Vietnam about nine percent. Even with the supplemental spending to fight radical Islamist terrorists in Iraq and Afghanistan, the President's defense budget is about four percent of GDP. America is engaged in a Long War. We should be prepared to pay for it."***—James Jay Carafano, Heritage Foundation, op-ed column,*** **Washington Times,** ***Feb. 21.***

Don't Hold Your Breath

"Some of our partners can't wait to see me stop fulfilling my duties so that they could deal with another man. But [newly elected Russian President Dimitry Medvedev] is no less of a Russian nationalist—in a positive way—than me. And I don't think it will be easier for our partners to deal with him."***—Russian President Vladimir V. Putin, Associated Press, March 9.***

The Gentrifying of Terror

"The al Qaeda men who are coming today are not farmers, illiterate people. They are Ph.D.s, professors."***—Qari Mohammed Yusuf, cameraman for al-Sahab, a multimedia production company affiliated with the terror movement in Afghanistan, Associated Press, March 9.***

Into "Recallable Storage"

"I'm happy to hear they are putting it in a place where they could bring it back if they ever needed it."***—Brig. Gen. Gregory A. Feest, first person to fly an F-117 in combat (in Panama in 1989), as the Nighthawk moves from active duty into "recallable storage," Associated Press, March 11.***

Lego Force

"If someone can shoot me down, and I can say, 'Not a problem,' and be back up in a matter of days or a matter of hours, it kind of removes their incentive to shoot our stuff down."***—Air Force Chief Scientist Mark J. Lewis, looking ahead to satellites that could be built from off-the-shelf parts and launched within days,*** **New York Daily News,** ***March 6.*** ■

AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

History Lesson

Air Force Senior NCO Academy students met Air Force Association officials twice during the course of seven weeks of instruction at Maxwell AFB, Ala.

AFA Chairman of the Board Robert E. "Bob" Largent attended the graduation ceremony for Class 08-B in February to present MSgt. William L. Humphrey with AFA's CMSAF James M. McCoy Academic Achievement Award. Humphrey is from Wright-Patterson AFB, Ohio.

A few weeks earlier, other AFA connections had led to an Air Force history lesson, delivered to the same class by the **Lincoln (Neb.) Chapter's** aerospace education vice president.

Diane R. Bartels spoke to the group in January, relating the story of World War II WASP pilot Evelyn G. Sharp.

Sharp grew up in Ord, Neb., in the 1930s. She earned a private pi ot's license at 17 and had taught more than 350 people to fly by the time World War II began. She joined the Women's Auxiliary Ferrying Squadron, which later became the Women Airforce Service Pilots (WASPs). Sharp had flown nearly every airplane type in the Army Air Forces before her death in 1944 in a P-38 crash.

It was Col. Thomas D. Klincar, commander of the College for Enlisted Professional Military Education at Maxwell, who led to Bartels making the SNCOA presentation. He and Bartels met last September at the dedication ceremony for the airman leadership school in Offutt AFB, Neb. The school was dedicated in the name of James M. McCoy, the sixth Chief Master Sergeant of the Air Force and also an AFA National President and Chairman of the Board (1992-96).

At the ceremony, Bartels mentioned to Klincar that she had written a book in 1996, titled *Sharpie,* and asked if she could present the aviator's life story to the students under his purview.

Bartels' audience included 336 senior NCOs from the Air Force's active and reserve components, as well as from the Army, Navy, Coast Guard, and Canada.

Wing Dinner

In February, members of the **Northern Shenandoah Valley Chapter (Va.)** visited the Air National Guard's 167th Airlift Wing at the Eastern West Virginia Airport in Martinsburg, W.Va., for a tour of the unit and an awards dinner.

USAF photo by Melanie E. Rodgers

AFA Board Chairman Bob Largent presents MSgt. William Humphrey with the academic achievement award at graduation ceremonies in February for the Senior NCO Academy's Class 08-B.

It was, according to Chapter President Norman M. Haller, "a long-awaited get-together."

The wing has transitioned from C-130 to C-5 airlifters, and Capt. Melissa Shade and CMSgt. John Alderton from the 167th arranged for guests to see the Galaxy transport up close. The visitors also toured the unit's Starbase facility. Starbase is a federally funded science and math education program for elementary and high school students. It is hosted at some 45 USAF, Navy, and Marine Corps sites. At the 167th, Starbase targets fifth-graders for its program of experiential learning, simulations, and experiments in aviation and aerospace.

Sherra Triggs, Starbase deputy director at the 167th, was among the award recipients at the dinner that evening. She was named Teacher of the Year.

The dinner began with a presentation of the colors by the wing's color guard. After the awards ceremonies, retired Lt. Gen. Kenneth E. Eickmann spoke to the gathering on recent studies covering propulsion, re-engining, and wings for Air Force aircraft. Eickmann retired 10 years ago as Aeronautical Systems Center commander and early in his career had been a reliability and maintainability engineer on the C-5.

Those traveling to West Virginia for this chapter-wing dinner included Central East Region President Mason S. Botts and Virginia State President Scott P. Van Cleef.

More Chapter News

■ AFA Board Chairman Bob Largent welcomed more than 500 defense contractors to the 2008 Hill Air Force Base Requirements Symposium co-hosted by Utah AFA Industrial Associates in March in Layton, Utah. The symposium provides businesses with insight into the base's upcoming requirements. It takes place every two years. The industrial associates are 38 businesses associated with AFA Utah: the **Northern Utah Chapter, Salt Lake Chapter,** and **Ute-Rocky Mountain Chapter.**

■ US Rep. Emanuel Cleaver II (D-Mo.) surprised the **Harry S. Truman Chapter** members by dropping in for a quick visit before their meeting in Kansas City, Mo., in March. Chapter President James Snyder explained that the Missouri Democrat is a minister and returns to Kansas City regularly to conduct services. While in town this time, Cleaver spent nearly an hour chatting with chapter members and cadets from an AFJROTC color

guard who had come to the meeting from Blue Springs South High School. Their senior aerospace science instructor is retired Maj. Paul W. Bekebrede, a chapter member.

■ CMSAF Rodney J. McKinley spoke to the **Montgomery Chapter** in Alabama about his experience testifying on Capitol Hill about Air Force achievements and requirements. He told the chapter that the service's top priorities were the Global War on Terror; recruiting and training personnel; and recapitalization of the aircraft fleet. Taking care of Air Force people is essential, he told the chapter, echoing what he had said earlier that month, at a Hill hearing. Chapter President Thomas Gwaltney presented the chief with a handmade model of the Wright Flyer and thanked him for his years of service.

■ The **Strom Thurmond Chapter** in Clemson, S.C., helped sponsor the second annual Doug Harris Memorial Run in March. Col. Lance S. Young, chapter president, presented a donation on behalf of the chapter to cadet Charles E. Polley, a chapter member from Clemson University's AFROTC Det. 770. Harris was a freshman cadet in the detachment when he died in an auto accident in November 2006. Proceeds from the half-marathon and 10K race go to scholarships for Air Force cadets at Clemson.

■ Don Deering, the community liaison for US Rep. Jim Cooper (D-Tenn.), spoke at the March meeting of the **Maj. Gen. Dan F. Callahan Chapter** in Nashville, Tenn. A retired Army armor officer, Deering spoke about a roles and missions panel chaired by Cooper, a member of the House Armed Services Committee. He also described the Congressman's role in supporting the transition of the 118th Airlift Wing (ANG), Nashville Airport, to its new mission of training allied airmen on C-130 operations.

■ According to **Southern Indiana Chapter** President Marcus R. Oliphant, retired Maj. Gen. Frank L. Hettlinger covered people, places, and airplanes during his remarks as chapter guest speaker in March. A former commander of the Indiana Air National Guard, Hettlinger enlisted in the Air Force in 1951 and was commissioned 18 months later at Williams AFB, Ariz. He flew 12 types of aircraft—from the F-86 to the C-131—on active duty and in the ANG. At the chapter meeting, Hettlinger, who retired in 1989, showed photos from a career that included active duty for the Berlin Airlift.

USAF photo by Jennifer Duncan

S. Sanford Schlitt, AFA's Vice Chairman of the Board for Aerospace Education (fifth from the left), hosted a recent presentation by retired Gen. Gregory Martin (fourth from the left) to the Air and Space Basic Course at Maxwell AFB, Ala. Martin retired as AFMC commander in 2005. The audience at his presentation included brand-new second lieutenants. AFA sponsors these meetings with a senior USAF or defense industry leader several times a year.

■ In Arlington, Va., the **Donald W. Steele Sr. Memorial Chapter** held the latest in its series of Salutes to Air Force action officers, honoring in February a group from the Office of the Deputy Chief of Staff for Air, Space, and Information Operations, Plans and Requirements. More than 150 attendees listened to guest speaker Lt. Gen. Daniel J. Darnell, the A3/5, describe the office visits he'd conducted earlier that day on Capitol Hill. Receiving awards that evening were: Lt. Col. Thomas James, Lt. Col. Fred Shiner, Maj. Chuck Menza, Maj. Gregory Miller, Maj. Jeffrey R. Stein, TSgt. Anthony Boykin, SSgt. Sergio Berrios, SSgt. LaTash S. Mason, and Terry Tallent.

■ Borrowing a page from the Steele Chapter, the **Gen. Charles A. Gabriel Chapter (Va.)** co-hosted a salute of its own in February, the second annual Salute to Space: SAF/US. Guest speaker was Gary E. Payton, deputy undersecretary of the Air Force for space programs. With support from a half-dozen industry sponsors, Jon Safley, the leadership development VP, and Matt O'Kane, the VP for unit recognition, organized the reception. Receiving awards as outstanding action officers were: Lt. Col. David Beckwith, Lt. Col. Paul Dotzler, Cmdr. Lynn Mackovick, Lt. Col. Kenneth Warcholik, Maj. Chris Brann, Maj. Jeff Hardy, Maj. Andre Lobo, Maj. Darren Rhyne, Capt. Rebecca Hamilton, Capt. Michael Manning, MSgt. John Villasista, SSgt. Michelle Davenport, and Brian Shannon. The Global Positioning System Team was named 2007 Team of the Year. Maj. Tim McKenzie accepted the team's award.

■ The executive director of the Cyber Innovation Center of Bossier City, La., spoke to a group of **Ark-La-Tex Chapter**

AFA Conventions

May 9-10	**South Carolina State Convention,** Shaw AFB, S.C.
May 9-10	**Tennessee State Convention,** Nashville, Tenn.
May 13-15	**New Jersey State Convention,** Atlantic City, N.J.
July 11-12	**Florida State Convention,** Cape Canaveral, Fla.
July 11-12	**Texas-Oklahoma State Convention,** Oklahoma City
July 19	**North Carolina State Convention,** Fayetteville, N.C.
July 25-26	**California State Convention,** Edwards AFB, Calif.
July 25-26	**Colorado State Convention,** Colorado Springs, Colo.
Aug. 2	**Massachusetts State Convention,** Boston
Aug. 9	**Georgia State Convention,** Robins AFB, Ga.
Aug. 9	**Pennsylvania State Convention,** State College, Pa.
Aug. 12	**Michigan State Convention,** Mount Pleasant, Mich.
Sept. 13-14	**AFA National Convention,** Washington, D.C.
Sept. 14-17	**AFA Air & Space Conference,** Washington, D.C.

members in February. Craig Spohn provided an update on the center, an office complex adjacent to Barksdale AFB, La. The center is to work with defense contractors, think tank scholars, and others supporting Cyber Command. Chapter President Jack Skaggs said Spohn explained the command's impact and the need for the kind of assistance the center plans to provide.

■ In Gainesville, Fla., **Red Tail Memorial Chapter** President Michael H. Emig and Chapter Secretary Stephen C. Spires continued to build the chapter's relationship with University of Florida AFROTC cadets by attending Det. 150's pass in review in March. The detachment's cadets include recipients of two AFA awards for cadets: Maureen A. Hartney, the AFA 2007 AFROTC Cadet of the Year, and chapter member Tyler F. Holley who was to receive AFA's 2008 W. Randolph Lovelace Memorial Award in April.

■ The **Mount Clemens Chapter** (Mich.) carried out its annual Aid to Military Families project in December, providing gift cards that could be used at a local department-grocery store. Some half a dozen of these cards went to families selected by first sergeants from the 127th Wing (ANG) and 927th Air Refueling Wing (AFRC), Selfridge ANGB, Mich. ■

Reunions

reunions@afa.org

8th TFW in Thailand. Aug. 25-28 in San Antonio. **Contact:** Pete Nash, 22018 N. Giovota Dr., Sun City West, AZ 85375 (480-223-2351) (prkmnash@aol.com).

13th BS Assn. Sept. 10-14 in Colorado Springs, CO. **Contact:** Brian Parker, 10527 Nunn Jones Rd., College Station, TX 77845 (979-776-0207) (btparker13@suddenlink.net).

388th BG. Sept. 3-6 at the Marriott in Ogden, UT. **Contacts:** Henry (904-993-0808) (henry@388th-reunionplanners.org) or Betty (904-434-4521).

492nd BG. July 30-Aug. 3 in Bloomington, MN. **Contact:** Willis Beasley (303-756-4766) (beasley492@hotmail.com).

B-66 Destroyer Assn. Sept. 4-7, in Colorado Springs, CO. **Contact:** George and Diana Ciz, 23262 Sky Dr., Lake Forest, CA 92630 (949-855-8754) (dsparkles42@yahoo.com).

BAD 2 Assn, Warton, UK, during WWII. Sept. 4-6, in Chicago. **Contact:** Dick McClune, 527 Quarterfield Rd., Newport News, VA 23602 (bad2trsr@cox.net).

Navigator Cadet Class 58-02, Harlingen. June, July, or August in San Antonio. **Contact:** Phil Murphy (775-853-2170) (philjofran-murphy@sbcglobal.net).

OCS Class 58-A. Sept. 16-19 at the Doubletree Hotel in San Antonio. **Contact:** George Cochran (210-340-2535) (pil141ot@msn.com).

Pilot Training Class 54-F. July 3-7. **Contact:** Pete Sheridan, 8615 Timber Hill Ln., Potomac, MD 20854 (301-299-7002) (pete.sheridan@comcast.net).

Pilot Tng Class 56-M. Sept. 4-7 in Colorado Springs, CO. **Contact:** John Mitchell, 11713 Decade Ct., Reston, VA 20191 (703-264-9609) (mitchelljf@yahoo.com).

Pilot Tng Sq 3389. Sept. 18-21 at the Settle Inn in Branson, MO. **Contact:** Chuck Davies, 4435 Monaco Dr., San Antonio, TX 78218 (210-653-1475) (cpmfd@sbcglobal.net).

61st FS, Newfoundland (1950s). Sept. 4-6, in Branson, MO. **Contact:** Chris Christianson, PO Box 326, Monticello, MN 55362. ■

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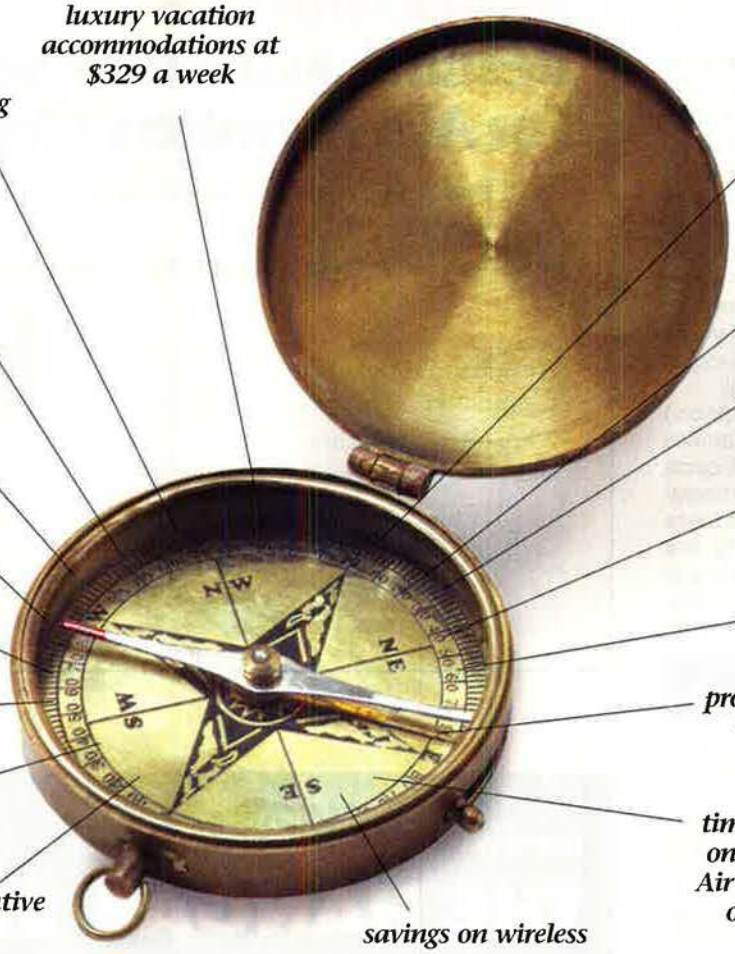

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Artwork by Zaur Eylanbekov

F/RF-101 Voodoo

The sleek and powerful F/RF-101 Voodoo fighter was the first production airplane capable of achieving a speed of 1,000 mph in level flight. It was also the heaviest single-seat fighter USAF had ever accepted to that point. The RF version became the world's first supersonic reconnaissance aircraft, and it made a name for itself in combat missions over North Vietnam and during the 1962 Cuban Missile Crisis.

The McDonnell aircraft had several significant versions. These include the F-101A fighter-bomber, F-101B long-range interceptor, and RF-101A/C photoreconnaissance variant. All traced their origins to the short-lived 1946 McDonnell XF-88, developed as a "penetration fighter" to escort Strategic Air Command B-36 bombers. That concept was dropped but was revived in the early 1950s. The second generation, dubbed "Voodoo," was enlarged and equipped with more powerful engines, and eventually saw service in multiple roles. In October 1959, eight RF-101As were sold to Taiwan, which used them to overfly mainland China. For the US, reconnaissance Voodoos played a key role in the Cuban Missile Crisis. On Oct. 23, 1962, the 363rd Tactical Reconnaissance Wing's RF-101A and RF-101C aircraft confirmed the Soviet missile buildup in Cuba; 15 pilots were awarded Distinguished Flying Crosses for their work. The RF-101C was the only version to see action in Vietnam. Their flights began in 1961. With demand for photoreconnaissance growing, USAF based Voodoos in Thailand as well as Vietnam. On Feb. 8, 1965, RF-101Cs serving as Pathfinders led the first US strike (by F-100s) on North Vietnam.

The Voodoo's fighter-bomber and reconnaissance roles eventually were taken over by the F-4 Phantom II. It often is viewed as an important evolutionary step toward the Phantom, which replicated its upswept aft fuselage and dual crew.

—Walter J. Boyne

This aircraft: RF-101C Voodoo—#60054—as it looked in October 1961 when assigned to the 15th TRS, Kadena AB, Japan.

A flight of F-101B Voodoo interceptors.

In Brief

Designed, built by McDonnell Aircraft ★ first flight Sept. 29, 1954 ★ crew of one or two ★ number built 807 ★ **Specific to F-101B:** two PW J57-P-55 turbojet engines ★ armament two AIM-4D air-to-air missiles, two AIR-2A Genie nuclear missiles ★ max speed 1,094 mph ★ cruise speed 546 mph ★ max range 1,754 mi ★ weight (loaded) 52,400 lb ★ span 39 ft 8 in ★ length 71 ft 1 in ★ height 18 ft.

Famous Fliers

Notables: Robin Olds (Air Force Cross, ace), James R. Brickel (Silver Star), Charles E. Shelton (Vietnam KIA), Lonnie R. Moore (Korean War ace, killed in F-101 test), John R. Lasater, Fred Mellor, George L. Monahan Jr. **Record Setters:** Adrian Drew (1957, absolute speed); Robert Sweet (1957, speed westbound coast-to-coast); Gustav Klatt (1957, speed eastbound coast-to-coast); George A. Edwards (1959, speed over closed course).

Interesting Facts

Nicknamed "One-Oh-Wonder" and "Longbird" ★ reached Vietnam in October 1961, first USAF jet aircraft to arrive ★ led first USAF attack on North Vietnam (Feb. 8, 1965) ★ achieved best first-year safety record of any USAF jet fighter ★ downed 30 times in Vietnam ★ had nuclear capability in B and C models ★ operated by Taiwan and Canada.

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