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AIR FORCE

Journal of the Air Force Association

MAGAZINE

2015 USAF Almanac





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About the cover: A bald eagle photographed by Robert Seitz. See "USAF Almanac 2015," p. 32. Corbis photo.



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The RPA Problem

OVER the past 14 years, the Air Force has steadily fielded an enormously capable remotely piloted aircraft fleet, though during the first half of that timespan, USAF was frequently criticized for an alleged lack of interest in the burgeoning mission.

Criticism reached its apogee in April 2008, when Defense Secretary Robert M. Gates traveled to Maxwell AFB, Ala., and spoke at the Air War College. "Unmanned systems cost much less and offer greater loiter times than their manned counterparts, making them ideal for many of today's tasks," Gates said.

"Our services are still not moving aggressively in wartime to provide resources needed now on the battlefield," he continued. "I've been wrestling for months to get more intelligence, surveillance, and reconnaissance assets into the theater. Because people were stuck in old ways of doing business, it's been like pulling teeth."

At the time, the inventory of remotely piloted aircraft had increased 25-fold over seven years, and even Gates admitted DOD had "doubled this capability in recent months." To the Defense Secretary, this was "still not good enough."

And so ISR, and RPAs in particular, moved to the head of the requirements queue. Over the past seven years, the Air Force has redoubled its efforts to meet the nation's immediate wartime ISR needs.

The never-ending effort to provide the capabilities sought by combatant commanders has come at a price, however. This affects all aspects of Air Force ISR, such as the Global Hawk, AWACS, and U-2 communities, but the strain is seen most clearly in the RPA community.

Combatant commanders freely admit their appetite for ISR is insatiable, and this manifests itself in an ever-increasing requirement for more and more RPA "orbits"—around-the-clock airborne coverage tracks.

"Our budget is going to ramp up support to the most urgent needs that the combatant commanders identified to us, which basically equates to one thing: ISR," said Air Force Secretary Deborah Lee James, explaining the service's 2016 budget request to House lawmakers

March 17. "ISR. ISR—that is what they tell us."

The airmen working with MQ-1 Predator and MQ-9 Reaper RPAs have been unable to meet the demand for their systems' reconnaissance and strike capabilities. After 14 years of nonstop shortages, the community is now at the breaking point.

"We've never caught the requirements rabbit," Gen. Mark A. Welsh III, Air Force Chief of Staff, said April 8. "It's been running so fast since 2008 that

USAF has spent years chasing the ISR "requirements rabbit." The force has reached the breaking point.

we've been chasing it, but we haven't been able to catch it. ... We've gone from 21 orbits to now 60." This requires ever-growing numbers of RPA airmen.

The demand goes up another five orbits this year, "three orbits next year, and five more the year after that," Welsh noted.

The shortfalls are exacerbated by the fact that the Predator and Reaper force regularly goes into surge mode, further straining the system.

The Air Force has 55 combat air patrol's worth of airmen to meet a steady state requirement (such as it is) for 60 CAPs. The RPA airmen have been working six day on, two day off schedules, with 12-hour days, for years.

And then come the surges, "nine of them in the last eight years, some lasting months at a time," Welsh said. The surge periods require USAF to fly 10 orbits more than it has personnel for, which to the airmen means seven straight 12-hour days, followed by a single day off.

This is an unsustainable pace—the Air Force doesn't even have enough RPA airmen to fill its training units. Too many airmen are needed in the operational units to spare trainers, so the problem snowballs.

The RPA replacement training unit is only 60 percent manned, meaning USAF is only able to produce 180 new Predator and Reaper pilots per year. It is losing 240 pilots per year through normal rotations and separations.

Welsh said the RPA community is excited about the mission and its future, but the airmen are overworked and unable to get the career-broadening experiences—or even the time off—they need to have viable long-term careers. Staff assignments and advanced schooling are tough sells.

"We have got to change that dynamic by at least taking enough of a deep breath ... that we can get ahead of that training curve and create a healthy force size so they can have a battle rhythm that's supportable over time," the Chief said.

It is time to begin looking beyond today's ISR requirements and think about long-term needs.

First, the Air Force must be allowed to build a Predator and Reaper community large enough to meet the long-term demand for these systems, even if it means the combatant commanders find their insatiably growing hunger going temporarily unfilled. Failing to stabilize the force will result in mass defections from the RPA career fields. This could come to a head in 2017, when a large cadre of RPA pilots will reach the end of their initial service commitments.

"We can't afford to lose these people," Welsh said. "These are the experts in this business. These are the pioneers."

Second, the Air Force must be granted the funding and flexibility needed to develop ISR systems for tougher future fights. Predators and Reapers are great for places where the US has absolute control of the air, but they are slow, visible, and not particularly agile. They would be shot down in droves in a battle against an enemy with advanced air defenses.

"A relentless operations tempo, with fewer resources ... has left a force proficient in only those portions of the mission necessary for current operations," Air Force officials wrote in the 2015 USAF Posture Statement.

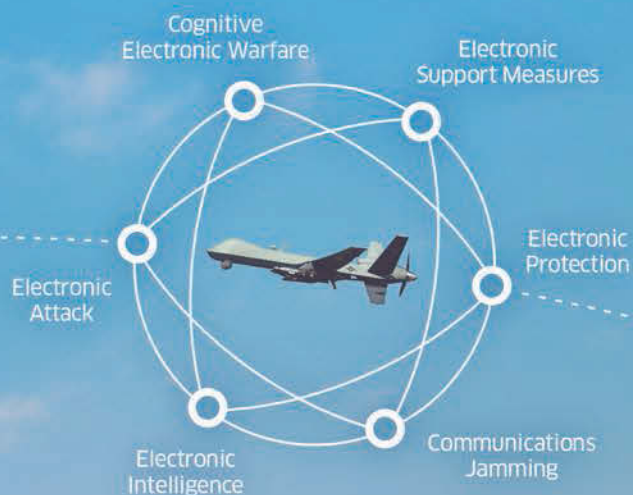
Today's unrelenting requirements are draining the current force and crowding out future advancements. As the posture statement put it, "the nation deserves an Air Force that can outmatch its most dangerous enemies at their peak of power—the most demanding warfighting scenario, not just the 'low-end fight.'" ☛



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Educate the public on the critical need for unmatched aerospace power and a technically superior workforce to ensure US national security.

Advocate for aerospace power and STEM education.

Support the Total Air Force family and promote aerospace education.

On the Backs of Airmen

Your editorial titled "Pay and Benefits and National Security" addresses some issues in the macro sense but overlooks a simple fact [*"Editorial," March, p. 4*]. Current pay and benefits encourage individuals who join the military to stay in and make the military a career. However, the current system is very expensive. With the Department of Defense faced with sequestration and other budget measures, the only other places left to cut are operational expenses. Just like in a civilian business, the most costly aspect of US military operations is personnel.

The report of the Military Compensation and Retirement Modernization Commission (the commission) is not designed to benefit the average airman. It is an attempt to find money to buy stuff and pay for flying hours by shifting the costs of services and benefits to the airman and retirees. Using the current pay and benefits proposals from the commission, one should look at the impact on a young airman and his/her family. Granted the numbers that I am using are estimates but probably typical, and the general impact is fairly accurate.

For an E-5 staff sergeant who is married with two children, over eight years' service, residing in CONUS, and his/her spouse is not working, the following numbers apply. Before taxes, his/her base pay would be \$2,951.40 a month, with a BAS of \$367.92 and BAH of \$889.20, giving a monthly income of about \$4,208.52. Assuming that the staff sergeant is living in base housing, losing BAH, and taking out federal income taxes, and his/her monthly take-home would be about \$2,952.15.

Following the commission's recommendations, take out an additional five percent of base pay for a 401(k), which equates to \$147.57. Plus, take away the commissary subsidies—according to the USDA, the average cost of food for a family of four will run approximately \$1,037.50 a month—and that leaves him/her with \$1,767.07 in spendable income. Now they have to address other commission recommendations such as health care costs.

A midrange health care plan, as proposed by the commission, would leave the staff sergeant with an annual

deductible between \$500 to \$3,000. So if anyone in the family would get quite sick, this is a bill that would have to be paid before the insurance coverage would begin. Individuals will need to create a significant contingency health care fund, even before they could begin saving for other contingencies, such as an automobile malfunction or replacement. With the loss of commissary subsidies, the impact on MWR would be quite significant. If the staff sergeant had to use base day care, the costs would be driven to the national average of \$972 per month per child.

Also to make things worse, two other proposals have taken effect or are being considered. The presidential budget proposes to cap base pay at one percent below CPI through 2020 and to reduce BAH by four percent, requiring military personnel to suck up the difference. If all of these proposals are implemented, the staff sergeant and family would be unable to make ends meet. To say the commission's proposals are beneficial to the average airmen would be hiding the realities of the situation.

Col. Talbot N. Vivian,
USAF (Ret.)
Norfolk, Va.

C'mon, Now

How does it happen that the Air Force just now realizes it needs additional experienced maintainers in order to support new F-35s, and that these must be achieved by reducing the A-10 fleet [*"Aperture: The Case of the Missing Maintainers," March p. 11*]? Presumably, plans should have been established years ago for properly sup-

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porting new F-35s. For how long have these plans envisioned retiring the A-10 to fill those needs?

It seems to me that either the A-10 retirement has been envisioned for years, or that the need for more F-35 maintainers is an excuse invented to provide another leg of support to Air Force plans to retire the A-10.

Time and again the Air Force has wanted to retire the A-10s, and this seems like another go-around which will try to apply any rationale.

If I were a ground soldier, I would certainly wonder at the apparent insignificance the Air Force assigns to achieving their most effective support in close combat situations.

Maj. Richard M. Floyd,
USAF (Ret.)
Rome, N.Y.

I'm confused. First, we were told that the only reason the USAF had to retire the A-10 was simply because of a lack of money. (We really don't want to, but we just don't have a choice.) That didn't work, so it was claimed that the ole Hog just isn't survivable in a fight against "peer adversaries." (Wasn't that same argument used back in 1990 just before Saddam invaded Kuwait?) Now, suddenly it's been discovered that by not retiring the A-10, IOC for the F-35 is being jeopardized. Holy smokes! How did that happen? Where did all the crew chiefs go and why did nobody notice until just now? How about a little honesty (I know, extremely rare within The Beltway), or at least a consistent sob story?

The truth is that this is just one of many problems caused because the Speaker of the House apparently believed that DOD represents 50 percent of the budget and allowed our liberal President to snooker him into levying 50 percent of the sequestration cuts out of the 20 percent of the budget that he absolutely hates. The truth may hurt, but somebody has to say it.

Maj. Jim Rotramel,
USAF (Ret.)
Lexington Park, Md.

Teach the Children Well

A very good and informative article on the Air Force Operation Rolling Thunder [*"How Rolling Thunder Began," March, p. 68*]. It is a shame that that article is not in the curriculum of all the high schools in the United States. Unfortunately way too many of the younger generation today, and some of the older generation, have never heard of the Vietnam War, and that is not our fault, it is our educational leaders' fault.

The article is very well-written and to the point. In my 30 years in the Air Force, 23-plus were in Strategic Air Command (SAC).

I remember when Rolling Thunder started, and in fact was on several tanker task forces (KC-135) operations to SEA in support of those missions like Rolling Thunder, Coronet East/West, Young Tiger, etc. I was the maintenance supervisor on the missions.

John T. Correll is absolutely right on the target selections. What a wrong decision for the Pentagon to make the target selections. That decision did not only affect Rolling Thunder, it affected the success of several other missions in the Vietnam war as well. I really enjoyed my times on the tanker task forces supporting the fighters. I would have anywhere from three tankers to 12 tankers, depending on the mission. What a great group of airmen—both flight crews and especially the maintenance

people. Outstanding dedication and determination to do their job because they, just like the Rolling Thunder, Young Tiger, Arc Light, and Linebacker crews, knew what the mission was.

CMSgt. Donald W. Grannan,
USAF (Ret.)
Benbrook, Texas

John Correll's fine article on Operation Rolling Thunder was a real memory jogger. It reminded me of the Air War College paper I authored, "Rolling Thunder: Carrots and Sticks Approach to an Air Campaign," to meet graduation requirements. It was pretty unremarkable in the eyes of the faculty, but it had a rather unique aspect that made it special, if only to me.

In an effort to humanize what I felt at



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the time was otherwise a pretty bland historical perspective, I solicited first-person accounts on Operation Rolling Thunder from two who had experienced it firsthand, my father-in-law and grandfather-in-law.

My grandfather-in-law was Lt. Gen. Joe Moore, the 2nd Air Division commander and later 7th Air Force commander. When asked whether ORT airpower was constrained, he replied, "Targets were selected by Washington. Number of planes, numbers and types of bombs, and times for attacks were all directed by Washington. No weather delays were allowed, and no alternative targets authorized."

LBJ once crowed, "They can't even bomb an outhouse without my approval." General Moore added, "And that was the truth!"

His son, also Joe Moore, echoed his father's sentiments. "Lil' Joe" was a major and an F-4 pilot who flew with Robin Olds and the 8th Tactical Fighter Wing "Wolfpack" out of Ubon Royal Thai Air Base. He arrived in June 1967 and flew 135 combat missions during his tour. He opined that "the limits of our airpower were our civilian masters who attempted to control every aspect of the combat. We had the military strength and capability to bring NVN to its knees at any time, even to the end, had LBJ, and later Nixon, told us to win."

A typical fighter pilot, he added, "We were unabashedly patriotic. If they had not paid us, we would have paid them to do what we loved to do."

Unfortunately both General Joe Moores ("Lil' Joe" went on to attain the rank of major general) are gone now; the younger died from ALS in 2001 and the elder died in 2006 at age 92.

I fondly recall being mesmerized by the elder's war stories told across the kitchen table at his residence in San Antonio. His Vietnam experiences were only one chapter in his illustrious career.

General Moore and Gen. [William] Westmoreland went way back. Both hailed from Spartanburg, S.C. They attended high school and were members of Boy Scout Troop 5 at the First Baptist Church. Imagine these two Eagle Scouts-in-the-making, earning merit badges, working on their Eagle project, and undoubtedly dreaming about their futures.

Both wanted to be pilots, at least partially inspired by the visit of Charles Lindbergh, flying the *Spirit of St. Louis*, to their hometown after his epic solo flight. "Westy" couldn't pass the eye exam, so he ended up in artillery after graduating from West Point. General Moore took a more circuitous route to the cockpit and his military career through the Army Air Corps Flying Cadet program. That just

shows that there's more than one way to reach the top.

Col. Bill Malec,
USAF (Ret.)
O'Fallon, Ill

Get Serious

Are the Secretary of Defense and the USAF Chief of Staff really serious about costs? Seems not [*"Air Force World: Four-Seven Dash-8 for Air Force One," March, p. 13, and "Verbatim: Good Luck," March, p. 12*].

The Cold War is over! We do not need to replace the 747-200 command centers with the 747-8—especially since the current VC-25s are now VIP jets. Taxpayers will now have to foot the bill of \$5 billion or more to keep the proposed three 747-8s flying, starting in 2017.

Along the same lines, the over 10,000 military and civilians at Joint Base Andrews, 89th Airlift Wing, could be downsized if 80 percent of the base is contracted out to civilian companies. Military pilots should not be used for all those VIP flights by Congress and bureaucrats.

Capt. David Chigos,
USN (Ret.)
San Diego

Wrong Hat

As I read "Forged in One Furnace" in the February issue of *Air Force Magazine*, I was pleased to see that the Active Duty, Reserve, and Guard have joined together to train officers [*p. 70*]. We have been training airmen for decades that way. This is a giant step forward toward being a Total Force. The skills needed to be an officer and lead are no different in any of the components of the Air Force.

Back in 1967, I was in the first class going through OTS that had an expanded curriculum from eight to 10 weeks. It would seem like there should be more to teach today and more time needed to forge the next generation of leaders. The Army and Navy have a 12-week OCS. Are we missing out on something?

On p. 72, we see the OTs passing in review. What a shame to see them in flight caps. The "service hat," AKA "wheel hat," is a symbol of the military. You'll note the reviewing officers are wearing them. The flight cap is for daily ease and convenience. It is not for formal military ceremonies.

Col. Don Hengesh,
USAF (Ret.)
Petoskey, Mich.

Twenty-five and Done

Thanks for your article [*"Twenty-seven Minutes Over Ploesti," February, p. 74*]. For many years, I had read brief summaries, but none with so much detail. Specifically, I was always curious about

the chances of the B-24 over the B-17 in accomplishing the mission. You certainly answered that question.

I am now 70 years old and try constantly to understand the steps my father was taking in July 1943 with the 97th Bomb Group, also in North Africa. Which airfield his squadron was flying from, I still haven't learned.

I have a box of mementos, from his graduation certificate from Mather Air Force Base to the American flag presented to me by the Rhode Island Air National Guard. Your article helped to paint a picture of why he was only required to do 25 missions in his B-17.

William T. Humphries
Houston

Prize Monkey

I enjoyed the January article "Back in Black," describing the New Jersey and DC ANG F-16 deployment to Australia. The "Letters" section in the March issue, which gave more accounts of F-16s deploying to Australia, brought back some fond memories.

In May 1982, I assumed command of the 35 TFS (F-16s) at Kunsan, South Korea, and a couple of months later I was tasked to attend the Sandgroper 1982 exercise planning conference in Sydney, Australia. This was to be a maritime training exercise, and I convinced the planning committee that the F-16 had the legs to fly the maritime mission, find and attack the ships, and then fly DACT on the way back to the base.

In December 1982, I took seven F-16s from the 35 TFS and deployed to RAAF Base Pearce near Perth, Australia. Other fighters in this exercise were RAAF Mirages and A-4s and USN A-4s. We had the good fortune to glean invaluable instruction from the RAAF and USN A-4 pilots who flew these missions on a regular basis.

After the attack on the ships was complete, we would fight our way back to base, flying DACT against the Mirages and A-4s. The entire exercise was very enlightening and enjoyable with the RAAF personnel being most gracious hosts. Another bonus for this deployment was escaping the frigid November weather at the Kun.

The senior USAF officer for Sandgroper 1982 was Col. Tony Cushenberry, 13th Air Force deputy commander for operations, with Col. Mike Rhodes, 8th TFW (Kunsan) DO as his assistant. The highlight of this exercise for me was giving Colonel Cushenberry a DACT ride in the Viper. He had been one of the old heads in my squadron, the 335th, at Seymour Johnson in 1967, and was instrumental in teaching us young bucks what flying fighters was all about. For those of you

who know Colonel Cushenberry ("the Crusher"), you will appreciate this: When we landed, he said that he wouldn't trade that ride for a "prize monkey."

Lt. Col. Bob Lowery,
USAF (Ret.)
Aldrich, Mo.

It was a real pleasure to read the letter from Col. Pat Miller [*Letters: Vipers Down Under, "March, p. 6]* updating some of the history of the 35th Fighter Bomber Squadron. I was elated because it was the first time I have seen any reference to my squadron since I left Korea in 1953.

From June 1952 into January 1953, I was assigned to the 35th FBS at K-13, Suwon, South Korea. It was, of course, during the shooting war, and we were flying the F-80C Shooting Star as part of the 9th Fighter-Bomber Wing. We occupied the east side of K-13, while the 51st Fighter-Interceptor Wing occupied the west side with F-86s.

The Shooting Star was a really good plane to fly for the kind of close support and interdiction missions we were performing. It was strong (you couldn't pull the wings off) and mechanically reliable. In 100 missions, my only malfunction was the loss of a generator. I got a free drop for the bombs, turned off everything electrical, returned to K-13 on the tips and fuselage tank, turned the battery and command radio back on, and made a normal landing.

We had no trouble with MiGs at that time. They were too fast to get a shot off at us, and if they slowed down, we could outturn them. So they left us alone. The F-86s kept them busy up north, while we got our job done farther south.

If he was at home or in his office, I got the commanding general of the North Korean Army because I put two 1,000-pound bombs right through the roof of his home and headquarters building. But since the North Koreans never released casualty information, I never learned whether or not I got him.

Life in the Black Panther Squadron wasn't really all that bad. We lived in Quonset huts, had a large latrine building with johns, sinks, and showers. There was a good mess hall and a boisterous officers club. The food must have been good; I gained about 10 pounds. Though we got shot at on almost every mission, I was only hit twice and know of only two losses during my seven-month hitch.

The combat got exciting on occasion, but was exactly what I wanted to be doing. My idols as a teenager were the fighter pilots of World War II, and now I was one. I believe I would have volunteered for another 25 missions, but I was racing the stork. And would you believe it? Even though I was flying jets, the stork won.

Now, at age 85, I'm still alive and kicking and playing golf three times a week.

And I only use the golf ball with the Black Panther logo.

Anyway, thank you, Colonel Miller, for your update on the 35th FBS. I hope this letter fills in some of its earlier history.

Lt. Col. Alfred J. D'Amario,
USAF (Ret.)
Hudson, Fla.

The Long War

Your monthly sidebar titled "The War on Terrorism" clearly needs new nomenclature [*"Air Force World," March, p. 19]*. Terrorism is a tactic, not an adversary. Labeling our current combat efforts as a "War on Terrorism" is like calling World War II a "War Against Blitzkrieg" or labeling World War I as "Operations to Defeat Trench Warfare."

I understand the tendency to not call attention to the primary shared attribute of today's diverse enemies, i.e., an ancient, warped version of Islam. There is no sense in providing quotes that can be posted on the other team's locker room bulletin board. More importantly, attaching the Muslim label to current adversaries would needlessly, and understandably, inflame passions among the much larger community of nonradical Muslims.

If a politically correct moniker cannot be devised, perhaps you should label this column simply "Combat Operations." Personally, I prefer "The Long War" as it has been long and it will be longer yet.

Lt. Col. Nelson E. Cobleigh,
USAF (Ret.)
Paso Robles, Calif.

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A War Over the War Budget

Lawmakers in both chambers are attempting to alleviate the pressure on defense spending next year by relying on the largely unconstrained war budget to serve as an overflow valve for tens of billions of dollars in programs that would ordinarily be funded out of the Pentagon's base budget accounts.

The so-called overseas contingency operations accounts have been used quietly—yet repeatedly—over the years to pay for items, including new aircraft, that many budget watchdogs believe should be paid out of the regular budget.

But this year's effort by hawks on Capitol Hill may be the most brazen use yet of the war accounts and would almost certainly squash hopes of ending the Defense Department's heavy reliance on OCO as the operations in Afghanistan wind down.

However, it is also a clear signal that a bipartisan budget deal giving the Pentagon at least some relief from the stringent caps on the 2016 budget is simply not within grasp. The war accounts are not subject to the same caps that affect the base budget.

Indeed, Senate Armed Services Chairman John McCain (R-Ariz.), a longtime watchdog of government spending, initially blasted the strategy to move billions to OCO as a "gimmick." Just days later, however, he had changed his tune, saying it was the only way to get the military the funds it needs next year.

"I don't like OCOs. I think they should have gone away some time ago," McCain told reporters in March. "But if that's the only way to get the required level of defense spending, I would support" it.

McCain's comments came as both the House and Senate were drafting their budget resolutions, largely symbolic documents that nonetheless serve as a guide for the Armed Services and Appropriations committees as they get to work on the annual defense authorization and spending bills.

In the House, hawks narrowly succeeded in getting approval for an amendment to the budget resolution that raises the limit on war accounts to \$96 billion—\$38 billion above the Administration's request—and gives Congress a pass for finding an offset elsewhere in the federal budget.

The additional war spending is intended to make up for the amount defense spending exceeded the budget caps, with about \$1 billion to spare.

The Senate's version of the resolution also includes \$96 billion in war funding, but makes OCO subject to a point of order of those accounts exceeding \$58 billion. The inclusion of that language could effectively allow fiscal hawks to block efforts to plus-up OCO.

is a one-year-at-a-time thing, doesn't work for national defense. It's not going to permit us to carry out the strategy as we've planned."

The use of OCO for base-budget bills also significantly broadens the umbrella of items that can be considered war-related,



Boeing illustration

Wherever the funding comes from—OCO or regular funding—keeping the tanker on track is a priority.

Nonetheless, hawks see the budget resolutions as at least a step in the right direction, in the likely event the two parties cannot agree to a deficit-reduction deal that gives the Defense Department's base budget more funding than currently allowed under the caps.

But relying on OCO comes with its own set of problems. It is, for one, just a one-year fix that does not provide the department any more budgetary stability in the outyears, which are also subject to the caps.

Without any confidence that it can rely on OCO in Fiscal 2017, the Defense Department cannot be assured that programs can continue on the same trajectory, raising significant questions as detailed planning gets underway for 2017 and beyond.

"We need the budget that we have laid out not just in one year, but in the years to come," Defense Secretary Ashton B. Carter told the House Armed Services Committee March 18. "And so, budgeting one year at a time, and this proposal

effectively reducing the prospects for eliminating—or at least sharply curtailing—the war budget in the coming years.

But with no other alternative right now, defense hawks will take what they can get to keep military programs—including Air Force priorities like the F-35A Lightning II, KC-46 aerial refueling tanker, and next generation bomber—on track, for now.

McCain, meanwhile, says he is hopeful that his wing of the party will ultimately prevail over fiscal conservatives in the budget battle.

"One way or another, I am confident that defense spending increases are coming—hopefully because prudent arguments will prevail, but if not, I fear it will be in response to a national security crisis," he said March 26 at the Center for Strategic and International Studies in Washington, D.C. ★

Megan Scully is a reporter for CQ Roll Call.



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Running ragged—narrowed edge for the US; Russia, China, and beyond; NATO and hybrid war

EW, ATTRITION, AND SURVIVAL

With the US military facing the very real possibility of renewed sequestration cutbacks, defense officials are increasingly concerned that the whittling down of force structure is affecting the calculations of adversaries.

This is why the “third offset strategy” is so important, Deputy Defense Secretary Robert O. Work said at a McAleese & Associates/Credit Suisse Defense Programs Conference in Washington, D.C., on March 17. Work unveiled a new joint electronic warfare panel within the Pentagon to coordinate EW efforts.

Investment in enablers is becoming more important the longer sequestration grinds on. As US military force structure has contracted, potential adversaries have grown their force structure, said Vice Chairman of the Joint Chiefs of Staff, Adm. James A. “Sandy” Winnefeld Jr., who also spoke at the event.

“We’re working our forces so ragged right now that our proficiency advantage is also shrinking,” Winnefeld said. US military “overmatch is definitely slipping.”

This is worrisome to many senior military leaders because it’s widely believed a future “high-end” conflict could involve modern, precise weaponry—specifically, precision guided munitions and medium- and long-range ballistic missiles. Surviving and coming out ahead in that exchange is what the “third offset” is seeking to secure.

From Russia to China and beyond, “competitors have caught up on this regime” of precision attack, Work said. If the US can no longer convince a potential adversary that it will “dominate in that competition, then they may feel emboldened to pull the trigger, and they may feel that they can forestall us from projecting power into a theater,” he said.

Officials are still working out exactly how the US could “ride it out” if someone throws “a salvo of 100 guided munitions,” Work said. He entreated defense industry rep-

resentatives for ideas that could lead to a “raid breaker,” preserving enough military power to effectively respond and project power.

“It doesn’t have to be a kinetic solution. Hell, I don’t really want a kinetic solution,” he added. This would put the US on a path toward the losing end of a cost imposition strategy. The Fiscal 2016 budget request reflects DOD’s priorities for long-range research and development, funding research on high energy lasers, unmanned systems, air dominance concepts, electronic warfare, and stealth improvements.

“Payloads will become more important than platforms,” Winnefeld noted, particularly with regard to electronic warfare and unmanned systems.

The department needs to move EW beyond just being an “enabler,” Work said, because adversaries are treating EW as an “important part of their offensive and defensive arsenal.”

“We need platforms in the services that are appropriate for their mission areas,” said Kendall. Each service is going to have to make investments in “some things that are unique and some that are shared, and what we’re going to do with that council is be as effective at that as we can be.”

ASSESSING AMERICAN “HARD POWER”

In early March, the Heritage Foundation unveiled its inaugural *Index of US Military Strength*, a 300-plus-page assessment of American military power, the operating environment the US military faces around the globe, and potential threats to US interests.

Using a blend of both qualitative and quantitative assessment, the *Index* lays out the state of US interests, the condition of the global operating environment, and the “status of our nation’s military forces.”

The *Index* focuses on so-called “hard power.” It is not exhaustive, however, nor does it seek to be. It is concerned solely with the state of US Active Duty military forces, as opposed to the Total Force. Unlike the Obama Administration, it embraces the “two major regional contingencies (MRC) requirement,” arguing that the US should strive to maintain the military power required to engage and defeat one opponent, while still retaining the ability to do the same with another. And its assessment of the global security environment focuses solely on three key regions—Europe, the Middle East, and Asia—as the security challenges in other regions “do not currently rise to the level of direct threats to America’s vital security interests as we have defined them.”

Europe remains the most favorable operating environment of the three regions, according to the report. Despite the recent actions of Russia, Europe is judged a largely “stable, mature, and friendly environment” with “favorable” marks for established allies, political stability, and modernized, yet shrinking, military forces.

In contrast, the Middle East is beset with “unfavorable” political instability linked to the fallout from the Arab Spring, but the US maintains a “moderate” military posture it has built up with its core allies since the end of the first Gulf War, and it has extensive experience conducting operations.

USAF photo by MSGT Adrian Cadiz



Robert Work predicts payloads will become more important than platforms.

Though Asia has “favorable” long-standing alliances, its vast expanse and more dispersed US military footprint makes military power projection more challenging than in other theaters.

The report's assessment of threats downplays states and non-state entities that lack “physical ability to pose a meaningful threat to the vital security interests of the US.” As a result, four of the six “threat actors” assessed in the report are nation states—Russia, Iran, China, and North Korea (with “Middle East terrorism” and “Af-Pak terrorism” the other two categories).

China and Russia both received “high” threat ratings. The authors claim both countries deserve these ratings due to their deep and “rapid modernization and expansion of their offensive military capabilities,” a point senior military leaders often make before Congress. While Iran and Middle East-based terror threats warrant concern, both these threats have limited ability to “project military power outside of their immediate areas.”

Finally, the report judges US military power in terms of its capability, capacity, and readiness, broken down by US military service, with the exception of the nuclear deterrent, which is separated into another category.

While the US military has gained valuable experience in Afghanistan and Iraq, its experience is “ephemeral and context-sensitive,” states the report. As the composition of the force changes over time and members come and go, it may be called to perform in far different military operations than counterinsurgency campaigns. The current joint force, as a result, is experienced, but is “aged and shrinking in its capacity,” the report states.

THE STRENGTH OF THE AIR FORCE

Heritage's interservice analysis describes the air service as the most capable at present.

The Air Force is the only military service judged to have a “strong” overall rating for the state of its military power, with the authors citing the service's high operations tempo and the fact that its current force structure, while it has shrunk since 2001, maintains “significantly more aircraft than required for a two-MRC force.” The Air Force also fields appropriate fighter forces to meet the demand of combatant commanders, but not enough ISR or bomber forces, states the report.

However, the report bases its military power assessment around the “tactical aircraft” required by a two-MRC-sized force, benchmarked at 1,200 air superiority, strike, and attack airframes. It concludes that the 1,098 fighter aircraft in USAF's Fiscal 2014 force structure is 91 percent of the needed figure, but a great deal of that force is old and nearing the end of its life, which poses capability challenges in the future.

The report also highlights the high average age of USAF's fleet and notes that some of its modernization efforts are “problematic,” which could affect capability in the long-term. Thus, while USAF retains a “strong” rating for capacity and readiness, the report's authors rate the service's capability as “marginal.”

As for the other services, the Army's power is dubbed “marginal” for its weak readiness and marginal capacity, as is the Marine Corps. Although the Marine Corps has higher readiness, it also suffers from “troubled” replacement of some of its core ground vehicles.

Informed deliberation on US military power is “needed today more than at any other time since the end of the Cold War,” the report's authors claim, as US interests are under significant pressure and fiscal and economic burdens are growing, both at home and for US allies abroad.

NATO will be judged by how it adapts its missions and forces to deal with Russia's embrace of “hybrid warfare,” said North Atlantic Treaty Organization leaders and military officials during the Alliance's annual “transformation seminar,” held in Washington, D.C., March 24 to 26.

Improving NATO's ability to gather information to inform strategic decision-making and its ability to project forces quickly in response to crisis will be crucial to that evolution, the Alliance's leadership declared during the conference, which was hosted by NATO Allied Command Transformation (ACT) and the Atlantic Council.

The outgoing head of NATO ACT, French Air Force Gen. Jean-Paul Palomeros, told attendees at the Willard InterContinental Hotel that the Alliance now faces a “hardened security environment,” both in Europe and beyond. Russia's actions in and around eastern Ukraine have displayed how state and non-state actors can harness innovation, military force, and “higher ambiguity” to achieve goals rapidly.

To respond to these challenges and to regain the “battle of the narrative,” NATO forces must improve “strategic awareness” and invest in better tools and techniques for information sharing, joint intelligence gathering, and “real-time” intelligence, surveillance, and reconnaissance capabilities, Palomeros said.

The push for improved C2 and ISR tools comes as NATO begins a preliminary study on how it will replace its 17-airframe E-3 AWACS fleet by 2035. The aircraft are frequently deployed in support of operations from air policing to flying surveillance sorties. For example, the AWACS fleet was mobilized to assess Russian military activity from Romania and Poland last year.

NATO Secretary General Jens Stoltenberg, in his March 25 keynote speech, declared hybrid warfare is as “old as the Trojan horse,” but today the scale is much larger, the speed and intensity is greater, and it is breaking out on the Alliance's borders—with proxy soldiers, unmarked special forces, disinformation, and propaganda all combining to create a “thick fog of confusion ... and to attempt deniability.”

This new brand of hybrid warfare is a “dark reflection of our comprehensive approach” and seeks to destabilize rather than build up. Russia's increasing use of “snap” military drills, such as the massive exercises staged from the borders of the Baltic states all the way to the Black Sea in early March, are concerning, Stoltenberg told reporters after his speech. He noted NATO member states saw similar drills used as a cover for launching “aggressive actions” in Ukraine last year.

Despite Russian actions, Alliance leadership cautioned its member-state representatives at the conference that NATO would not retrench solely into a Cold War-like posture, saying that the Alliance still has to balance its obligations.

The Alliance no longer has “the luxury to choose between collective defense and crisis management. For the first time in NATO's history we have to do both at the same time,” Stoltenberg said.

These demands have driven the creation of a 30,000-strong NATO response force and a “spearhead force” of 5,000 personnel, with lead elements that could “move within as little as 48 hours,” Stoltenberg said. This fall NATO will hold Exercise Trident Juncture with some 30,000 troops in Spain, Portugal, and Italy in a broad test of the response force concept, said Palomeros.

But reconciling the needs of crisis reaction with an Alliance structure built around consensus, whether responding to cyber attacks or hybrid threats, means NATO has to find a way to “reconcile oversight with speed,” Stoltenberg said, adding, “We need to develop a common understanding of events and our potential adversaries.”

Doing so will allow NATO the basis to effectively “identify, anticipate, plan, and react in a crisis.”

By Robert S. Dudley

Through the Looking Glass

"For 20 years, three presidents of both major parties proclaimed that an Iranian nuclear weapon was contrary to American and global interests—and that they were prepared to use force to prevent it. Yet negotiations that began 12 years ago as an international effort to prevent an Iranian capability to develop a nuclear arsenal are ending with an agreement that concedes this very capability."—*Former Secretaries of State Henry A. Kissinger and George P. Shultz, essay on the Obama Administration's "framework" nuclear deal with Iran, Wall Street Journal, April 7.*

High Standard

"[USAF] is trying to get back [to] taking a leading role in the nuclear debate in this country. We lead and execute two thirds of the nuclear triad, for Christ's sake. We should be in the middle of the policy debates on this issue. ... So the idea, as I told [USAF Gen.] Robin Rand, was go become the next Curtis LeMay. Bring this nuclear mission, no kidding, back to the front edge of Air Force attention every single day."—*Gen. Mark A. Welsh III, USAF Chief of Staff, on the mission of the new head of Air Force Global Strike Command, remarks at an Air Force Association breakfast, April 2.*

Big Cat of Baghdad

"Saddam Hussein, though a Sunni, ruled the predominantly Shia and partly Kurd nation of Iraq with a ruthless hand. ... He may not have been a savoury character but ... he was the cat that kept the rats of Islamism at bay. ... In the absence of the cat, the rats ran riot."—*Nobel Prize-winning novelist V. S. Naipaul, writing in the Daily Mail, London, March 21.*

What We Don't Need Right Now

"MARINE SNIPER IN URINATION SCANDAL TO PUBLISH A MEMOIR."—*Actual headline in Marine Corps Times, April 5.*

That's One Scenario ...

"The US and China are not allies, but we don't have to be adversaries. I reject the zero-sum thinking that China's gain is our loss. There is another scenario in which everyone wins."—*Secretary of De-*

fense Ashton B. Carter, speech at Arizona State University, April 6.

... And Here's Another One

"I would say that he doesn't want to build a navy that's equivalent to the US. He wants to build a navy that surpasses the US."—*Retired Adm. Gary Roughead, former US Chief of Naval Operations, on the ambition of Adm. Wu Shengli, China's top naval leader, Wall Street Journal, March 30.*

Table Talk

"It was on the table. It's still on the table. It's going to remain on the table. Israel should be able to defend itself, by itself, against any threat."—*Yuval Steinitz, Israeli minister for finance, remarks to reporters about Israel's option to strike Iran's nuclear facilities, April 6.*

Nonlinear Warfare

"In Crimea and Ukraine ... the Russians have unleashed what their Chief of the General Staff called 'nonlinear warfare,' which evolves from covert actions by special operations forces, to sustained unconventional combat waged under an umbrella of denial. And then ultimately escalating to high-end force-on-force proxy warfare. ... Separatist forces use advanced counter-battery radar to accurately pinpoint Ukrainian fires capability and ... use UAVs to identify targets. ... Russian-backed separatists [are also using] advanced electronic warfare equipment, ... jamming GPS frequencies, command and control networks. [Our troops] are going to have to fight on a battlefield swept by precision guided munitions, but also one that is swept by persistent and effective electronic warfare attacks."—*Deputy Secretary of Defense Robert O. Work, address to the US Army War College, April 8.*

Back to the Future

"I am what you could call a seasoned Cold Warrior. ... It is more or less the same as when I started. ... The signal they [Russians] are sending is that the situation in the 1990s was an exception."—*Norwegian Air Force Lt. Gen. Morten Haga Lunde, on the re-appearance of Russia air activity around Norway, New York Times, April 2.*

Army Wants to Join You

"Society is changing its view of tattoos, and we have to change along with that. It makes sense. Soldiers have grown up in an era when tattoos are much more acceptable and we have to change along with that."—*Gen. Raymond T. Odierno, Army Chief of Staff, announcing a new and more liberal policy on soldiers' tattoos, Army Times, April 1.*

Slow—Very Slow—to Anger

"Greece's deputy finance minister said on Monday [that] Germany owes Greece nearly 279 billion Euros (\$305.17 billion) in reparations for the Nazi occupation of the country."—*Reuters dispatch, April 6.*

Hypersonic Promise

"Hypersonic technology offers the potential for dramatic increases in speed, altitude, and range for our aircraft. The simplest class of hypersonic vehicle could travel as fast as Mach 8. This technology has the potential to advance intelligence, surveillance, and reconnaissance and improve the execution of any Air Force mission around the world. ... It is not difficult to imagine the value that such speed could bring in a future fight with advanced enemies or in our efforts to strike remote terrorist hideouts on extremely short notice."—*Gen. Larry O. Spencer, USAF Vice Chief of Staff, op-ed in Defense One, March 31.*

Eyes of the Aircraft

"When the helmet's tuned correctly to the pilot's eyes, you almost step into this other world where all this information comes in. You can look through the jet's eyeballs to see the world as the jet sees the world."—*AI Norman, Lockheed Martin test pilot, referring to an advanced helmet worn by F-35 pilots, Washington Post, April 1.*

We Didn't Start the Fire

"I wouldn't have believed that I would be involved in as much foreign policy as I am today. And it certainly isn't by choice. It's just that the world is on fire."—*Speaker of the House John Boehner (R-Ohio), interview with Politico, April 2.*



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— LOCKHEED MARTIN —

Air Force World

First Production QF-16 Delivered

Boeing recently delivered the Air Force's first production QF-16C full-scale aerial target to Tyndall AFB, Fla.

The former Michigan Air National Guard F-16C Block 30 airframe is the first of 13 QF-16s scheduled for delivery as part of Lot 1 production of the new flying target.

QF-16s will replace the 82nd Aerial Targets Squadron's QF-4s that provide targets for weapons testing and training over the nearby Eglin Range complex.

Boeing is under contract to convert up to 126 retired, early model F-16s to the QF-16 configuration.

QF-16, serial No. 86-0233, arrived at Tyndall on March 11.

★ screenshot

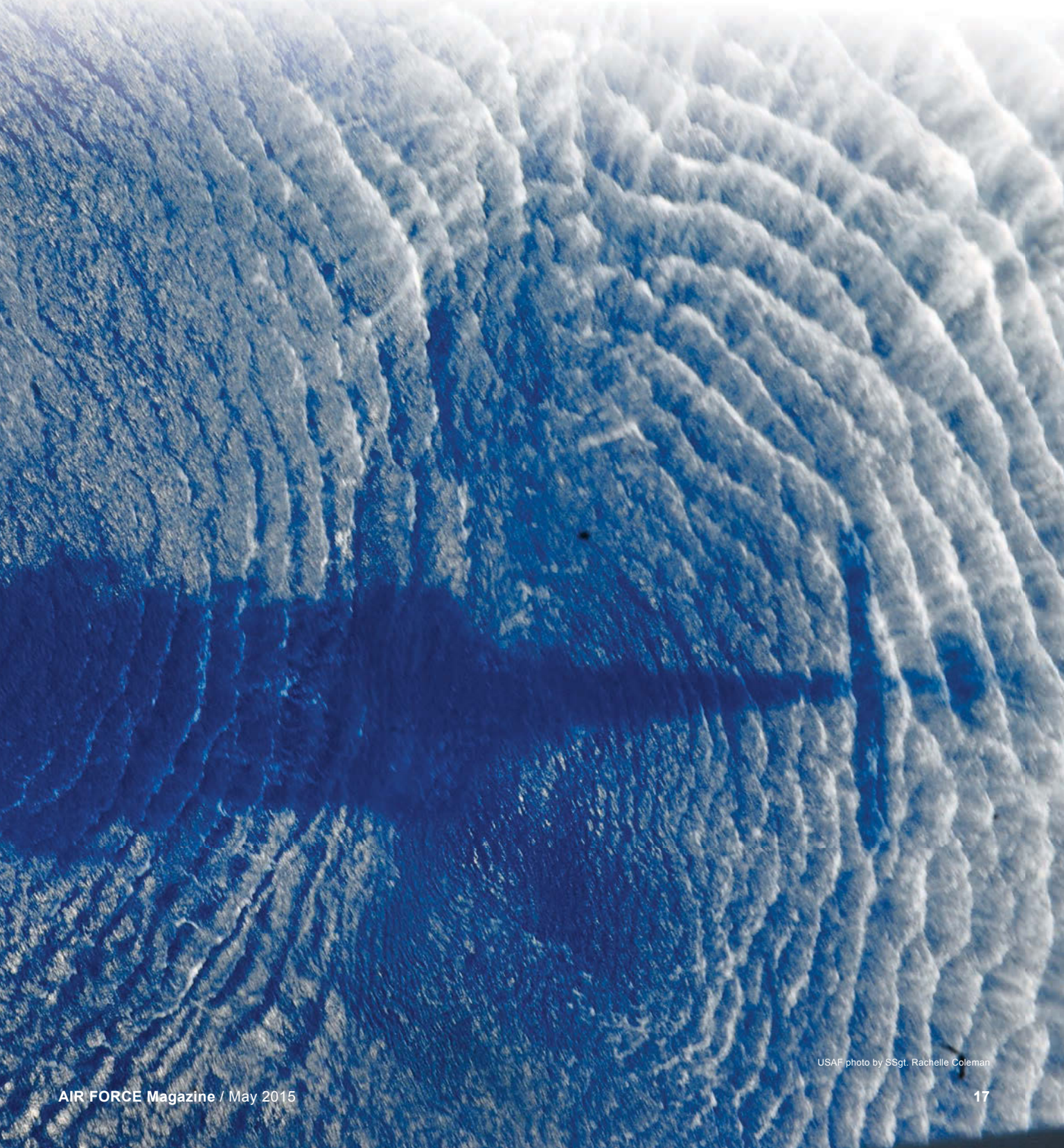
04.01.2015

An HH-60G Pave Hawk helicopter hovers over the Pacific Ocean, allowing the crew to practice combat search and rescue techniques during Forceful Tiger. The large-force exercise demonstrated the 18th Wing's combat capability to defend Okinawa, Japan.

C-5M Flies Into the Record Books

Airmen assigned to Travis AFB, Calif., claimed to have set 45 aeronautical records during an April 3 flight of a C-5M transport loaded with cargo. The eight-person aircrew included members of Travis' Active Duty 22nd Airlift Squadron and Air Force Reserve Command's 312th AS, according to a base news release.

The records claimed are the Class C-1.T jet category for altitude in horizontal flight, altitude with payload, time-to-climb, time-to-climb with payload, and greatest payload to 9,000 meters. "We took on approximately 265,000 pounds of cargo and our goal was to climb as fast as we could at 3,000, 6,000, and 9,000 meters," said Maj. Jon Flowers, pilot for the flight.



USAF photo by SSgt. Rachelle Coleman



"We got up to an altitude of approximately 37,000 feet before we ran out of performance," he said. The National Aeronautic Association and Fédération Aéronautique Internationale must certify any national and international records, respectively. If certified, the marks set on April 3 would give the C-5M 86 aeronautical records, surpassing the B-1B bomber, having 83, said Travis officials.

Turn, Turn, Turn: Maintenance vehicles line up on the snowy flight line at Minot AFB, N.D., during a rapid launch exercise in late March. A B-52H is sheltered behind them. USAF maintainers, fire department and security forces personnel, B-52H crews and crew chiefs, and other base personnel practiced generating fast and fluid responses to deter, and if necessary defeat, a military attack.

Doolittle Raider Robert Hite Dies

Retired Lt. Col. Robert L. Hite, one of the last surviving Doolittle Tokyo Raiders, died in Nashville, Tenn., on March 29. He was 95. Hite was the copilot on airplane 16, dubbed *Bat Out of Hell*, during the top secret April 18, 1942, mission to bomb Japan.

The raid, led by Lt. Col. James H. "Jimmy" Doolittle, had little impact on the Japanese military, but significantly boosted American morale during World War II. Hite was captured by the Japanese in China following the raid and was imprisoned in Shanghai for 40 months. He was held in solitary confinement, tortured, and starved until he was liberated on Aug. 20, 1945.

During the Korean War, Hite returned to Active Duty and served overseas before he was released from duty for the second time in November 1955.

He was the recipient of the Distinguished Flying Cross, Purple Heart with one Oak Leaf Cluster, and the Chinese Breast Order of Pao Ting.

Only two Doolittle Raiders are still living. They are: retired Lt. Col. Richard E. Cole, copilot of crew 1, and David Thatcher, who was a staff sergeant and the engineer-gunner of crew No. 7.

—Amy McCullough

First Internationally Built F-35A

Italy rolled out its first F-35A from a facility in Cameri, Italy, on March 12, marking the completion of the first F-35A assembled internationally, according to a company press release.

Aircraft AL-1 moves from the Italian Ministry of Defense's final assembly and checkout facility to additional checkout inspections, then first flight later this year, Lockheed Martin officials said.

The F-35 is the first of eight on order for the Italians, and the Cameri facility is also home to the European F-35 maintenance overhaul and upgrade center.

In addition to the Italian F-35A and F-35B airframes, the Cameri facility is expected to build F-35As for the Royal Netherlands Air Force and could be tapped to produce airframes for other European countries as needed.

The Italians are replacing their Panavia Tornado, AMX Ghibli, and McDonnell Douglas AV-8B attack aircraft with F-35s.

Florida Guard Leads Euro-TSP

A dozen Florida Air National Guard F-15Cs and around 200 Air Guardsmen from the 125th Fighter Wing deployed as part of the second European Theater security package sent to the continent, marking the ANG's first TSP deployment in support of US Air Forces in Europe-Air Forces Africa.

"The TSP is a strategic capability that allows the Air Force greater flexibility against evolving threats. ... It reassures our allies and partner nations that our commitment to European

By the Numbers

35,000

Size, in square miles, of USAF's planned Powder River Training Complex after an expansion was recently approved by the FAA. It will span the Dakotas, Montana, and Wyoming and provide bombers with enhanced training airspace.

security is a priority," Lt. Gen. Darryl L. Roberson, 3rd Air Force commander, said in a March 27 news release.

Heightened tensions with Russia prompted USAF-AF-AFRICA to commence TSPs for Operation Atlantic Resolve this year, dispatching A-10s from Davis-Monthan AFB, Ariz., to Spangdahlem AB, Germany. The first F-15s deployed to Leeuwarden AB, Netherlands, March 31 and will forward deploy to Graf Ignatievo AB, Bulgaria, during the six-month TSP.

The Liberty Verdict

Air Force Special Operations Command will continue flying the U-28 as its primary manned intelligence, surveillance, and reconnaissance platform instead of converting to the MC-12W Liberty, AFSOC Commander Lt. Gen. Bradley A. Heithold said.

"Congress was not enamored" with AFSOC's plan to acquire and modify 33 secondhand MC-12s divested by Air Combat Command and US Special Operations Command, he said March 18.

After reviewing a special operations report justifying the move, Congress decided the marginal capability increase over the U-28 "wasn't worth the investment," Heithold said.

AFSOC will still get 13 MC-12s to stand up a new Air National Guard special operations ISR and foreign training unit in Oklahoma, but the rest of the 33 planned aircraft will go elsewhere, he said.

The Army will take eight of the 51-strong MC-12W fleet, leaving the bulk of the Air Force airframes up for grabs. "They're opportune aircraft" for a government-owned, contractor-operated ISR fleet, Heithold said. "Nobody's decided that, but the opportunity's there."

Russian Provocation

Russia's military forces undertook massive snap military drills, from its Eastern Military District to the Arctic to the Black Sea in March.

The exercises included deployments of both Tu-95 Bear and Tu-22 Backfire nuclear-capable bombers to Crimea. Iskander SS-26 theater ballistic missile systems also deployed to Russia's Kaliningrad region, near the Baltic states.

The drills involved more than 100 aircraft, 15 submarines, 40 naval ships, and upward of 76,000 personnel, running March 16-21.

Adm. Cecil D. Haney, head of US Strategic Command, called the moves "very provocative," saying they were clearly intended to send a strong signal to the US and its allies.

No Eyes in the Clumsy Skies

Air Mobility Command accident investigators determined that inadequate visual scanning and overreliance on collision

avoidance systems by the crews of an Air Force Reserve Command C-130H and Army C-27J caused a midair collision near Pope Field, N.C., last December.

They found "convincing evidence" that "a breakdown in visual scan" resulted in insufficient clearing of the aircraft flight path by both aircrews, stated the accident investigation board's report, released March 16.

The 440th Airlift Wing's C-130 was pulling up after a night time low-level supply drop with night vision goggles when the C-27J clipped it roughly eight miles south of Mackall AAF, N.C., on Dec. 1, 2014.

The Army Special Operations Command C-27 passed head-on diagonally under the C-130, grazing the latter's underside with its wingtip. The C-27's vertical stabilizer struck the C-130's right wing, external fuel tank, and outboard engine nacelle, according to the AIB report.

The impact sheared a third of the C-27's vertical tail off, but both aircraft landed safely.

The C-130 sustained an estimated \$1.8 million in damage and associated cleanup. No crew members were injured.

Ninth GPS IIF Satellite Launched

The ninth Global Positioning System IIF satellite successfully launched aboard a United Launch Alliance Delta IV rocket from Cape Canaveral AFS, Fla., on March 25, the Air Force announced.

The Boeing-built satellite reached orbit just over three hours after launch and "sent signals confirming its health," according to a company press release.

"Boeing, ULA, and the Air Force successfully launched four GPS IIFs last year, the highest operations tempo in over 20 years, and today's mission marks the first of three launches planned in 2015," said Dan Hart, vice president of Boeing Government Space Systems. "As they enter service, the IIFs are advancing and modernizing the GPS constellation by improving accuracy, signal strength, and anti-jamming capability."

Ground Strike Lightning

The F-35A will be capable of "basic" close air support when it achieves initial operational capability next September, but improvements in the coming years will make it more effective for joint CAS missions, according to Air Combat Command.

Initial war-ready capabilities will include "limited" suppression and destruction of enemy air defense capabilities, and limited air interdiction weapons and capabilities, said Maj. Michael Albrecht, the F-35 functional area manager in ACC's operations directorate.

By next year, the F-35 will be capable of dropping both laser guided bombs and Joint Direct Attack Munitions, whereas by 2019 it will improve both its sensor capabilities and gain the ability to use "different variations of precision guided munitions," such as the Small Diameter Bomb II, he said March 12.

Albrecht confirmed that the Defense Advanced Research Projects Agency did present a brief on future CAS weapons development, but said the services are still talking about their various concepts and ideas in this area.

He said the services "talked about having their [research and development] look at what kinds of things we could bring to the CAS fight in the future," specifically weapons that are "platform agnostic, so we can put it on whatever is flying out there."

—Marc V. Schanz

Russia Ditches CFE Treaty

Russia declared it will no longer participate in a Vienna-based consultative group on the Treaty on Conventional Armed Forces in Europe (CFE), making good on a 2007 threat to pull out of the conventional weapons agreement.

NATO Secretary General Jens Stoltenberg said he was "disappointed" by the decision, but NATO supports continued efforts to regulate conventional forces in Europe.

"We believe that to have consultations on arms control, arms reductions is important," he said, adding later that Russia is continuing to deliver weapons and heavy equipment to rebels in eastern Ukraine.

Russian diplomats claim they are withdrawing because NATO countries are allegedly dodging the terms of the agreement, signed just prior to the end of the Cold War.

This does not mean rejection of "further dialogue on control over conventional arms in Europe," said Russian diplomat Anton Mazur, who leads the Russian delegation in Vienna on arms control issues.

—Marc V. Schanz

Airmen Rescue Saudi Aircrew

Djibouti-based Air Force rescue personnel plucked a two-man Saudi F-15S crew from the Red Sea after the pair ejected during a strike sortie over Yemen, according to the Saudi government and a press report.

An HH-60G rescue helicopter from Camp Lemonnier, Djibouti, recovered the Saudi airmen on March 26, in coordination with US Navy ships in the area, within two hours of the request for assistance, reported the *Wall Street Journal*.

"Both pilots are reported in good health and high spirits" and were taken to King Khalid AB, Saudi Arabia, for treatment, according to Saudi officials.

Air Force Reserve Command HH-60s of the 303rd Expeditionary Rescue Squadron are currently deployed to Camp Lemonnier alongside pararescue personnel and Alaska Air National Guard HC-130 tankers for Joint Task Force-Horn of Africa.

Saudi Arabia kicked off an Arab coalition air offensive against the Iranian-backed Houthi rebels in Yemen the previous week.

Hogs Hit the Sandbox

Idaho Air National Guard A-10Cs deployed to Al Udeid AB, Qatar, to fly a trio of international exercises in the Persian Gulf region, US Air Forces Central Command announced.

Six aircraft and roughly 120 pilots, maintainers, and support personnel from Gowen Field, near Boise, formed the 190th Expeditionary Fighter Squadron, which arrived in late February and early March.

"During these exercises, the focus will be more heavily on the A-10 ... in the area of close air support, forward air patrol, and combat search and rescue, among other tactics," said 190th EFS Detachment Commander Lt. Col. Anthony Brown.

AFCENT officials stressed that the 190th EFS deployment is a noncombat commitment to relieve pressure on in-theater units engaged in Operation Inherent Resolve against ISIS in Iraq and Syria.

High Attack Angle, Airframe Flaw Downed F-15D

An F-15D assigned to the 48th Fighter Wing at RAF Lakenheath, UK, crashed on Oct. 8, 2014, in part because a

radome irregularity disrupted airflow during a maneuver. The pilot safely ejected.

The flaw "generated sufficient yaw to cause a spin," delaying the pilot's recovery of the aircraft, according to an accident investigation board report, released March 12.

The pilot was engaged in combat maneuvers just north of Lakenheath and entered into a "series of descending vertical maneuvers" followed by an abrupt aft-stick input that "spiked" the aircraft's angle of attack, according to the AIB.

Aerodynamic testing showed similar radome imperfections only affected aircraft handling in specific, infrequent flight regimes, such as that encountered when the pilot initiated the pitch-up maneuver.

"By a preponderance of evidence, the board president also found that the inherent reduced stability of the F-15D model was a significant contributing factor to the mishap," states the report.

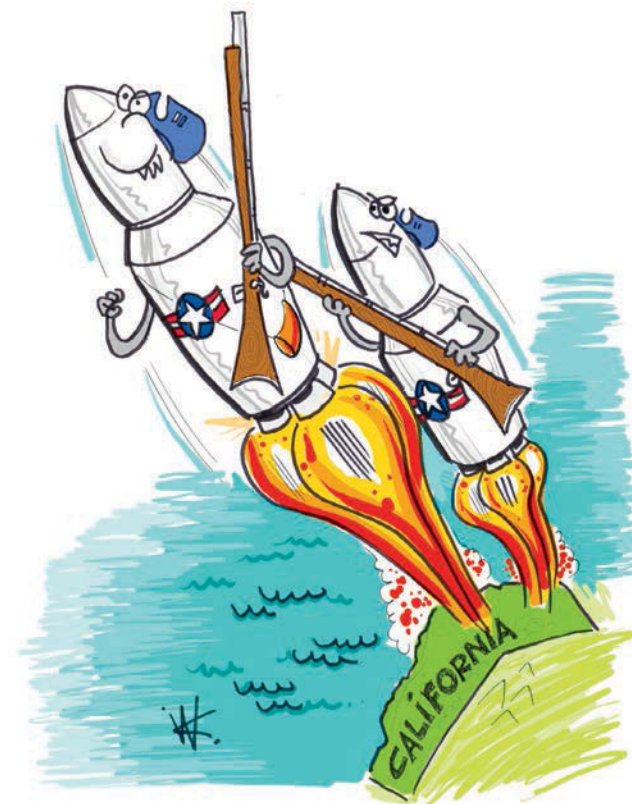
Minuteman Double Shot

Air Force missileers conducted a rare second unarmed Minuteman III operational test launch less than a week after a first shot from Vandenberg AFB, Calif. Air Force Global Strike Command announced that the launches were on March 23 and March 27.

"These launches are a visible reminder to both our adversaries and our allies of the readiness and capability of the Minuteman III weapon system," Lt. Col. Daniel Hays, 341st Missile Wing task force commander from Malmstrom AFB, Mont., said in a news release.

AFGSC has "two more launches scheduled for this fiscal year," command spokeswoman Capt. Michele Rollins told *Air Force Magazine*. Staging launches close together also took advantage of in-place Navy range support and was "far more efficient" than one-off testing, she added.

A launch crew from F. E. Warren AFB, Wyo., fired the first test shot of the pair.



The War on Terrorism

Operation Freedom's Sentinel (Afghanistan)

Casualties

As of April 16, one American had died in action in Operation Freedom's Sentinel.

Slowing Afghanistan Troop Withdrawal

The US will maintain its current 9,800 troop force posture in Afghanistan through 2015, as requested by Afghan President Ashraf Ghani, the White House announced.

"The specific trajectory of the 2016 drawdown will be established later this year to enable our final consolidation to a Kabul-based embassy presence by the end of 2016," said President Obama during a joint press conference with Ghani, March 24.

Obama emphasized that the overall timeline has not changed and that the US is still shifting out of the combat role. He noted that four years ago, the United States had more than 100,000 troops serving in Afghanistan, but less than 10,000 today.

"We're essentially moving the drawdown pace over to the right for several months in part to compensate for the lengthy period it took for government formation, and in part because we want to make sure we're doing everything we can to help the Afghan security forces succeed so we don't have to go back," said Obama.

Ghani paid tribute to US personnel killed or wounded in Afghanistan. "You stood shoulder-to-shoulder with us and I'd like to say thank you," said Ghani.

"The 2,215 Americans that have died, must not die in vain. They must leave behind a legacy of a stable Afghanistan," which he said the flexible drawdown schedule will help secure.

—Amy McCullough

C-130 Swap Out

West Virginia and Wyoming Air National Guard C-130Hs returned from a four-month deployment for operations in Afghanistan, Iraq, the Horn of Africa, and the broader Persian Gulf region in March.

Four aircraft from Cheyenne, Wyo.-based 153rd Airlift Wing were augmented by two C-130s from West Virginia's 130th AW in Charleston, and nearly 100 pilots, maintainers, and support personnel, according to a wing news release.

The combined expeditionary unit flew 1,310 flying hours over 649 sorties, airlifting some 3,140 personnel and 2,370 tons of supplies since deploying last November.

The rotation relieved the Minnesota ANG's 133rd AW and handed off to C-130s and airmen of the Kentucky ANG's 123rd AW in late February.

The final Wyoming Herc returned to Cheyenne from the US Central Command area of operational responsibility on March 5.

Operation Inherent Resolve (Syria and Iraq)

Casualties

As of April 16, four Americans had died in Operation Inherent Resolve. All four troops were killed in noncombat incidents.

Resolved Overview

US Central Command released new figures detailing air strike targets in Operation Inherent Resolve, revealing that 5,314 individual targets, from fighting positions to weapons caches, have been struck since the campaign began in August 2014. The target list has expanded to 26 categories, from 17 listed in CENTCOM's January report, with multiple categories added on types and purposes of buildings, weapons categories, as well as various oil infrastructure targets.

The heaviest hit targets include fighting positions, with 1,003 struck as of March 18 (up from 673 in early January), and 689 "logistics buildings" (a category not included in the January report). Other heavily hit targets include 460 "technical vehicles"—civilian vehicles with crew-served weapons mounted on them—up from 303 in January, as well as 547 "miscellaneous" vehicles (up from 394 in January).

The artillery, anti-aircraft artillery, and mortar category has been split up in this report. It shows 47 artillery pieces having been struck thus far, along with 99 mortars, and 48 AAA and air defense targets.

Some 40 weapons caches have now been hit, up from 23 in the January report.

—Marc V. Schanz

Back to Tikrit

After a request for assistance from the Iraqi government, US and coalition aircraft conducted air strikes in Tikrit, supporting Iraqi forces attempting to dislodge ISIS fighters from the city.

Fighters, bombers, and remotely piloted aircraft carried out 17 strikes on ISIS targets in the initial wave, hitting a building held by ISIS, two bridges, three checkpoints, berms, staging areas, and a command and control facility, according to a March 26 Defense Department press release.

The strikes inserted US and coalition forces directly into the battle for Tikrit that also involved Iranian advisors, Shiite militias, and Iraqi forces, raising potential deconfliction challenges with the Iranians.

US strikes were conditioned on the Iraqi government taking control of the operation, coordinating a scheme of maneuver with forces, and being able to establish a clear line of communication with Operation Inherent Resolve air planners, said US Central Command boss Army Gen. Lloyd J. Austin III.

Nellis AFB, Nev., the previous month and were developing tactics to integrate with fifth generation aircraft ahead of the F-35's introduction, according to the RAF.

Despite weather that challenged even airmen from the "north of Scotland," the exercise has proved the ability to "operate in extreme climatic conditions," said RAF Squadron Leader Alex Hunter.

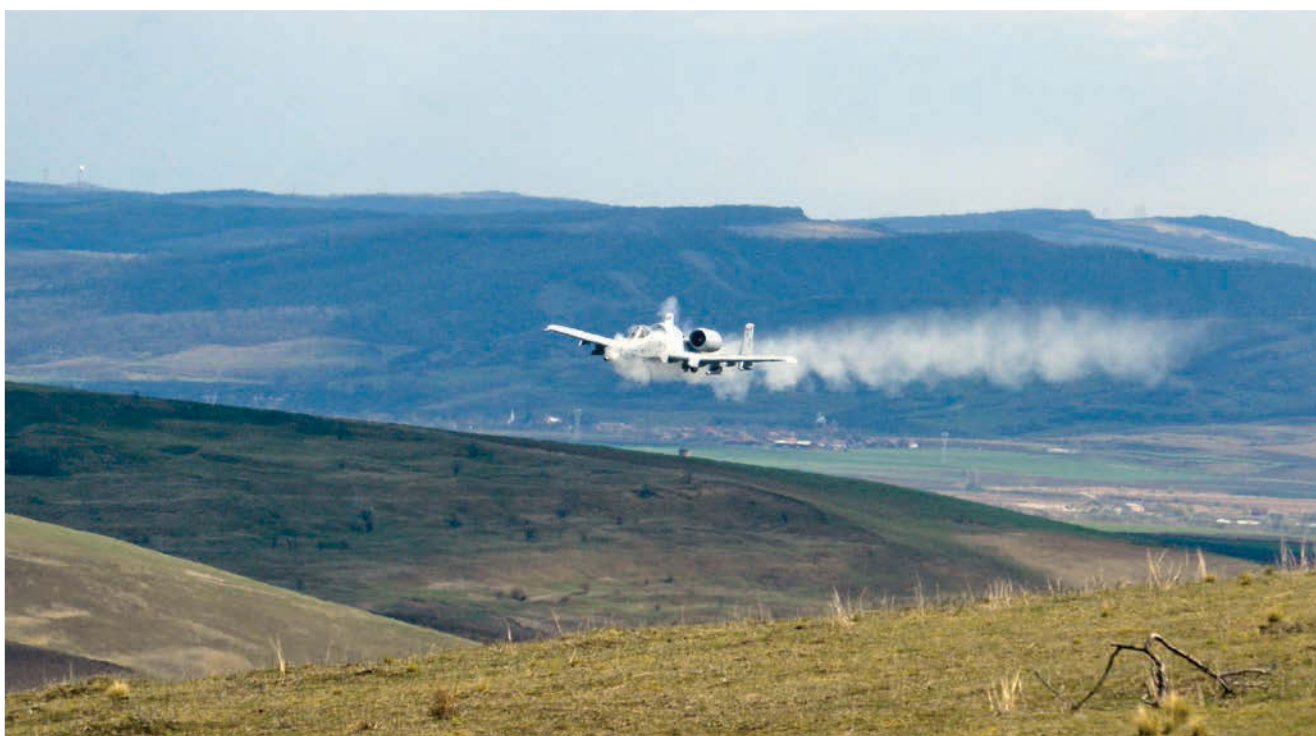
Zephyr culminated in larger-scale exercises with AWACS and Red-force aggressors.

Raptors and Flying Scots

Eight Royal Air Force Typhoon FGR4s joined F-22 Raptors at JB Langley-Eustis, Va., for the three-week joint training exercise Western Zephyr, RAF officials announced on March 5.

"Training of this nature alongside our allies is essential if we are to keep the RAF at the forefront of combat airpower," said deployed boss, RAF Wing Commander Jim Walls.

The Typhoons wrapped up participation in Red Flag at



JASSM-ER Ready to Rock

The Air Force's Joint Air-to-Surface Standoff Missile-Extended Range is now available for B-1B bomber crews to use in combat, announced officials at Dyess AFB, Texas.

The base, home to the B-1s of the 7th Bomb Wing, received its first batch of JASSM-ER production missiles in March 2014.

The declaration that the JASSM-ER is available for combat operations followed in early December, according to a March 9 base release.

Weeks later, the Air Force approved the missile for full-rate production. JASSM-ER boasts roughly two-and-a-half times the range of the baseline JASSM, meaning some 500 nautical miles (575.4 miles).

The B-1 is the only platform cleared to carry the extended-range version; the Air Force has integrated the baseline variant on B-2As, B-52Hs, F-16s, and F-15Es.

C-130 Compliance Top Priority

Making certain legacy C-130Hs are upgraded to comply with navigation and safety requirements to operate in US and international airspace beyond 2020 is "absolutely priority one" for the Air National Guard, ANG Director Lt. Gen. Stanley E. Clarke III said.

There are other modernization programs that "I'd say would be second tier to that one, but that one's got to come first," he told members of the House Appropriations Committee's defense panel on March 17. "The Air Force is committed to putting the resources behind this compliance issue in order to make sure we are compatible," he said, despite the fact that there's no current program of record to do so.

Clarke said that ambiguity and disagreement between Congress and the Air Force as to whether upgrades would be part of the C-130 Avionics Modernization Program has put the effort "a little bit behind" schedule.

The Air Force must "have multiple vendors" if there is any hope of meeting the FAA's deadline, but Clarke assured the panel that USAF will "make sure it happens."

Five Thousand Scrambles and Counting

District of Columbia Air National Guard aerospace control

We Got Your Back: An A-10 fires its 30 mm GAU-8 Avenger rotary cannon during a theater security package deployment to Campia Turzii, Romania, during an Operation Atlantic Resolve mission. USAF deployed 12 A-10s and some 200 airmen for the 90-day TSP. They trained with Romanian airmen flying MiG-21 aircraft in Atlantic Resolve and the exercise Dacian Thunder as part of an ongoing show of commitment to US allies in the region.

alert F-16s recently scrambled for the 5,000th time since Sept. 11, 2001, in defense of the nation's capital, unit officials announced.

Stricter flight restricted zones were instituted over the National Capital Region following the 9/11 terrorist attacks when the unit began 24/7 alert. Since then, the unit has responded to more incidents than NORAD's other continental alert sites combined.

"If you add up all of their alert calls and double that, that doesn't come close to the amount of activity we have had," said 113th Operations Ground Commander Col. Mark Valentine.

The 5,000th scramble occurred March 21.



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Senior Staff Changes

CONFIRMATIONS: To Be General: Ellen M. **Pawlikowski**. **To be Lieutenant General:** Arnold W. **Bunch Jr.** **To be Major General:** Nina M. **Armagno**, John D. **Bansemer**, Casey D. **Blake**, Michael T. **Brewer**, Anthony J. **Cotton**, Clinton E. **Crosier**, Thomas H. **Deale**, Timothy G. **Fay**, Timothy S. **Green**, Joseph T. **Guastella Jr.**, David A. **Harris**, James B. **Hecker**, Scott A. **Howell**, James C. **Johnson**, Mark D. **Kelly**, Matthew H. **Molloy**, Michael D. **Rothstein**, Kevin B. **Schneider**, Barre R. **Seguin**, Thomas J. **Sharpy**, James C. **Slife**, Scott F. **Smith**, Giovanni K. **Tuck**, Glen D. **VanHerck**, James C. **Vechery**, Sarah E. **Zabel**. **To be Brigadier General:** Christopher A. **Coffelt**, Jeffrey A. **Kruse**, Randall **Reed**. **To be ANG Major General:** Leonard W. **Isabelle Jr.**, Michael T. **McGuire**, Sami D. **Said**. **To be ANG Brigadier General:** Todd M. **Audet**, Johnny S. **Lizama**, Thomas W. **Ryan**, Jay N. **Selanders**, Scott A. **Young**. **To be AFRC Major General:** Abel **Barrientes**, Brian E. **Dominguez**, John C. **Flournoy Jr.**, Kathryn J. **Johnson**, Kenneth D. **Lewis Jr.**, Mark L. **Loeben**, Vincent M. **Mancuso**, Ronald B. **Miller**, Dixie A. **Morrow**, Karen A. **Rizzuti**, Richard W. **Scobee**. **To be AFRC Brigadier General:** Vito E. **Addabbo**, Thomas L. **Ayers**, Maureen G. **Banavige**, Dennis T. **Beatty**, James N. **Coombes II**, Christian G. **Funk**, Jay S. **Goldstein**, Hubert C. **Hegtveldt**, John A. **Hickok**, Farris C. **Hill**, John M. **Hillyer**, Arthur E. **Jackman Jr.**, Craig L. **LaFave**, Pamela J. **Lincoln**, Linda M. **Marsh**, Steven R. **Rosenmeier**, Stan A. **Sheley**, Patrick M. **Wade**, John B. **Williams**.

NOMINATIONS: To be Lieutenant General: John N. T. **Shanahan**, Jack **Weinstein**. **To be Brigadier General:** Aaron M. **Prupas**.

CHANGES: Maj. Gen. David W. **Allvin**, from Dir., Strategy, Concepts, & Assessments, DCS for Stat. Plans & Rqmts., USAF, Pentagon, to Dir., Plans & Policy, EUCOM, Stuttgart-Vaihingen, Germany ... Brig. Gen. Roy-Alan C. **Agustin**, from Dir., Instl. & Mission Spt., ACC, JB Langley-Eustis, Va., to Dir., Log., Instl., & Mission Spt., USAF, Ramstein AB, Germany ... Maj. Gen. (sel.) Nina M. **Armagno**, from Cmdr., 45th SW, AFSPC, Patrick AFB, Fla., to Dir., Rqmts., AFSPC, Peterson AFB, Colo. ... Brig. Gen. Steven L. **Basham**, from Dir., Strategy, Plans, Rqmts., & Prgms., PACAF, JB Pearl Harbor-Hickam, Hawaii, to Dep. Dir., Rqmts., Jt. Staff, Pentagon ... Lt. Gen. (sel.) Arnold W. **Bunch Jr.**, from Cmdr., Air Force Test Center, AFMC, Edwards AFB, Calif., to Mil. Dep., Office of the Asst. SECAF, Acq., Pentagon ... Maj. Gen. Theresa C. **Carter**, from Cmdr., AF Instl. & Mission Spt. Center, AFMC, JB Andrews-Naval Air Facility, Washington, D.C., to Cmdr., AF Instl. & Mission Spt. Center, AFMC, JBSA-Lackland, Texas ... Brig. Gen. (sel.) Christopher A. **Coffelt**, from Dep. Dir., Current Ops., STRATCOM, Offutt AFB, Neb., to Cmdr., Spaatz Center for Officer Education, AETC, Maxwell AFB, Ala. ... Maj. Gen. (sel.) Anthony J. **Cotton**, from Dep. Dir., NRO, Chantilly, Va., to Cmdr., 20th AF, AFGSC, STRATCOM, F. E. Warren AFB, Wyo. ... Maj. Gen. Stephen T. **Denker**, from Dir., Air, Space, & Cyberspace Ops., AFSPC, Peterson AFB, Colo., to Dep. Dir., NRO, Chantilly, Va. ... Brig. Gen. (sel.) Andrew J. **Gebara**, from Sr. Mil. to the Undersecretary of the AF, OSAF, Pentagon, to Dep. Dir., Nuclear Ops., STRATCOM, Offutt AFB, Neb. ... Maj. Gen. (sel.) Joseph T. **Guastella Jr.**, from Dep. Dir., Rqmts., Jt. Staff, Pentagon, to DCS, OSAF, SHAPE, NATO, Mons, Belgium ... Brig. Gen. Gregory M. **Guillot**, from Cmdr., 55th Wg., ACC, Offutt AFB Neb., to Dir., Stat. Plans, Rqmts., & Prgms., PACAF, JB Pearl Harbor-Hickam, Hawaii ... Brig. Gen. (sel.) Darren V. **James**, from Dep. Dir., Ops. & Plans, TRANSCOM, Scott AFB, Ill., to Cmdr., 379th AEW, ACC, Southwest Asia ... Brig. Gen. (sel.) Kevin B. **Kennedy**, from Cmdr., 28th BW, ACC, Ellsworth AFB, S.D., to Dir., Warfighter Sys. & Cyberspace Integration, Office of the Chief Info. Officer, OSAF, Pentagon ... Brig. Gen. Michael A. **Minihan**, from Dep. Dir., Air & Cyberspace Ops., PACAF, JB Pearl Harbor-Hickam, Hawaii, to Dep. Dir., Ops., PACOM, Camp

H. M. Smith, Hawaii ... Brig. Gen. Wayne R. **Monteith**, from Sr. Mil. Asst. to the SECAF, OSAF, Pentagon, to Cmdr., 45th SW, AFSPC, Patrick AFB, Fla. ... Brig. Gen. Patrick X. **Mordente**, from Cmdr., 86th AW, USAF, Ramstein AB, Germany, to Vice Cmdr., 18th AF, AMC, Scott AFB, Ill. ... Maj. Gen. Andrew M. **Mueller**, from Component Cmdr., NATO Airborne Early Warning & Control Force, SHAPE, Geilenkirchen, Germany, to Chief, Safety, USAF, Pentagon ... Maj. Gen. John F. **Newell III**, from Dir., Strategy, Policy, & Plans, NORAD, NORTHCOM, Peterson AFB, Colo., to Dir., Strategy, Concepts, & Assessments, DCS for Strat. Plans & Rqmts., USAF, Pentagon ... Brig. Gen. Ricky N. **Rupp**, from Spec. Asst. to the Cmdr., UN Command/Combined Forces Command/US Forces Korea, Yongsan, Republic of Korea, to US Sr. Defense Official/Defense Attaché, US Embassy, Tel Aviv, Israel ... Maj. Gen. John N. T. **Shanahan**, from Cmdr., 25th AF, ACC, JBSA-Lackland, Texas, to Dir., Defense Intel. (Warfighter Spt.) Office of the USD, Intel., Pentagon ... Brig. Gen. John S. **Shapland**, from US Sr. Defense Official/Defense Attaché, US Embassy, Tel Aviv, Israel, to Dir., Air, Space, & Info. Ops., AFMC, Wright-Patterson AFB, Ohio ... Maj. Gen. (sel.) Thomas J. **Sharpy**, from Vice Cmdr., 18th AF, AMC, Scott AFB, Ill., to Dir., Strat. Plans, Rqmts., & Prgms., AMC, Scott AFB, Ill. ... Maj. Gen. Bradford J. **Shwedo**, from Dir., Capability & Resource Integration, CYBERCOM, Fort George G. Meade, Md., to Cmdr., 25th AF, ACC, JBSA-Lackland, Texas ... Brig. Gen. Dirk D. **Smith**, from Dep. Dir., Ops., PACOM, Camp H. M. Smith, Hawaii, to Dir., Air & Cyberspace Ops., PACAF, JB Pearl Harbor-Hickam, Hawaii ... Brig. Gen. Bradley D. **Spacy**, from Dir., Log., Instl., & Mission Spt., USAF, Ramstein AB, Germany, to Dir., Expeditionary Spt., AF Instl. & Mission Spt. Center, AFMC, JBSA-Lackland, Texas ... Brig. Gen. Paul W. **Tibbets IV**, from Dep. Dir., Nuclear Ops., STRATCOM, Offutt AFB, Neb., to Cmdr., 509th BW, AFGSC, Whiteman AFB, Mo. ... Brig. Gen. Jon T. **Thomas**, from Dep. Dir., Future Jt. Force Dev., Jt. Staff, Suffolk, Va., to Cmdr., 86th AW, USAF, Ramstein AB, Germany ... Maj. Gen. Jack **Weinstein**, from Cmdr., 20th AF, AFGSC, STRATCOM, F. E. Warren AFB, N.Y., to DCS, Strat. Deterrence & Nuclear Integration, USAF, Pentagon ... Brig. Gen. Stephen N. **Whiting**, from Vice Cmdr., US Air Warfare Center, ACC, Nellis AFB, Nev., to Dir., Air, Space, & Cyberspace Ops., AFSPC, Peterson AFB, Colo. ... Lt. Gen. Stephen W. **Wilson**, from Cmdr., AFGSC, Barksdale AFB, La., to Dep. Cmdr., STRATCOM, Offutt AFB, Neb.

SENIOR EXECUTIVE SERVICE CHANGES: Jay O. **Aanrud**, to Dep. Dir., Sexual Assault Prevention & Response Office, Office of USAF Vice C/S, USAF, Pentagon ... William D. **Bailey**, to Dep. Dir., AF Rapid Capabilities Office, Office of the Administrative Asst. to SECAF, JB Anacostia-Bolling, Washington, D.C. ... Timothy K. **Bridges**, to Asst. DCS, Log., Engineering, & Force Protection, USAF, Pentagon ... Randy E. **Brown**, to Dir., AF Civil Engineer Center, AF Instl. & Mission Spt. Center, AFMC, JBSA-Lackland, Texas ... Timothy **Bunning**, to Chief Scientist, Materials & Manufacturing, AFRL, AFMC, Wright-Patterson AFB, Ohio ... Kent E. **Chadrick**, to Dir., Info. Mgmt., Office of the Administrative Asst. to SECAF, OSAF, Pentagon ... Thomas W. **Cooley**, to Sr. Scientist, Space Situational Awareness, Directed Energy, AFRL, Kirtland AFB, N.M. ... Terry G. **Edwards**, to Exec. Dir., AF Instl. & Mission Spt. Center, AFMC, JBSA-Lackland, Texas ... Gordon M. **Ettenson**, to Dep. Dir., Policy, Prgms., & Strategy, Office of the Dep. Undersecretary of the AF, (Intl. Affairs), Pentagon.

COMMAND CHIEF CHANGES: CMSgt. Jason L. **France**, from Supt., SECAF and C/S of the AF Executive Action Group, USAF, Pentagon, to Command Chief, AF Sustainment Center, AFMC, Tinker AFB, Okla. ... CMSgt. Gregory A. **Smith**, from Command Chief, Spec. Ops. Command Europe, EUCOM, Stuttgart-Vaihingen, Germany, to Command Chief, NATO Spec. Ops., SHAPE, Mons, Belgium. ➤

The Annba



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Photos by Jim Dunn



Many World War II and early Air Force aircraft soldiered on flying bush cargo, fighting wildfires, air racing, or serving foreign air arms after completing their USAF service. Decades later, a handful of representative examples have been recovered, reclaimed, or restored, and serve as inspirational flying ambassadors of airpower history.

In addition to their US service, both the Bell P-63 Kingcobra (foreground) and the North American T-28 Trojan went to war in the ground attack role in foreign service—the P-63 in Soviet hands against German forces in World War II, and the T-28 in Laotian and South Vietnamese air forces against communist insurgents in Southeast Asia. Pretty Polly was the fourth P-63 built and served out its operational service as a test aircraft with the National Advisory Committee for Aeronautics.

[1] In Nampa, Idaho, the Warhawk Air Museum's Curtiss P-40N is painted with parrot's head nose art in the colors of an AAF training unit at Napier Field, Ala. It was used in the 2001 film "Pearl Harbor" and is seen here flying near Reno, Nev. [2] The Marine Corps' Grumman F7F Tigercat entered service too late for World War II, but saw use over Korea. Here Kitty, Kitty! practices for the National Championship Air Races near Reno in 2011. [3] The T-28A replaced the Air Force's T-6 trainers in 1948, but was quickly deemed underpowered and replaced. The Navy flew the improved T-28B/C for many years. [4] Retired Air Force crew chief Jerry Anderson flew the photo ship for many of these shots and has worked on Beechcraft Model 18s—designated C-45s in USAF service—such as this one at Oshkosh, Wis., in 2009.





[1] Retired Brig. Gen. Regis Urschler taxis P-51D Gunfighter at the annual Oshkosh air show in 2005. Urschler logged some 12,700 hours as a Cold War Strategic Air Command RC-135 pilot. Gunfighter served in the AAF's Eighth Air Force.

[2] Pacific Theater markings are rare on restored P-51Ds, and #44-73751's representation of the Iwo Jima-based 47th Fighter Squadron's World War II markings won it top honors at Oshkosh in 2010.

[3] Douglas C-47s still haul cargo, and as turboprop-converted gunships, serve in several air arms worldwide. This "Gooney Bird" wears D-Day markings. [4] Lockheed P-38F Glacier Girl was rescued from 260 feet below the Greenland ice cap 50 years after a forced landing in 1942. Volunteers spent the better part of a decade restoring it to flight status.



1



2



4



3

[1] P-51D Quick Silver mixes World War II invasion stripes with symbolic markings honoring military veterans. **[2]** The German Messerschmitt Me-262 was the first operational jet fighter. This two-seat example seen over Napa, Calif., is one of several new-build full-scale flying replicas.

[3] The Boeing P-26 (foreground) and Seversky AT-12 were both revolutionary US designs in their time, as the first all-metal monoplane fighter and—as the P-35—the first enclosed-cockpit, retractable landing gear pursuit aircraft, respectively. Both quickly became obsolete. These

restored aircraft belong to the Planes of Fame museum in Chino, Calif.

[4] This “Japanese Nakajima B5N Kate torpedo bomber” is actually an amalgam of a North American T-6 front end and a Vultee BT-13 tail section grafted together to be used in the 1970 movie “Tora! Tora! Tora!”

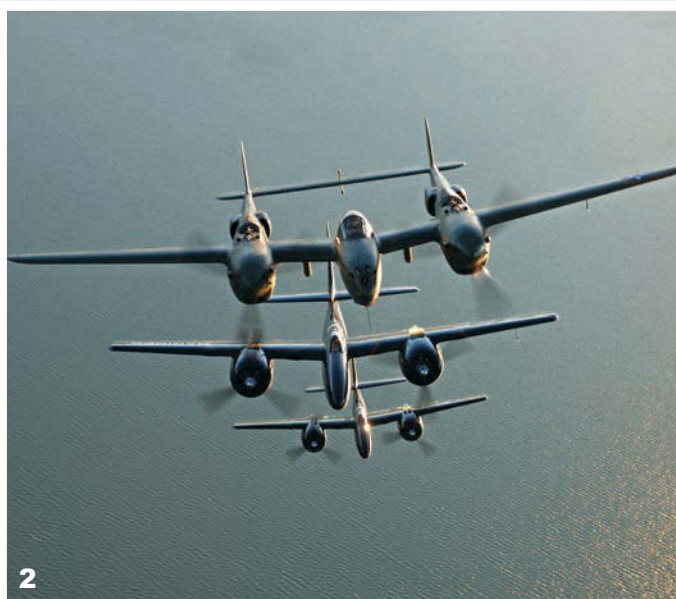


[1] A B-17G in the markings of Nine-O-Nine drops an inert bomb over California's San Joaquin Valley during Bomber Camp, where attendees experience World War II bomber crew training. [2] The Douglas A-26 is the only armed aircraft to see substantial AAF and USAF service in World War II, Korea, and Vietnam. Seen here in Korean War-era markings, #44-34538 went into combat with the French air

force in Southeast Asia. [3] Tiagh Ramey from the Stockton Field Aviation Museum in California adds a few modern instruments to a Lockheed PV-2D Harpoon to enable its recovery from a ranch in Northern California. Ramey flew the derelict airframe to the museum in 2010. [4] Steve Clough (l) and Cade Guthrie help Ramey prepare the Harpoon for that flight. This aircraft

was delivered too late in 1945 to see extensive military service and spent a long civilian career—until 1994—as a fire-fighting tanker. [5] This British De Havilland Dominie MK.1, flying over Northern California, was built for the Royal Air Force in 1944. It saw postwar service with British European Airways and as a survey aircraft, mapping motorways in the UK.

[1] P-51D Daddy's Girl takes off in California. It sports the colors of Capt. Ray Wetmore, an AAF ace with 21.25 kills in the European Theater. [2] A Lightning leads a pair of Tigercats during a photo shoot over Nevada's Pyramid Lake. [3] This North American OV-10B Bronco, retrofitted and painted as a Marine Corps OV-10A, actually served the West German Luftwaffe as a target-tug in the 1970s. It was photographed over Lake Berryessa in California. [4] This North American F-86F, at Oshkosh in 2009, spent some five years at Nellis AFB, Nev., and Williams AFB, Ariz., before being sent to the Argentine air force. It eventually ended up in the US in private hands.





[1] North American F-6D 'Lil' Margaret was converted from a stock P-51D to represent the reconnaissance version flown by World War II ace Capt. Clyde East, who scored 12 kills. [2] B-29 Superfortress Fifi has long been the only airworthy example of the World War II bomber. A second restored B-29, named Doc, should take to the skies this year after nearly a decade of restoration by volunteers in Kansas. [3] The C-40 is a military variant of Lockheed's Model 12 Electra Junior. Only 130 were built. Yanks Air Museum in Chino owns this example. [4] In 1954, Canadair license-built this T-33, resplendent in SAC markings, as a CT-33 Silver Star. Canada retired the last of them in 2005. ☺

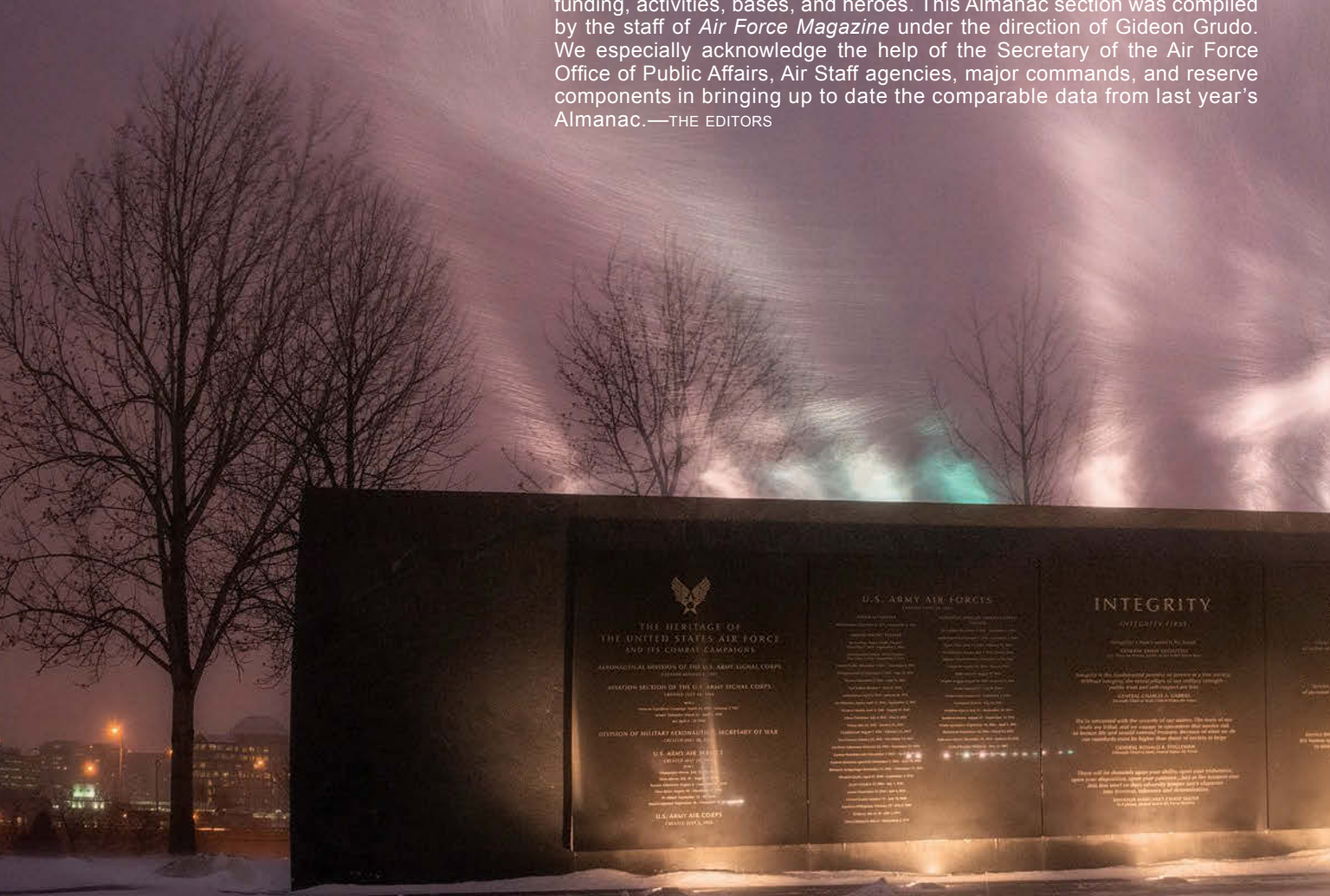
Photographer Jim Dunn thanks Jerry Anderson, Mike and Michele DeCastro, Taigh Ramey, and all the warbird pilots, operators, and owners who supported these photo missions.

USAF

Almanac 2015

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* under the direction of Gideon Grudo. 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.—THE EDITORS



The Air Force in Facts and Figures

■ 2015 USAF Almanac

Structure of the Force

How the Air Force Is Organized

This overview describes the Air Force's primary organizational structures and its Air and Space Expeditionary Force.

The **Department of Defense** is a Cabinet agency headed by the Secretary of Defense. It comprises three military departments—Air Force, Army, and Navy—each with a civilian Secretary.

The **Joint Chiefs of Staff (JCS)** constitute DOD's corporate military leadership. The Chairman and vice chairman serve full time in their positions, while the service Chiefs also serve as the military heads of their respective services.

The Secretary of the Air Force (SECAF) heads the **Department of the Air Force**. Supporting the SECAF are the Secretariat staff and the Chief of Staff of the Air Force (CSAF), who oversees the Air Staff. The heads of the major commands report to the CSAF.

Most Air Force units fall under a **major command** (majcom), which has broad functional responsibilities. Majcoms are organized under a unit-oriented scheme, with one or more **numbered air forces**, or a major non-unit scheme, with one or more centers.

The predominant command entity within USAF is the **wing**. A standard wing contains four groups: **operations** (operates primary mission equipment and includes such functions as intelligence),

maintenance (provides weapon system maintenance), **mission support** (provides base support and services, including civil engineer, logistics readiness, and security forces), and **medical**.

Squadrons form the basic organizational building blocks within a wing, generally working under one of the four groups to provide either mission or functional support. Squadrons may comprise several **flights**.

The Air Force organization also includes **field operating agencies** (FOAs) and **direct reporting units** (DRUs).

Air and Space Expeditionary Force

To relieve chronic optempo problems stemming from back-to-back operations, the Air Force developed an expeditionary concept initially called the Expeditionary Aerospace Force. The term EAF was supplanted by the term Air and Space Expeditionary Force (**AEF**). The term AEF also refers to a basic organizational unit.

USAF grouped its power projection and support forces into 10 AEF "buckets of capability" operating in five pairs. Initially, combat air forces (**CAF**) deployed for a 90-day AEF rotation, with mobility air forces (**MAF**) and low-density, high-demand (**LD/HD**) forces operating on longer deployments as needed. In 2004, USAF went to a basic 120-day rotation, while LD/

HD forces, including battle management, battlefield airmen, and reconnaissance assets, normally deployed for 180 days.

In late 2008, USAF began employing Tempo Bands (A-E) with different deployment-to-dwell ratios. For instance, CAF forces in Tempo Band A deployed on a 1:4 ratio—four months (120 days) deployed to 16 months dwell time. The other bands, operating mostly on 180-day deployment cycles, were: B at 1:4; C at 1:3; D at 1:2; and E at 1:1. In 2010, USAF changed 120-day rotations to 180-day, merging Band A with B.

In November 2011, USAF announced plans to change to a new construct, dubbed **AEF Next**, that would abandon the confusing tempo band approach. The Air Force deployed the first team of Agile Combat Support Airmen under its redesigned air expeditionary force construct in October 2014. Under the new construct, installations deploy larger numbers of airmen from the same unit in order to present a consistent Air Force capacity. The revised construct establishes an 18-month battle rhythm where an airman may deploy for six months followed by 12 months at home station. This allows wings to more effectively posture their forces to meet global mission requirements as well as continue home station training. ★

Current Air Force Leaders

Date in Position

Secretary of the Air Force	Deborah Lee James
Air Force Chief of Staff	Gen. Mark A. Welsh III
Chief Master Sergeant of the Air Force	CMSAF James A. Cody

Dec. 20, 2013
Aug. 10, 2012
Jan. 24, 2013

USAF Total Force

(As of Sept. 30, 2014)

	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	Estimate FY15
Air Force Active Duty										
Officers	70,539	65,722	64,805	65,496	66,201	65,487	64,932	64,806	62,349	61,451
Enlisted	273,990	263,372	258,092	263,351	263,437	263,542	263,964	261,976	250,104	249,949
Academy Cadets	4,424	4,401	4,482	4,561	4,558	4,341	4,022	3,912	3,879	3,879
Total Air Force Active Duty	348,953	333,495	327,379	333,408	334,196	333,370	332,918	330,694	316,332	315,279
Civilian personnel										
Direct hire (excluding technicians)	128,475	125,636	124,698	123,106	134,183	145,407	142,047	141,496	141,511	141,509
ANG technicians	21,997	22,409	22,353	22,391	22,657	22,139	22,859	22,568	22,912	22,142
AFRC technicians	9,427	9,127	8,857	9,147	10,068	9,397	10,366	9,277	8,421	9,608
Total direct hire	159,899	157,172	155,908	154,644	166,908	176,943	175,272	173,341	172,844	173,259
Indirect hire	6,833	6,212	6,515	6,346	6,564	6,776	6,714	6,501	7,738	5,388
Total civilian personnel	166,732	163,384	162,423	160,990	173,472	183,719	181,986	179,842	180,582	178,647
Air National Guard										
Selected Reserve Officers	13,782	13,992	14,115	14,326	14,389	14,418	14,598	14,731	15,024	14,616
Selected Reserve Enlisted	91,876	92,162	93,564	94,870	93,287	91,267	90,791	90,977	91,356	90,384
Total ANG	105,658	106,154	107,679	109,196	107,676	105,685	105,389	105,708	106,380	105,000
Air Force Reserve Command										
Selected Reserve Officers	16,678	16,199	15,169	14,753	14,560	14,535	14,303	14,060	13,817	15,355
Selected Reserve Enlisted	57,397	54,083	52,396	53,233	55,559	56,786	57,125	56,853	55,967	53,087
Total AFRC Selected Reserve	74,075	70,282	67,565	67,986	70,119	71,321	71,428	70,913	69,784	68,442
Individual Ready Reserve Officers	11,356	13,018	13,633	12,833	11,692	11,692	11,222	11,222	11,222	11,392
IRR Enlisted	33,548	36,831	35,668	30,349	28,863	28,863	24,271	24,271	24,271	27,482
Total AFRC IRR	44,904	49,849	49,301	43,182	40,555	40,555	35,493	35,493	35,493	38,874
Total AFRC	118,979	120,131	116,866	111,168	110,674	111,876	106,921	106,406	105,277	107,316
Total Ready Reserve	224,637	226,285	224,545	220,364	218,350	217,561	212,310	212,114	211,657	212,316

Armed Forces Manpower Trends, End Strength (in Thousands)

(As of Sept. 30, 2014)

	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	Estimate FY15
Active Duty military										
Air Force	349	334	327	333	334	333	333	331	316	315
Army	505	522	544	553	566	566	550	532	508	490
Marine Corps	180	187	199	203	202	201	198	196	188	184
Navy	350	338	332	329	328	325	318	324	326	328
Total	1,384	1,381	1,402	1,418	1,430	1,425	1,399	1,383	1,338	1,317
Guard and Reserve (selected reserve)										
Air National Guard	106	106	108	109	108	107	105	106	106	105
AFRC	74	71	68	68	70	71	71	71	70	67
Army National Guard	346	353	360	358	362	358	358	358	354	350
Army Reserve	190	190	197	205	205	205	201	198	195	198
Marine Corps Reserve	40	39	38	39	39	40	40	40	40	39
Naval Reserve	71	70	68	67	65	66	65	62	59	57
Total	827	829	839	846	849	847	840	835	824	816
Direct-hire civilian (full-time equivalents)										
Air Force	160	157	156	155	167	177	175	173	173	173
Army	220	221	230	247	260	269	250	242	207	210
Navy/Marine Corps	174	176	178	186	195	201	201	197	183	187
Defense agencies	104	105	108	115	120	125	133	127	189	200
Total	658	659	672	703	742	772	759	739	752	770

Active Duty Airmen by Rank

(As of Sept. 30, 2014)

Rank	Men	Women	Total
Officers			
General	10	1	11
Lieutenant General	39	5	44
Major General	86	10	96
Brigadier General	130	8	138
Colonel	2,887	431	3,318
Lieutenant Colonel	8,080	1,382	9,462
Major	11,221	2,363	13,584
Captain	17,060	4,914	21,974
First Lieutenant	5,441	1,752	7,193
Second Lieutenant	4,991	1,538	6,529
Total	49,945	12,404	62,349
Enlisted			
CMSAF	1	0	1
Chief Master Sergeant	2,192	315	2,507
Senior Master Sergeant	4,169	967	5,136
Master Sergeant	20,722	4,677	25,399
Technical Sergeant	30,942	7,640	38,582
Staff Sergeant	51,491	12,091	63,582
Senior Airman	47,090	10,312	57,402
Airman First Class	37,640	8,675	46,315
Airman	3,234	739	3,973
Airman Basic	5,927	1,280	7,207
Total	203,408	46,696	250,104
Academy Cadets	3,013	866	3,879
Total Personnel	256,366	59,966	316,332



USAF photo by MSgt. Tammie Moore

CMSAF James Cody (l) greets airmen assigned to Air Force District of Washington, including TSgt. Thomas White (r) at JB Andrews, Md.

Number and Percentage of Active Duty Airmen by Gender

(As of Sept. 30, 2014)

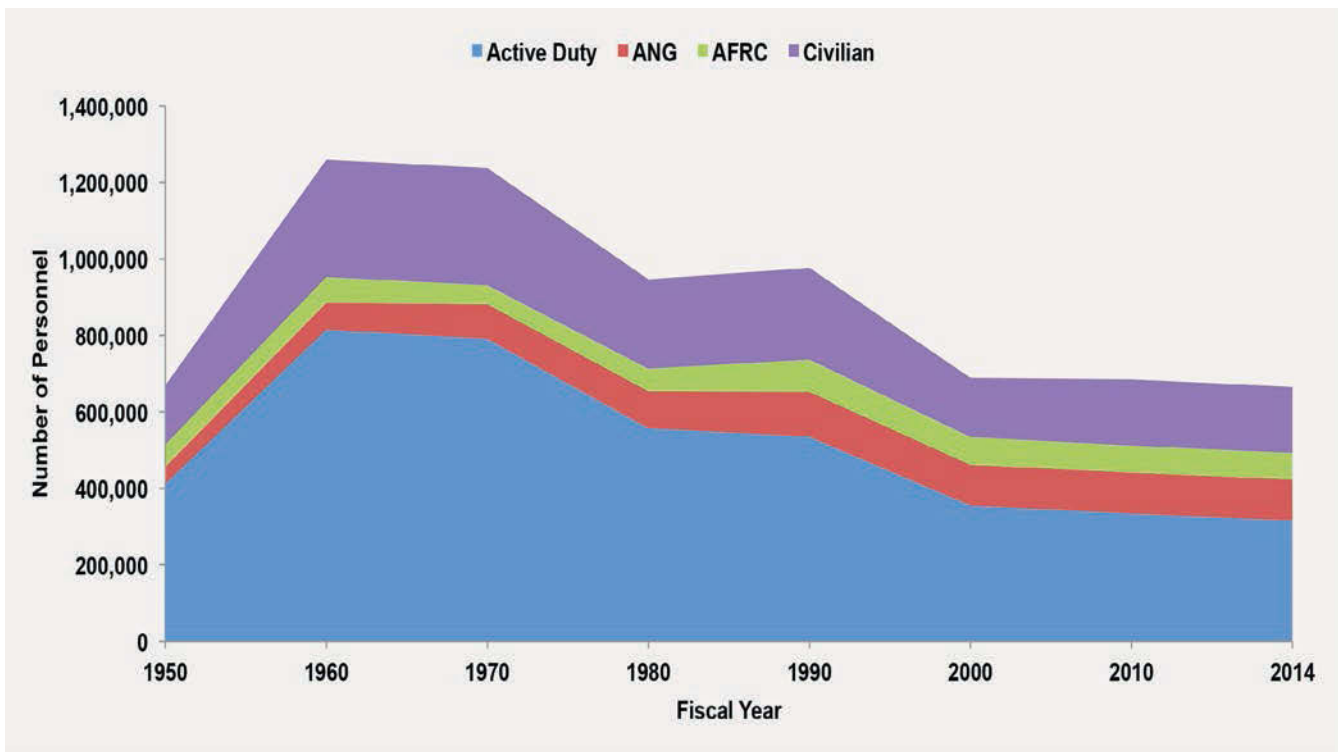
	1950	1960	1970	1980	1990	2000	2010	2014
Officers								
Male	55,474	126,014	125,136	89,156	86,714	57,204	53,838	49,945
Percentage	97.3%	97.2%	96.4%	91.3%	86.7%	82.9%	81.3%	80.1%
Female	1,532	3,675	4,667	8,493	13,331	11,819	12,363	12,404
Percentage	2.7%	2.8%	3.6%	8.7%	13.3%	17.1%	18.7%	19.9%
Total Officers	57,006	129,689	129,803	97,649	100,045	69,023	66,201	62,349
Enlisted								
Male	350,489	679,412	652,559	399,517	374,385	231,620	212,491	203,408
Percentage	98.9%	99.2%	98.6%	86.8%	86.0%	80.8%	80.7%	81.3%
Female	3,782	5,651	8,987	60,803	60,803	55,011	50,946	46,696
Percentage	1.1%	0.8%	1.4%	13.2%	14.0%	19.2%	19.3%	18.7%
Total Enlisted	354,271	685,063	661,546	460,320	435,188	286,631	263,437	250,104
Cadets								
Male	0	1,949	4,144	3,907	3,817	3,617	3,592	3,013
Percentage	0.0%	100.0%	100.0%	88.6%	87.3%	84.6%	78.8%	77.7%
Female	0	0	0	504	553	658	966	866
Percentage	0.0%	0.0%	0.0%	11.4%	12.7%	15.4%	21.2%	22.3%
Total Cadets	0	1,949	4,144	4,411	4,370	4,275	4,558	3,879

Active Duty Airmen by Region

Regions	1950	1960	1970	1980	1990	2000	2010	2014
US and its territories	342,437	633,327	565,098	445,886	418,027	291,260	277,123	264,977
Europe	24,531	104,899	72,937	76,788	69,296	32,901	30,963	29,215
East Asia, Pacific	36,412	50,679	139,666	32,263	33,558	22,030	12,649	12,084
Africa, Mideast, S. Asia	1,491	11,160	608	674	376	8,972	891	639
Western Hemisphere	6,266	14,106	5,348	2,211	2,356	345	339	290
Other	140	581	7,692	147	11,620	146	12,231	9,127
Total	411,277	814,752	791,349	557,969	535,233	355,654	334,196	316,332

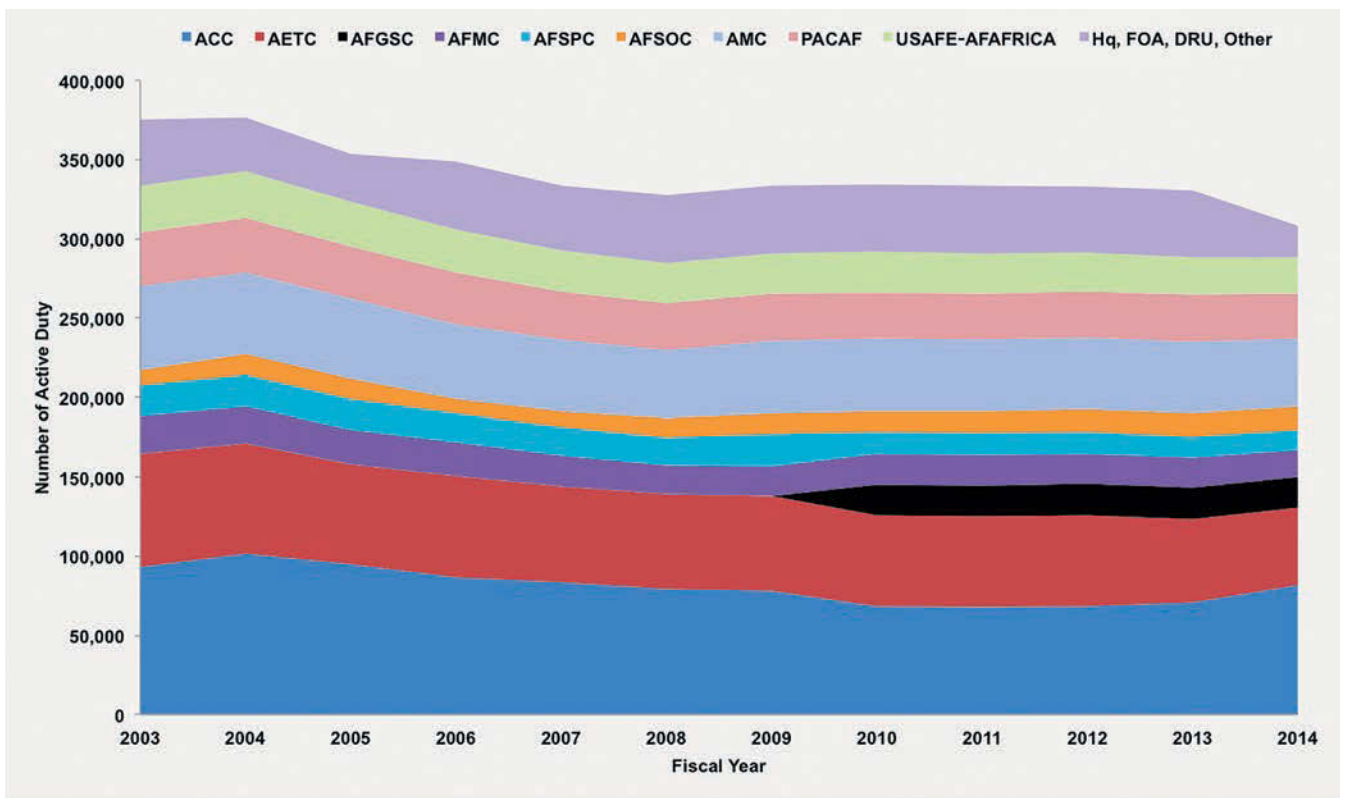
Note: Airmen deployed for operations in Afghanistan and Iraq are included in US (transients) and Other totals.

Total Force Over Time



Note: Data for 1950 and 1960 as of June 30; data for other years as of Sept. 30. Sources: *Air Force Magazine's* "USAF Almanac," various years; US Census Bureau, "Statistical Abstract of the United States"; "Department of Defense Selected Manpower Statistics," various years.

Active Duty Airmen by Active Duty Major Command



Note: Data for 1950 and 1960 as of June 30; data for other years as of Sept. 30.

Personnel Strength by Commands, FOAs, and DRUs

(As of Sept. 30, 2014)

	Military	Civilian	Total
Active Duty Major Commands			
Air Combat Command	81,694	12,718	94,412
Air Education and Training Command	49,116	14,076	63,192
Air Force Global Strike Command	19,011	2,343	21,354
Air Force Materiel Command	17,334	59,223	76,557
Air Force Space Command	12,653	7,318	19,971
Air Force Special Operations Command	14,292	1,579	15,871
Air Mobility Command	42,630	8,344	50,974
Pacific Air Forces	28,779	7,652	36,431
US Air Forces Europe-Air Forces Africa	23,043	5,782	28,825
Total Major Commands	285,552	119,035	407,587
Field Operating Agencies (FOAs)			
Air Force Agency for Modeling and Simulation	6	14	20
Air Force Audit Agency	0	572	572
Air Force Civil Engineer Center	109	1,045	1,154
Air Force Cost Analysis Agency	22	88	110
Air Force Financial Services Center	0	98	98
Air Force Flight Standards Agency	94	50	144
Air Force Historical Research Agency	0	44	44
Air Force Inspection Agency	84	20	104
Air Force Installation Contracting Agency	225	464	689
Air Force Intelligence Analysis Agency	47	75	122
Air Force Legal Operations Agency	536	241	777
Air Force Medical Operations Agency	194	158	352
Air Force Medical Support Agency	230	87	317
Air Force Mortuary Affairs Operations	0	31	31
Air Force Office of Special Investigations	1,507	824	2,331
Air Force Operations Group	40	3	43
Air Force Personnel Center	829	1,617	2,446
Air Force Personnel Operations Agency	8	237	245
Air Force Petroleum Agency	37	56	93
Air Force Public Affairs Agency	245	38	283
Air Force Review Boards Agency	17	81	98
Air Force Safety Center	38	62	100
Air Force Security Forces Center	307	47	354
Air Force Weather Agency	1,169	312	1,481
Air National Guard Readiness Center	63	669	732
Total FOAs	5,807	6,933	12,740
Direct Reporting Units (DRUs)			
Air Force District of Washington	3,544	931	4,475
Air Force Operational Test & Evaluation Center	331	227	558
US Air Force Academy (excluding cadets)	1,943	1,282	3,225
Total DRUs	5,818	2,440	8,258
Other			
Hq. USAF	1,809	1,794	3,603
Other	10,467	42,642	53,109
Academy Cadets	3,879	0	3,879
Total Other	16,155	44,436	60,591
Total Strength	316,332	172,844	489,176

Active Duty Personnel Strength

(As of Sept. 30, 2014)

Year	Number	Year	Number
1907	3	1973	691,182
1908	13	1974	643,970
1909	27	1975	612,751
1910	11	1976	585,416
1911	23	1977	570,695
1912	51	1978	569,712
1913	114	1979	559,455
1914	122	1980	557,969
1915	208	1981	570,302
1916	311	1982	582,845
1917	1,218	1983	592,044
1918	195,023	1984	597,125
1919	25,603	1985	601,515
1920	9,050	1986	608,199
1921	11,649	1987	607,035
1922	9,642	1988	576,446
1923	9,441	1989	570,880
1924	10,547	1990	535,233
1925	9,670	1991	510,432
1926	9,674	1992	470,315
1927	10,078	1993	444,351
1928	10,549	1994	426,327
1929	12,131	1995	400,409
1930	13,531	1996	389,001
1931	14,780	1997	377,385
1932	15,028	1998	367,470
1933	15,099	1999	360,590
1934	15,861	2000	355,654
1935	16,247	2001	353,571
1936	17,233	2002	368,251
1937	19,147	2003	375,062
1938	21,089	2004	376,616
1939	23,455	2005	353,696
1940	51,165	2006	348,953
1941	152,125	2007	333,495
1942	764,415	2008	327,379
1943	2,197,114	2009	333,408
1944	2,372,292	2010	334,196
1945	2,282,259	2011	333,370
1946	455,515	2012	332,918
1947	305,827	2013	330,694
1948	387,730	2014	316,332
1949	419,347	2015	315,279
1950	411,277		
1951	788,381		
1952	983,261		
1953	977,593		
1954	947,918		
1955	959,946		
1956	909,958		
1957	919,835		
1958	871,156		
1959	840,435		
1960	814,752		
1961	821,151		
1962	884,025		
1963	869,431		
1964	856,798		
1965	824,662		
1966	887,353		
1967	897,494		
1968	904,850		
1969	862,353		
1970	791,349		
1971	755,300		
1972	725,838		

Note: 2015 number is an estimate.



Cadet 3rd Class Kenneth McGhee (l) and Cadet 2nd Class Miranda Mila (r) prepare for a training flight in a TG-16A glider at the Air Force Academy.

Budgets

2015 USAF Almanac

Terms Explained

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

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

year, often the present one, is chosen as a baseline for constant dollars.

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

Appropriation is an act of Congress that enables federal agencies to spend money for specific purposes.

Air Force Budget—A 10-Year Perspective

(Budget authority in millions of current and constant FY16 dollars; excludes costs of the Global War on Terror.)

Current dollars	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
Military personnel	\$29,548	\$30,163	\$30,677	\$31,847	\$33,614	\$34,235	\$35,131	\$34,990	\$35,022	\$33,767
O&M	38,036	38,584	40,957	44,353	42,267	45,820	47,007	45,152	43,012	44,302
Procurement	33,603	31,490	35,136	35,938	35,830	36,277	36,020	36,609	31,325	33,814
RDT&E	21,813	24,342	26,262	26,305	27,700	26,982	26,113	26,642	23,533	23,594
Milcon	1,964	2,285	2,507	1,404	2,317	1,416	1,468	1,468	1,291	1,045
Housing	1,761	1,900	1,001	990	569	591	490	493	465	328
Revolving & Mgmt. Funds	213	43	60	61	64	67	65	66	62	62
Total	\$126,938	\$128,807	\$136,600	\$140,900	\$142,361	\$145,386	\$146,295	\$145,420	\$134,709	\$136,912

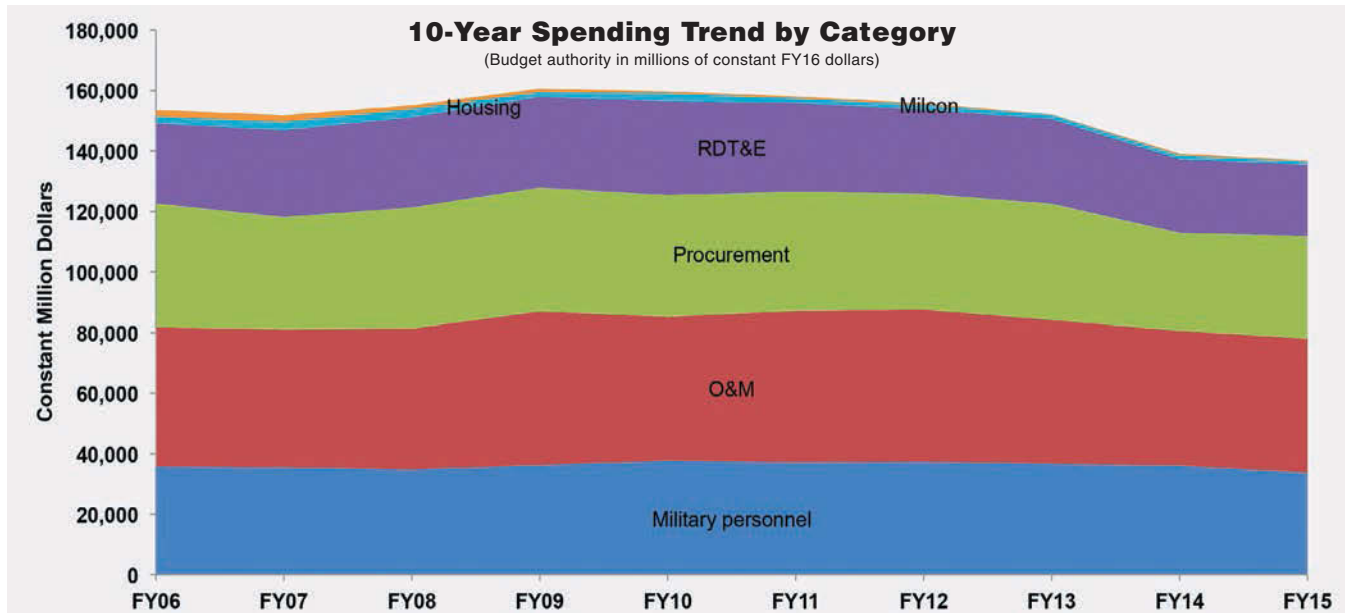
Constant dollars	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
Military personnel	\$35,821	\$35,571	\$34,852	\$36,327	\$37,739	\$37,244	\$37,433	\$36,732	\$36,186	\$34,510
O&M	46,111	45,501	46,532	50,592	47,454	49,847	50,087	47,399	44,442	45,277
Procurement	40,737	37,136	39,918	40,993	40,227	39,466	38,380	38,431	32,366	34,558
RDT&E	26,444	28,706	29,837	30,005	31,099	29,354	27,824	27,968	24,315	24,113
Milcon	2,381	2,695	2,848	1,602	2,601	1,540	1,564	1,541	1,334	1,068
Housing	2,135	2,241	1,137	1,129	639	643	522	518	480	335
Revolving & Mgmt. Funds	258	51	68	70	72	73	69	69	64	63
Total	\$153,887	\$151,900	\$155,193	\$160,721	\$159,830	\$158,165	\$155,880	\$152,658	\$139,187	\$139,924

Percentage real growth	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
Military personnel	-0.4%	-0.7%	-2.0%	4.2%	3.9%	-1.3%	0.5%	-1.9%	-1.5%	-4.6%
O&M	8.6%	-1.3%	2.3%	8.7%	-6.2%	5.0%	0.5%	-5.4%	-6.2%	1.9%
Procurement	1.0%	-8.8%	7.5%	2.7%	-1.9%	-1.9%	-2.8%	0.1%	-15.8%	6.8%
RDT&E	3.6%	8.6%	3.9%	0.6%	3.6%	-5.6%	-5.2%	0.5%	-13.1%	-0.8%
Milcon	40.1%	13.2%	5.7%	-43.8%	62.4%	-40.8%	1.5%	-1.5%	-13.4%	-19.9%
Housing	2.2%	5.0%	-49.2%	-0.7%	-43.4%	0.6%	-18.8%	-0.9%	-7.2%	-30.2%
Total	3.9%	-1.3%	2.2%	3.6%	-0.6%	-1.0%	-1.4%	-2.1%	-8.8%	0.5%

Numbers do not add due to rounding.

10-Year Spending Trend by Category

(Budget authority in millions of constant FY16 dollars)



Defense Budget Authority

(\$ billions)

	2014	2015	2016	Planned 2017	2018	2019	2020
No War Costs, Current Dollars							
	\$496.3	\$496.1	\$534.3	\$547.0	\$556.0	\$564.0	\$570.0
No War Costs, Constant FY 2015 Dollars							
	\$515.5	\$507.0	\$534.3	\$535.0	\$531.3	\$526.5	\$519.3
With War Costs, Current Dollars							
	\$581.4	\$560.4	\$585.3	\$574.0	\$583.0	\$591.0	\$597.0
With War Costs, Constant FY 2015 Dollars							
	\$600.7	\$572.7	\$585.3	\$561.4	\$557.1	\$551.7	\$543.9

Defense Outlays

(\$ billions)

	2014	2015	2016	Planned 2017	2018	2019	2020
Current Dollars							
	\$577.9	\$567.7	\$586.5	\$575.1	\$563.2	\$561.1	\$568.3
Constant FY 2015 Dollars							
	\$597.1	\$580.2	\$586.5	\$562.4	\$538.1	\$523.8	\$517.8

Service and Agency Shares of Total DOD Budget

(Budget authority in billions of constant FY16 dollars)

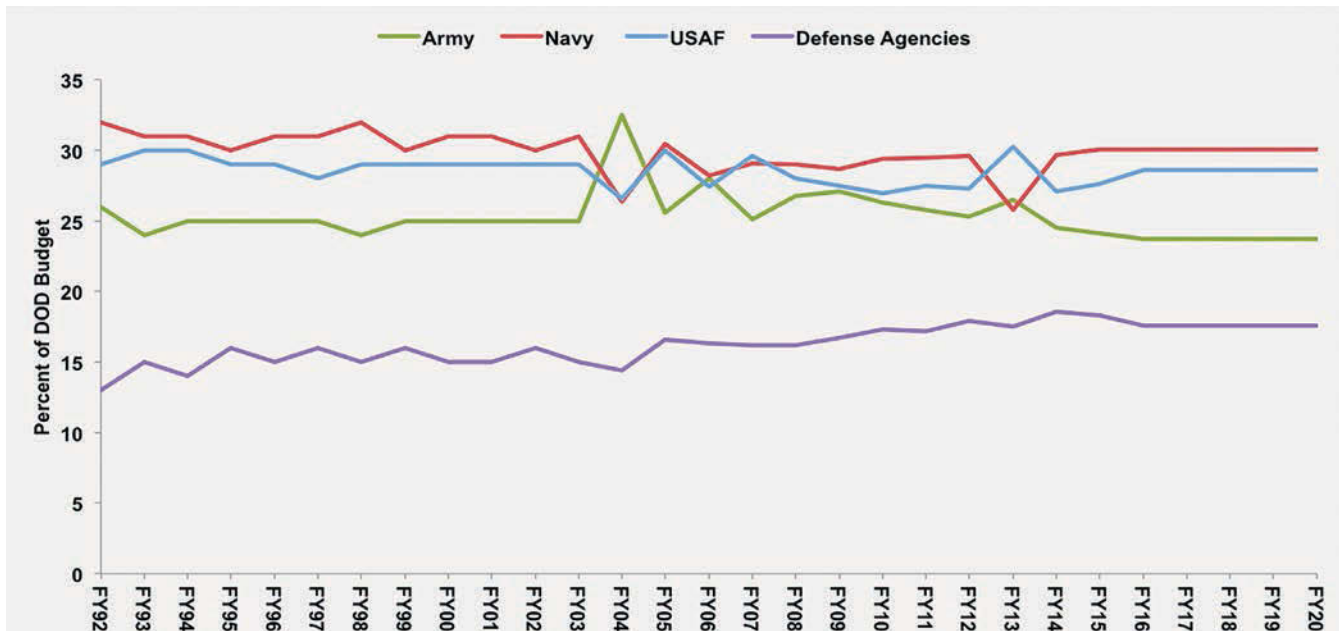
	2014	2015	2016	Planned 2017	2018	2019	2020
Dollars							
Air Force	\$139.2	\$139.9	\$152.9	\$153.0	\$152.1	\$150.6	\$148.5
Army	125.7	122.1	126.5	126.8	126.0	124.8	123.1
Navy/Marine Corps	152.2	152.5	161.0	161.0	160.0	158.5	156.3
Defense agencies	95.4	92.6	94.0	94.2	93.6	92.7	91.4
Total	\$512.8	\$507.0	\$534.3	\$535.0	\$531.6	\$526.5	\$519.3
Percentages							
Air Force	27.1%	27.6%	28.6%	28.6%	28.6%	28.6%	28.6%
Army	24.5%	24.1%	23.7%	23.7%	23.7%	23.7%	23.7%
Navy/Marine Corps	29.7%	30.1%	30.1%	30.1%	30.1%	30.1%	30.1%
Defense agencies	18.6%	18.3%	17.6%	17.6%	17.6%	17.6%	17.6%

Note: USAF shares above include non-Blue funding. Outyears estimates based on FY 2016 shares.

USAF's Blue-only share

Dollars	\$109.5	\$111.7	\$122.2				
Percentage	21.4%	22.0%	22.9%				

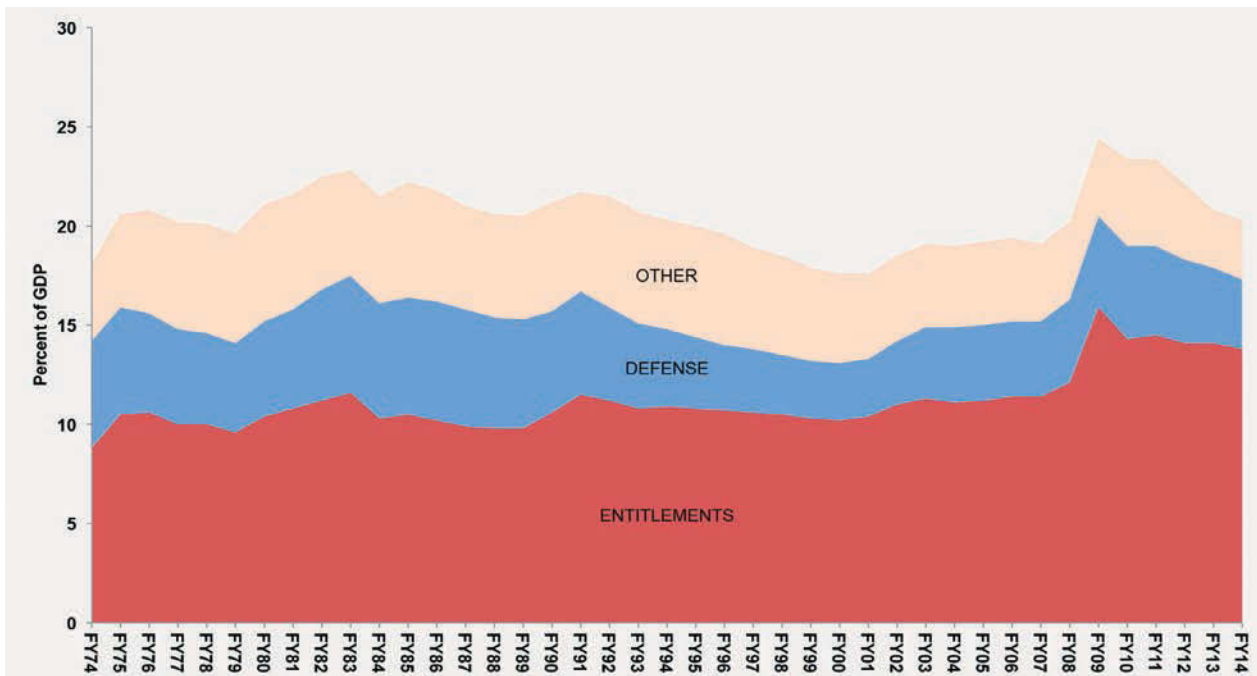
Note: USAF budget includes Blue, dollars for programs actually managed by USAF, and non-Blue, dollars USAF does not manage but that simply pass through USAF's accounts, such as some intelligence and space-related funding.



Federal Budget Outlay Categories

Percentages of GDP

Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense	Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1974	18.1	0.5	8.8	5.4	1995	20.0	3.0	10.8	3.6
1975	20.6	3.4	10.5	5.4	1996	19.6	2.2	10.7	3.3
1976	20.8	3.9	10.6	5.0	1997	18.9	1.2	10.6	3.2
1977	20.2	2.5	10.0	4.8	1998	18.5	0.3	10.5	3.0
1978	20.1	2.4	10.0	4.6	1999	17.9	0.0	10.3	2.9
1979	19.6	1.5	9.6	4.5	2000	17.6	0.9	10.2	2.9
1980	21.1	2.6	10.4	4.8	2001	17.6	0.3	10.4	2.9
1981	21.6	2.4	10.8	5.0	2002	18.5	2.9	11.0	3.2
1982	22.5	3.6	11.2	5.6	2003	19.1	4.8	11.3	3.6
1983	22.8	5.9	11.6	5.9	2004	19.0	4.7	11.1	3.8
1984	21.5	4.7	10.3	5.8	2005	19.2	3.8	11.2	3.8
1985	22.2	5.2	10.5	5.9	2006	19.4	3.2	11.4	3.8
1986	21.8	5.2	10.2	6.0	2007	19.1	2.4	11.4	3.8
1987	21.0	3.5	9.9	5.9	2008	20.2	4.4	12.1	4.2
1988	20.6	3.7	9.8	5.6	2009	24.4	10.8	15.9	4.6
1989	20.5	3.7	9.8	5.5	2010	23.4	9.3	14.3	4.7
1990	21.2	4.7	10.6	5.1	2011	23.4	8.9	14.5	4.5
1991	21.7	5.3	11.5	5.2	2012	22.1	7.2	14.1	4.2
1992	21.5	5.3	11.2	4.7	2013	20.8	4.3	14.1	3.8
1993	20.7	4.4	10.8	4.3	2014	20.3	3.0	13.8	3.5
1994	20.3	3.6	10.9	3.9					



Source: "The Budget and Economic Outlook: Fiscal Years 2015-2025," Congressional Budget Office, January 2015.

Where To Find Budget Data

Congressional Budget Office

<http://www.cbo.gov/>

■ Topics>>Budget

Defense Department Comptroller

<http://comptroller.defense.gov>

■ Budget materials by fiscal year

■ Links to budget pages for each service

Office of Management and Budget

<http://www.whitehouse.gov/omb/>

■ The Budget (current fiscal year, including appendices and historical tables)

■ Links to past budgets (via GPO Access)

Government Printing Office (GPO) Access to Budget

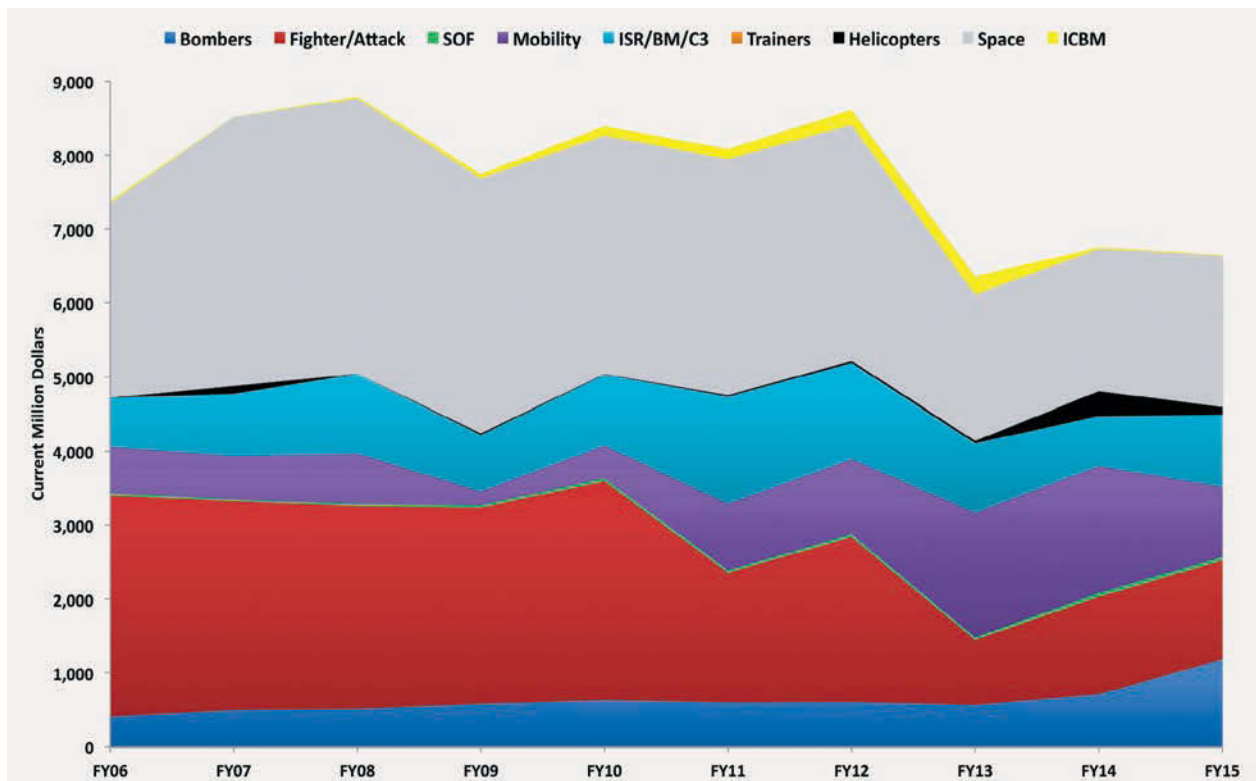
[http://www.gpo.gov/fdsys/browse/collectionGPO.](http://www.gpo.gov/fdsys/browse/collectionGPO.action?collectionCode=BUDGET)

action?collectionCode=BUDGET

■ Current and historical budget documents through Clinton Administration

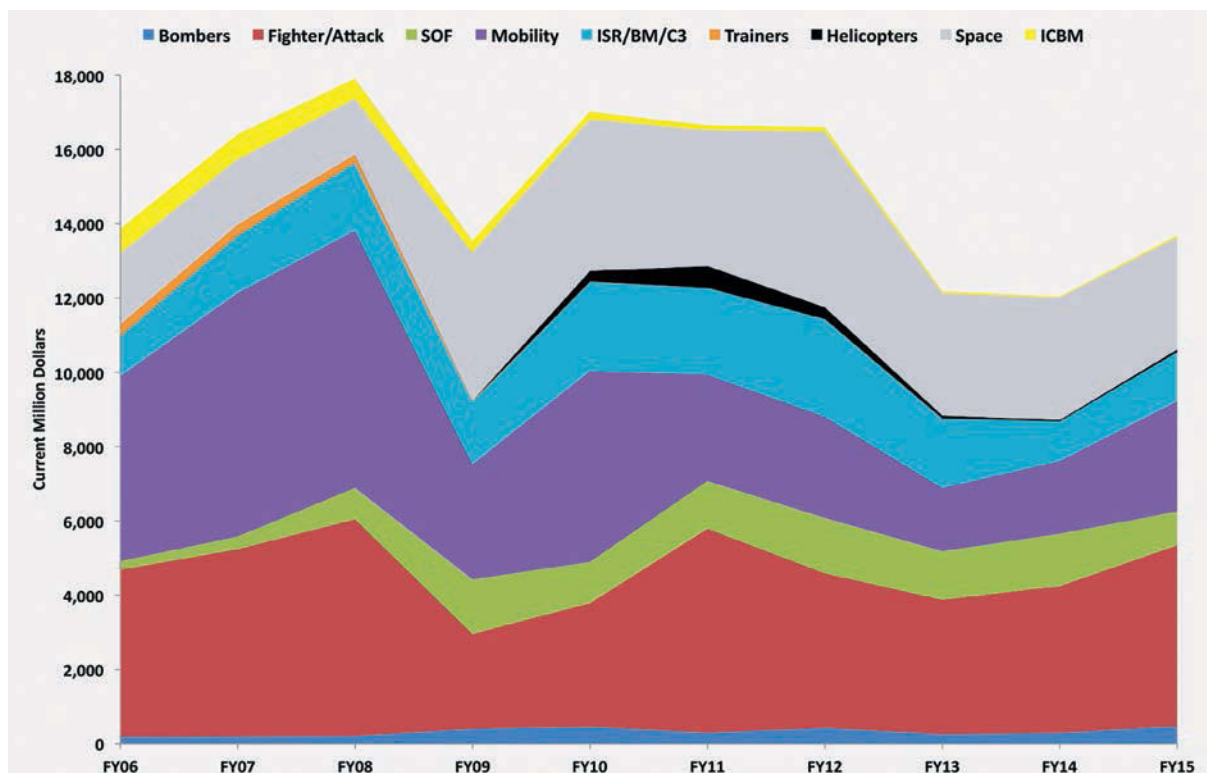
10 Years of RDT&E Funding for USAF Major Programs by Category

(Based on current million dollars)



10 Years of Procurement Funding for USAF Major Programs by Category

(Based on current million dollars)



Aircraft Total Active Inventory (TAI)

(As of Sept. 30, 2014)

	Active	ANG	AFRC	Total Force		Active	ANG	AFRC	Total Force
Bomber					Tanker				
B-1	63	0	0	63	HC-130J	11	0	0	11
B-2	20	0	0	20	HC-130N	2	6	1	9
B-52	58		18	76	HC-130P	10	3	5	18
Total	141	0	18	159	KC-10	59	0	0	59
Fighter/Attack					KC-135R	132	152	62	346
A-10C	159	91	47	297	KC-135T	30	24	0	54
F-15C	101	112	0	213	Total	244	185	68	497
F-15D	13	23	0	36	Transport				
F-15E	220	0	0	220	C-5A	0	10	12	22
F-16C	465	294	55	814	C-5B	8	0	16	24
F-16D	110	45	2	157	C-5C	1	0	0	1
F-22A	167	20	0	187	C-5M	18	0	0	18
F-35A	38	0	0	38	C-12C	16	0	0	16
Total	1,273	585	104	1,962	C-12D	6	0	0	6
Special Ops Forces					C-12F	2	0	0	2
AC-130H	6	0	0	6	C-12J	4	0	0	4
AC-130U	17	0	0	17	C-17	178	26	18	222
AC-130W	12	0	0	12	C-20B	5	0	0	5
CV-22	38	0	0	38	C-20C	1	0	0	1
MC-130H	20	0	0	20	C-20H	2	0	0	2
MC-130J	19	0	0	19	C-20K	1	0	0	1
MC-130P	12	4	0	16	C-21	34	2	0	36
Total	124	4	0	128	C-32A	4	0	0	4
ISR/BM/C3					C-37A	9	0	0	9
E-3B	21	0	0	21	C-37B	3	0	0	3
E-3C	5	0	0	5	C-38A	0	2	0	2
E-3G	5	0	0	5	C-40B	4	0	0	4
E-4	4	0	0	4	C-40C	0	3	4	7
TE-8A	0	1	0	1	C-130E	2	0	0	2
E-8C	0	16	0	16	C-130H	36	138	85	259
EC-130H	14	0	0	14	C-130J	74	16	10	100
EC-130J	0	7	0	7	LC-130H	0	10	0	10
MC-12W	41	0	0	41	VC-25	2	0	0	2
MQ-1	118	34	0	152	Total	410	207	145	762
MQ-9	143	11	0	154	Helicopter				
NC-135W	1	0	0	1	HH-60G	66	17	15	98
OC-135	2	0	0	2	TH-1H	28	0	0	28
RC-26	0	11	0	11	UH-1N	62	0	0	62
RC-135S	3	0	0	3	Total	156	17	15	188
RC-135U	2	0	0	2	Trainer				
RC-135V	8	0	0	8	T-1	178	0	0	178
RC-135W	9	0	0	9	T-6	445	0	0	445
RQ-4B	30	0	0	30	T-38A	54	0	0	54
TC-130H	1	0	0	1	AT-38B	6	0	0	6
TC-135W	3	0	0	3	T-38C	447	0	0	447
TU-2	5	0	0	5	T-41	4	0	0	4
U-2	27	0	0	27	T-51	3	0	0	3
WC-130H	0	8	0	8	T-53	25	0	0	25
WC-130J	0	0	10	10	UV-18	3	0	0	3
WC-135C	1	0	0	1	Gliders	30	0	0	30
WC-135W	1	0	0	1	Total	1,195	0	0	1,195
Total	444	88	10	542					

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

Total Number of Aircraft in Service Over Time

(As of Sept. 30, 2014)

Type of Aircraft—Active	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Bomber	173	172	173	153	154	150	144	144	141	141
Fighter/Attack	1,622	1,619	1,552	1,496	1,468	1,256	1,287	1,289	1,287	1,273
Special Ops Forces	98	103	100	94	89	98	105	117	122	124
ISR/BM/C3	134	137	266	292	320	362	381	413	394	444
Tanker	285	278	277	262	260	263	247	246	243	244
Transport	525	529	454	449	452	458	429	425	413	410
Helicopter	169	160	160	170	159	160	151	170	138	156
Trainer	1,267	1,284	1,111	1,074	1,114	1,000	1,190	1,213	1,189	1,195
Total Active Duty	4,273	4,282	4,093	3,990	4,016	3,747	3,934	4,017	3,927	3,987

Type of Aircraft—ANG	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Bomber	0	0	0	0	0	0	0	0	0	0
Fighter/Attack	764	765	746	687	664	614	639	635	630	585
Special Ops Forces	4	4	4	4	4	4	4	4	4	4
ISR/BM/C3	26	29	28	45	45	80	80	87	86	88
Tanker	252	260	235	215	182	179	189	189	187	185
Transport	249	245	258	244	241	240	242	232	223	207
Helicopter	18	18	18	18	17	17	17	17	17	17
Total ANG	1,313	1,321	1,289	1,213	1,153	1,134	1,171	1,164	1,147	1,086

Type of Aircraft—AFRC	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Bomber	9	9	9	9	9	9	18	18	18	18
Fighter/Attack	120	120	104	103	108	97	100	101	95	104
Special Ops Forces	14	14	14	14	14	10	10	5	4	0
ISR/BM/C3	20	17	17	11	11	14	12	11	11	10
Tanker	89	89	85	69	69	69	72	72	71	68
Transport	133	146	152	149	149	149	152	148	147	145
Helicopter	15	15	15	15	15	15	15	15	15	15
Total AFRC	400	410	396	370	375	363	379	370	361	360

Total Force	5,986	6,013	5,778	5,573	5,544	5,244	5,484	5,551	5,435	5,433
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ICBMs and Spacecraft in Service Over Time

(As of Sept. 30, 2014)

Type of System	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Minuteman III	500	450	450	450	450	450	450	450	450	450
Peacekeeper	0	0	0	0	0	0	0	0	0	0
Total ICBMs	500	450	450	450	450	450	450	450	450	450

AEHF						1	1	2	2	3
ATRR								1	1	0
DMSP	4	4	6	6	6	6	6	4	4	6
DSCS	9	9	9	9	9	8	8	8	8	7
DSP (classified)										
GPS	29	30	30	30	30	36	34	30	31	38
Milstar	5	5	5	5	5	5	5	5	5	5
SBIRS					2	2	2	2	2	2
SBSS						1	1	1	1	1
WGS					2	3	3	3	4	6
Total Satellites	47	48	50	50	54	62	60	56	58	68

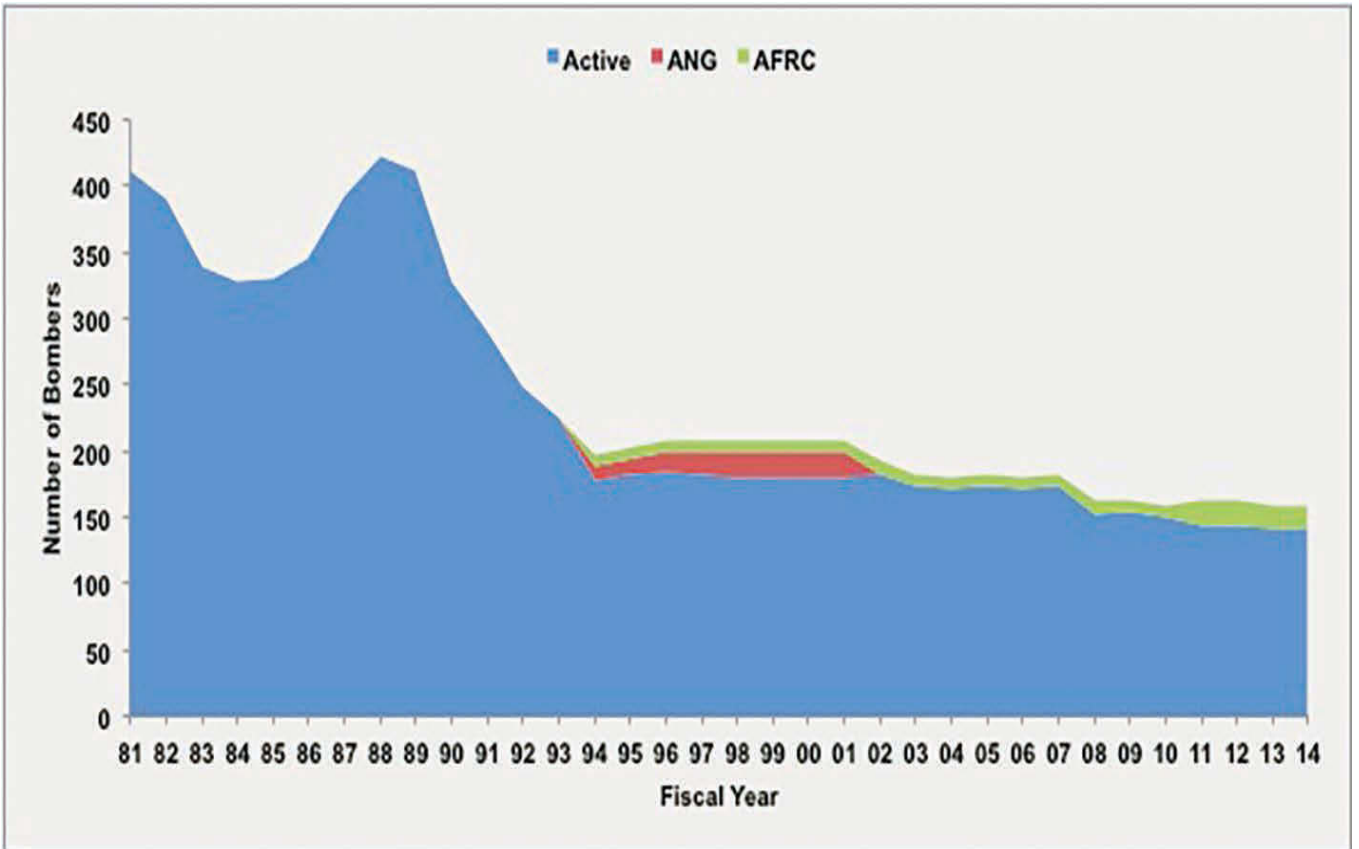
AEHF: Advanced Extremely High Frequency; ATRR: Advanced Technology Risk Reduction; DMSP: Defense Meteorological Satellite Program; DSCS: Defense Satellite Communications System; DSP: Defense Support Program; GPS: Global Positioning System; SBIRS: Space Based Infrared System; SBSS: Space Based Surveillance System; WGS: Wideband Global SATCOM

Tactical Aircraft Flying Hours per Crew per Month

(As of Sept. 30, 2014)

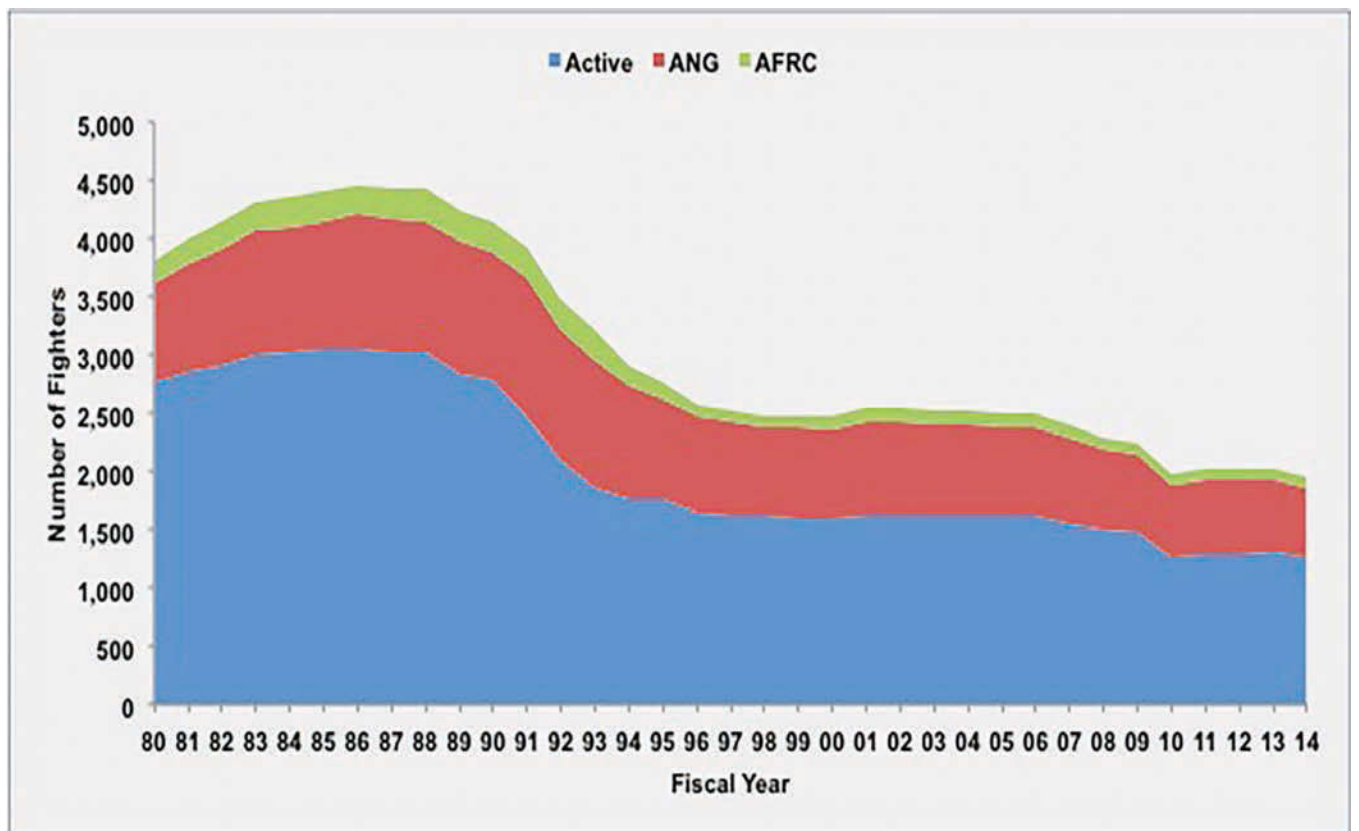
	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Active Duty	15.3	16.0	15.9	14.4	17.0	19.4	17.7	13.5	14.8	13.2
ANG	10.6	10.6	10.0	9.0	9.0	8.5	7.8	7.1	9.6	51.4
AFRC	11.6	17.5	12.5	14.4	14.1	14.9	16.5	15.8	12.3	12.0

Bombers Over Time



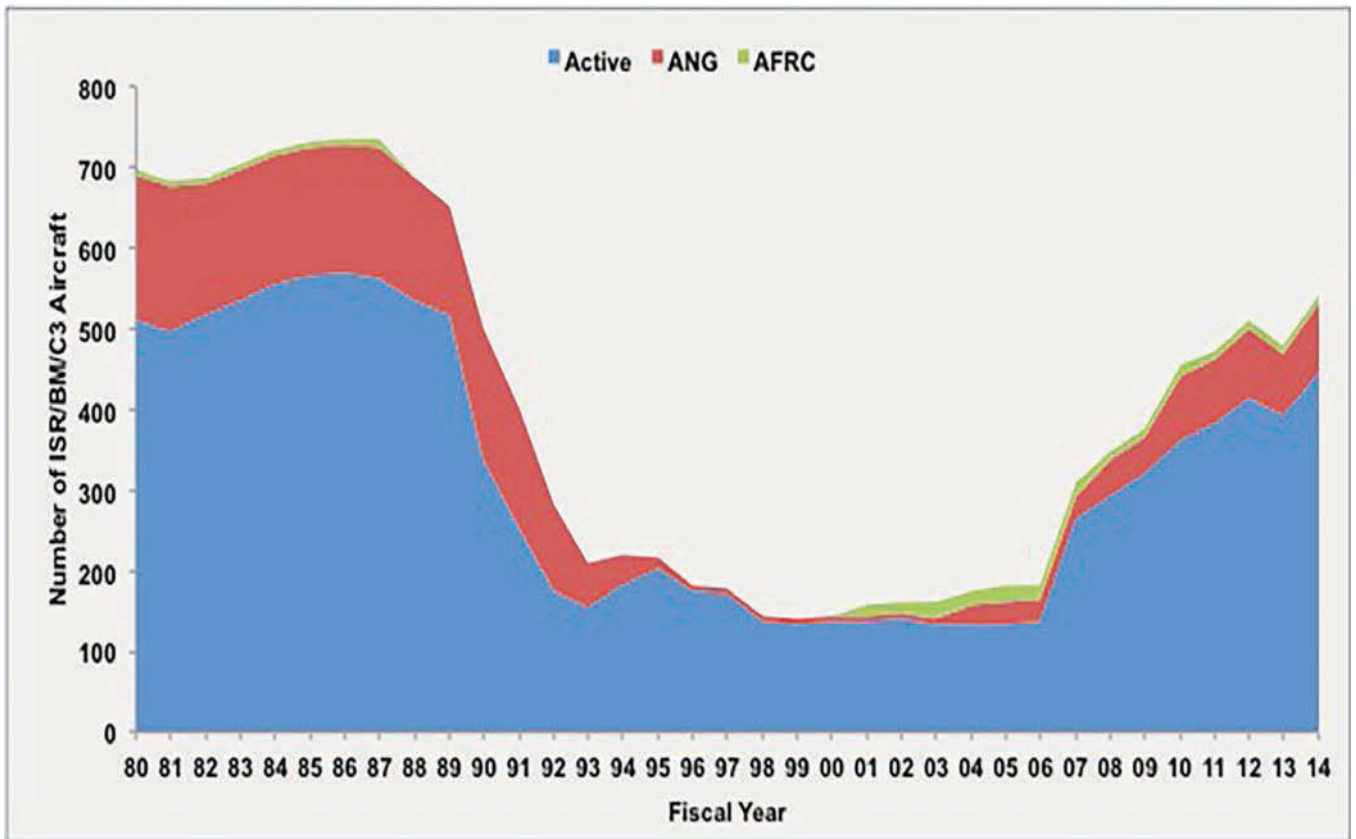
Source for historical data (1980-2000): "Arsenal of Airpower: USAF Aircraft Inventory, 1950-2009," Mitchell Institute Press, November 2010.

Fighters Over Time



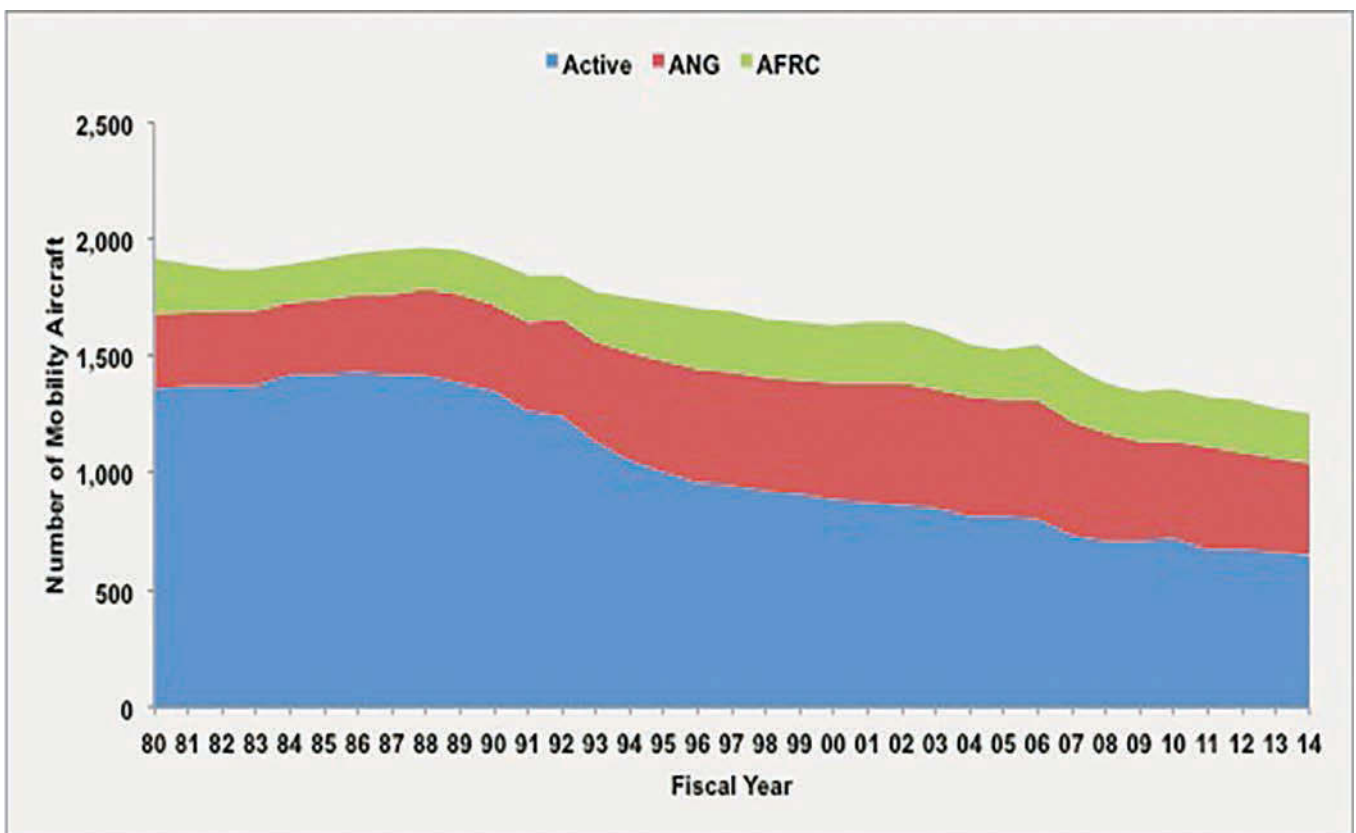
Source for historical data (1980-2000): "Arsenal of Airpower: USAF Aircraft Inventory, 1950-2009," Mitchell Institute Press, November 2010.

ISR/BM/C3 Aircraft Over Time



Source for historical data (1980-2000): "Arsenal of Airpower: USAF Aircraft Inventory, 1950-2009," Mitchell Institute Press, November 2010.

Mobility Aircraft Over Time



Source for historical data (1980-2000): "Arsenal of Airpower: USAF Aircraft Inventory, 1950-2009," Mitchell Institute Press, November 2010.

Total Force Aircraft Age

(As of Sept. 30, 2014)

	Total Force TAI	Average Age		Total Force TAI	Average Age
Bomber			Transport		
B-1B Lancer	63	27.0	C-5A Galaxy	28	42.5
B-2A Spirit	20	18.9	C-5B Galaxy	25	26.1
B-52H Stratofortress	76	52.4	C-5C Galaxy	1	43.7
Total	159	32.7	C-5M Super Galaxy	18	27.5
Fighter/Attack			C-12C Huron	16	37.7
A-10C Thunderbolt II	297	32.5	C-12D Huron	6	30.0
F-15C Eagle	213	29.6	C-12F Huron	2	29.9
F-15D Eagle	36	29.5	C-12J Huron	4	26.3
F-15E Strike Eagle	220	24.2	C-17 Globemaster III	222	12.2
F-16C Fighting Falcon	814	23.8	C-20B	5	26.9
F-16D Fighting Falcon	150	23.7	C-20C	1	26.6
F-22A Raptor	187	7.7	C-20H	2	19.1
F-35A Lightning II	38	1.8	C-21	36	28.3
Total	1,955	21.6	C-27J Spartan	0	—
Special Ops Forces			C-32A	4	15.6
AC-130H Spectre	6	44.5	C-37A	9	12.9
AC-130U Spooky	17	23.2	C-37B	3	4.2
AC-130W Stinger II	12	24.9	C-38A	2	16.0
CV-22 Osprey	38	3.2	C-40B	4	10.3
MC-130E Combat Talon	0	—	C-40C	7	8.3
MC-130H Combat Talon II	20	25.7	C-130E Hercules	2	51.0
MC-130J Commando II	19	1.7	C-130H Hercules	259	27.3
MC-130P Combat Shadow	16	46.7	C-130J Hercules	100	9.6
Total	128	21.2	LC-130H Hercules	10	28.6
ISR/BM/C3			VC-25 "Air Force One"	2	23.5
E-3B Sentry (AWACS)	19	35.6	Total	768	23.4
E-3C Sentry (AWACS)	5	31.3	Helicopter		
E-3G Sentry (AWACS)	5	32.5	HH-60G Pave Hawk	98	24.4
E-4 NAOC	4	39.9	TH-1H Iroquois	28	33.1
E-8C JSTARS	16	13.3	UH-1H Iroquois	0	—
EC-130H Compass Call	14	40.9	UH-1N Iroquois	43	42.1
EC-130J Commando Solo	7	13.8	Total	169	24.9
MC-12W	41	5.7	Trainer		
MQ-1 Predator	152	7.5	T-1 Jayhawk	178	19.5
MQ-9 Reaper	154	3.6	T-6 Texan II	445	8.5
OC-135 Open Skies	2	52.0	T-38A Talon	54	47.4
RC-26B Condor	11	19.93	(A)T-38B Talon	6	50.1
RC-135S Cobra Ball	3	52.0	T-38C Talon	447	50.7
RC-135U Combat Sent	2	49.2	T-41 Mescalero	4	44.7
RC-135V Rivet Joint	8	49.5	T-51	3	8.7
RC-135W Rivet Joint	9	50.6	T-53	25	2.2
RQ-4B Global Hawk	30	9.0	UV-18 Twin Otter	3	30.1
TC-130H (C2 trainer)	1	48.5	Gliders	24	7.6
TC-135W (C2 trainer)	3	51.8	Total	1,189	26.9
TE-8A JSTARS	1	23.3	Grand Total		
TU-2 (trainer)	5	30.0		5,404	27.6
U-2 Dragon Lady	27	31.2			
WC-130H Hercules	8	48.3			
WC-130J Hercules (Hurricane Hunter)	10	13.0			
WC-135C Constant Phoenix	1	49.9			
WC-135W Constant Phoenix	1	52.0			
Total	539	32.9			
Tanker					
HC-130J Combat King II	11	1.9			
HC-130N King	9	36.1			
HC-130P King	18	48.1			
KC-10 Extender	59	29.3			
KC-135R Stratotanker	346	52.1			
KC-135T Stratotanker	54	54.2			
Total	497	36.9			

Decommissioned since 2008, this B-52, Ghost Rider, is being restored to join USAF's fleet.



USAF photo by MSgt. Greg Steele



F-16s line up on the runway during an exercise at Misawa AB, Japan.

USAF Aircraft Tail Codes

Code	Unit and Location	Code	Unit and Location
AC	177th FW (ANG), Atlantic City Arpt., N.J.	LF	56th FW (ACC), Luke AFB, Ariz.
AF	USAF Academy, Colo.	LI	106th RQW (ANG), F. S. Gabreski Arpt., N.Y.
AK	3rd Wing (PACAF), JB Elmendorf-Richardson, Alaska	LN	48th FW (USAFE-AFACRICA), RAF Lakenheath, UK
	354th FW (PACAF), Eielson AFB, Alaska	MA	104th FW (ANG), Barnes Arpt., Mass.
	176th Wing (ANG), JB Elmendorf-Richardson, Alaska	MD	175th Wing (ANG), Martin State Arpt., Md.
AL	187th FW (ANG), Montgomery Regional Arpt., Ala.	MI	127th Wing (ANG), Selfridge ANGB, Mich.
AP	12th FTW (AETC), NAS Pensacola, Fla.	MM	341st MW (AFGSC), Malmstrom AFB, Mont.
AV	31st FW (USAFE-AFACRICA), Aviano AB, Italy	MN	133rd AW (ANG), Minn.-St. Paul Arpt./ARS
AZ	162nd Wing (ANG), Tucson Arpt., Ariz.		148th FW (ANG), Duluth Arpt., Minn.
BB	9th RW (ACC), Beale AFB, Calif.	MO	366th FW (ACC), Mountain Home AFB, Idaho
	Det. 2, 53rd Wing (ACC), Beale AFB, Calif.	MT	5th BW (AFGSC), Minot AFB, N.D.
BD	307th BW (AFRC), Barksdale AFB, La.		91st MW (AFGSC), Minot AFB, N.D.
CA	129th RQW (ANG), Moffett Field, Calif.	NY	174th ATKW (ANG), Hancock Fld., N.Y.
	144th FW (ANG), Fresno Yosemite Arpt., Calif.	OF	55th Wing (ACC), Offutt AFB, Neb.
	163rd RW (ANG), March ARB, Calif.	OH	179th AW (ANG), Mansfield Lahm Arpt., Ohio
CB	14th FTW (AETC), Columbus AFB, Miss.		180th FW (ANG), Toledo Express Arpt., Ohio
CH	432nd Wing (ACC), Creech AFB, Nev.	OK	137th ARW (ANG), Will Rogers World Arpt., Okla.
CO	140th Wing (ANG), Buckley AFB, Colo.		138th FW (ANG), Tulsa Arpt., Okla.
CT	103rd AW (ANG), Bradley Arpt., Conn.		552nd ACW (ACC), Tinker AFB, Okla.
D	100th ARW (USAFE-AFACRICA), RAF Mildenhall, UK	OS	51st FW (PACAF), Osan AB, South Korea
DC	113th Wing (ANG), JB Andrews, Md.	OT	31st TES (ACC), Edwards AFB, Calif.
DM	355th FW (ACC), Davis-Monthan AFB, Ariz.		49th TES (ACC), Barksdale AFB, La.
DR	943rd RQG (AFRC), Davis-Monthan AFB, Ariz.		53rd Wing (ACC), Eglin AFB, Fla.
DY	7th BW (ACC), Dyess AFB, Texas		88th TES (ACC), Nellis AFB, Nev.
ED	412th TW (AFMC), Edwards AFB, Calif.		337th TES (ACC), Dyess AFB, Texas
EG	33rd FW (AETC), Eglin AFB, Fla.		422nd TES (ACC), Nellis AFB, Nev.
EL	28th BW (ACC), Ellsworth AFB, S.D.		556th TES (ACC), Creech AFB, Nev.
EN	80th FTW (AETC), Sheppard AFB, Texas		Det. 4, 53rd Wing (ACC), Creech AFB, Nev.
ET	96th TW (AFMC), Eglin AFB, Fla.	RA	12th FTW (AETC), JBSA-Randolph AFB, Texas
FC	336th TRG (AETC), Fairchild AFB, Wash.	RS	86th AW (USAFE-AFACRICA), Ramstein AB, Germany
FE	90th MW (AFGSC), F. E. Warren AFB, Wyo.	SA	149th FW (ANG), JBSA-Lackland AFB, Texas
FF	1st FW (ACC), JB Langley-Eustis, Va.	SC	169th FW (ANG), McEntire JNGB, S.C.
	192nd FW (ANG), JB Langley-Eustis, Va.	SD	114th FW (ANG), Joe Foss Fld., S.D.
FL	920th RQW (AFRC), Patrick AFB, Fla.	SJ	4th FW (ACC), Seymour Johnson AFB, N.C.
FM	482nd FW (AFRC), Homestead ARB, Fla.	SP	52nd FW (USAFE-AFACRICA), Spangdahlem AB, Germany
FS	188th Wing (ANG), Fort Smith Arpt., Ark.	SW	20th FW (ACC), Shaw AFB, S.C.
FT	23rd Wing (ACC), Moody AFB, Ga.	TD	53rd WEG (ACC), Tyndall AFB, Fla.
GA	116th ACW (ANG), Robins AFB, Ga.	TX	147th RW (ANG), Ellington Fld., Texas
	165th AW (ANG), Savannah Hilton Head Arpt., Ga.		301st FW (AFRC), NAS JRB Fort Worth, Texas
HD	Det. 1, 53rd Wing (ACC), Holloman AFB, N.M.	TY	325th FW (AETC), Tyndall AFB, Fla.
HH	15th Wing (PACAF), JB Pearl Harbor-Hickam, Hawaii	VN	71st FTW (AETC), Vance AFB, Okla.
	154th Wing (ANG), JB Pearl Harbor-Hickam, Hawaii	WA	57th Wing (ACC), Nellis AFB, Nev.
HL	388th FW (ACC), Hill AFB, Utah	WI	115th FW (ANG), Truax Fld., Wis.
	419th FW (AFRC), Hill AFB, Utah	WM	72nd TES (ACC), Whiteman AFB, Mo.
HO	49th Wing (ACC), Holloman AFB, N.M.		509th BW (AFGSC), Whiteman AFB, Mo.
IA	132nd Wing (ANG), Des Moines Arpt., Iowa	WP	8th FW (PACAF), Kunsan AB, South Korea
ID	124th FW (ANG), Boise Air Terminal, Idaho	WV	130th AW (ANG), Yeager Arpt., W.Va.
IN	122nd FW (ANG), Fort Wayne, Ind.	WW	35th FW (PACAF), Misawa AB, Japan
JZ	159th FW (ANG), NAS JRB New Orleans	XL	47th FTW (AETC), Laughlin AFB, Texas
KC	442nd FW (AFRC), Whiteman AFB, Mo.	YJ	374th AW (PACAF), Yokota AB, Japan
LA	2nd BW (AFGSC), Barksdale AFB, La.	ZZ	18th Wing (PACAF), Kadena AB, Japan

USAF Grades and Insignia

Officer



Second Lieutenant
(O-1)



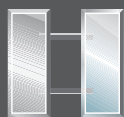
Brigadier General
(O-7)



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



Master Sergeant
(E-7)

Airman Basic
(E-1)
No insignia



Airman
(E-2)



Senior Master Sergeant
(E-8)



Airman First Class
(E-3)



Senior Airman
(E-4)



Chief Master Sergeant
(E-9)



Staff Sergeant
(E-5)



Chief Master Sergeant of
the Air Force



Technical Sergeant
(E-6)



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

Shown in order of precedence.



Medal of Honor (AF)



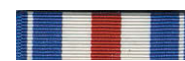
Air Force Cross



Defense Distinguished Service Medal



Distinguished Service Medal (AF)



Silver Star



Defense Superior Service Medal



Legion of Merit



Distinguished Flying Cross



Airman's Medal



Bronze Star Medal



Purple Heart



Defense Meritorious Service Medal



Meritorious Service Medal (AF)



Air Medal



Aerial Achievement Medal



Joint Service Commendation Medal



Air Force Commendation Medal



Joint Service Achievement Medal



Air Force Achievement Medal



Air Force Combat Action Medal



Presidential Unit Citation (AF)



Joint Meritorious Unit Award



Gallant Unit Citation



Air Force Meritorious Unit Award



Air Force Outstanding Unit Award



Air Force Organizational Excellence Award



Prisoner of War Medal



Combat Readiness Medal



Air Force Good Conduct Medal



Good Conduct Medal



Air Reserve Forces Meritorious Service Medal



Outstanding Airman of the Year Ribbon



Air Force Recognition Ribbon



American Defense 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



National Defense Service Medal



Korean Service Medal



Antarctica Service Medal



Armed Forces Expeditionary Medal



Vietnam Service Medal



Southwest Asia Service Medal



Kosovo Campaign Medal



Afghanistan Campaign Medal



Iraq Campaign Medal



Global War on Terrorism Expeditionary Medal



Global War on Terrorism Service Medal



Korean Defense Service Medal



Armed Forces Service Medal



Humanitarian Service Medal



Military Outstanding Volunteer Service Medal



Air & Space Campaign Medal



Nuclear Deterrence Operations Service Medal



Air Force Overseas Ribbon-Short



Air Force Overseas Ribbon-Long



Air Force Expeditionary Service Ribbon



Air Force Longevity Service Award Ribbon



USAF Basic Military Training Instructor Ribbon



Air Force Recruiter Ribbon



Armed Forces Reserve Medal



USAF NCO PME Graduate Ribbon



USAF Basic Military Training Honor Graduate Ribbon



Small Arms Expert Marksmanship Ribbon



Air Force Training Ribbon



Philippine Defense Ribbon



Philippine Liberation Ribbon

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Awards and Decorations, Continued



Philippine Independence Ribbon



Philippine Presidential Unit Citation



ROK Presidential Unit Citation



RVN Gallantry Cross with Palm



United Nations Service Medal



United Nations Medal



NATO Meritorious Service Medal



NATO Medal for Yugoslavia



NATO Medal for Kosovo



Article 5 NATO Medal-Eagle Assist



Article 5 NATO Medal-Active Endeavor



Non-Article 5 NATO Medal-Balkans



Non-Article 5 NATO Medal-ISAF



Republic of Vietnam Campaign Medal



Kuwait Liberation Medal, Kingdom of Saudi Arabia



Kuwait Liberation Medal, Government of Kuwait



Republic of Korea Korean War Service Medal

Devices



Bronze Star

For number of campaigns or operations, multiple qualifications, or an additional award of an authorized ribbon.



Silver and Bronze Stars

When worn together on a single ribbon, silver stars are worn to wearer's right of a bronze star.



Mobility Device

Worn with the Armed Forces Reserve Medal to denote Active Duty status for at least one day during a contingency; here with number of mobilizations.



A Device

Worn on Overseas Ribbon-Short for service north of Arctic Circle; one per ribbon; worn to the wearer's right of OLCs.



Silver Star

One silver star is worn in lieu of five bronze service stars.



Silver and Bronze OLCs

Silver OLCs are worn to the wearer's right of the bronze OLCs on the same ribbon.



Hourglass Device

Issued for the Armed Forces Reserve Medal in bronze for 10 years of service, silver for 20, and gold for 30.



Arrowhead Device

Shows participation in assigned tactical combat parachute, glider, or amphibious assault landing; worn on campaign medals, Korean Service Medal, and Armed Forces and GWOT Expeditionary medals.



Silver Oak Leaf Cluster

For sixth, 11th, etc., entitlements or in lieu of five bronze OLCs.



Valor Device

For valor; not an additional award; only one per ribbon; worn to the wearer's right of OLCs on the same ribbon.



Plane Device

Worn on Army of Occupation Medal for 90 consecutive days in direct support of the Berlin Airlift, June 26, 1948, to Sept. 30, 1949.



"Wintered Over" Device

Worn on Antarctica Service Medal to denote staying on the Antarctic continent over the winter—bronze for one; gold, two; silver, three.



Bronze Oak Leaf Cluster

For second and subsequent awards.

USAF Specialty Berets

Airmen in seven USAF specialties are authorized to wear a colored beret along with the insignia of that particular field.



Combat Controller/Special Tactics Officer



Pararescue/Combat Rescue Officer



Security Forces



Survival, Evasion, Resistance, and Escape



Tactical Air Command and Control
(Tactical Air Control Party crest)



Air Liaison Officer
(TACP flash and rank)



Weather Parachutist

Major Commands and Reserve Components

■ 2015 USAF Almanac

Note: All data as of Sept. 30, 2014

Organization



U.S. AIR FORCE

The Air Force has 10 major commands and two Air Reserve Components. (Air Force Reserve Command is both a majcom and an ARC.) As major subdivisions of the Air Force, majcoms conduct a major part of the service's mission and are directly subordinate to Hq. USAF.

Major commands are organized on a functional basis in the US and on a geographic basis overseas. In addition to accomplishing designated portions of USAF's worldwide activities, they organize, administer, equip, and train their subordinate elements.

Major commands, in general, include the following organizational levels: numbered air force (NAF), wing, group, squadron, and flight. The majcom sits at the top of a skip-echelon staffing structure, which means every other organizational level (i.e., majcom, wing, and squadron) will have a full range of staff functions. The other organizations (NAF, group, and flight) are tactical echelons with minimal or no support staff. These tactical echelons are designed to increase operational effectiveness rather than to review and transmit paperwork.

There are two basic organizational schemes for Air Force major commands: unit-oriented organizations and major non-unit organizations. The more standard unit-oriented scheme comprises majcom, NAF, wing, group, squadron, and flight levels. The major non-unit organization scheme comprises majcom,

10 Major Commands

Air Combat Command

Air Education & Training Command

Air Force Global Strike Command

Air Force Materiel Command

Air Force Reserve Command

Air Force Space Command

Air Force Special Operations Command

Air Mobility Command

Pacific Air Forces

US Air Forces in Europe-Air Forces Africa

Two Air Reserve Components

Air Force Reserve Command

Air National Guard

center, directorate, division, branch, and section levels.

USAF has two types of major commands: lead majcom and component majcom (C-Majcom). *(Some major commands are both lead majcoms and C-Majcoms.)* A C-Majcom is the USAF component to a unified combatant command. The commander of a C-Majcom is the commander of air forces (COMAF-FOR) and may function as a theater joint force air and space component commander (JFACC) when required. A C-Majcom has one or more component NAFs (C-NAFs) through which it presents its forces to the combatant commander.

Numbered Air Force

A numbered air force, that level of command directly below a major command, provides operational leadership and supervision to its subordinate units (wings, groups, and squadrons). A C-NAF supports the commander of air forces at the operational and tactical level. USAF has designated some C-NAFs, rather than a majcom, as the Air Force component to a unified combatant command. In that role, the C-NAF functions at the strategic level as well as the operational and tactical levels and will have a broader staff. *(On the following pages, NAFs with "Air Forces" designations, such as Air Forces Southern, are C-NAFs.)*

ACC

Air Combat Command

Headquarters JB Langley-Eustis, Va.

Established June 1, 1992

Commander Gen. Herbert J. "Hawk" Carlisle



PRIMARY MISSION

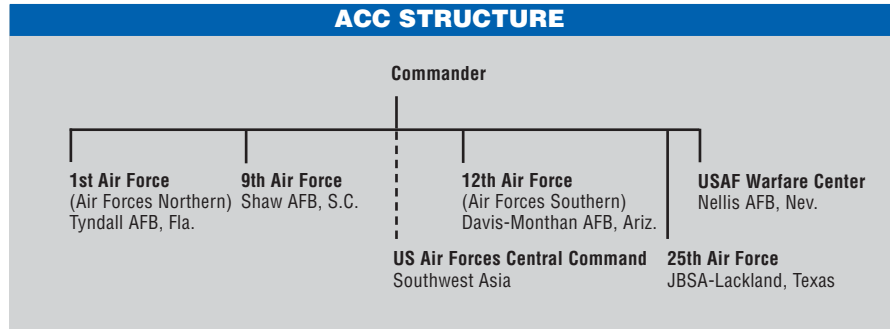
Primary force provider of combat airpower—fighter, conventional bomber, reconnaissance, battle management, and electronic combat aircraft—to combatant commands; provide C3I systems and conduct global information operations.

PERSONNEL

Active Duty	82,863
Civilian	13,030
Total	95,893

EQUIPMENT (Total active inventory)

Bomber	61
--------	----



Fighter/Attack	656	Transport	1
ISR/BM/C3	378	Helicopter	40
Tanker	17	Trainer	45

Abbreviations: CFACC: combined force air component commander; DCGS: Distributed Common Ground Station.

MAJOR WINGS/CENTERS	LOCATION	AIRCRAFT/MISSION/WEAPON
1st Fighter Wing	JB Langley-Eustis, Va.	F-22
4th FW	Seymour Johnson AFB, N.C.	F-15E
7th Bomb Wing	Dyess AFB, Texas	B-1B
9th Reconnaissance Wing	Beale AFB, Calif.	MC-12W, RQ-4, T-38A, U-2
20th FW	Shaw AFB, S.C.	F-16CJ
23rd Wing	Moody AFB, Ga.	A-10C, HC-130, HH-60G
28th BW	Ellsworth AFB, S.D.	B-1B
49th Wing	Holloman AFB, N.M.	F-16 (gaining 2014-15), MQ-1, MQ-9, T-38C
53rd Wing	Eglin AFB, Fla.	A-10C, B-1B, B-52H, F-15, F-16, F-22, F-35, HC-130J, HH-60G, MQ-1, MQ-9, RQ-170, space test
55th Wing	Offutt AFB, Neb.	E-4B, OC-135B, RC-135S, RC-135U, RC-135V/W, WC-135
57th Wing	Nellis AFB, Nev.	A-10C, F-15, F-15E, F-16, F-22, F-35A, HH-60G (23rd Wing), MQ-1, MQ-9
70th Intelligence, Surveillance, and Reconnaissance Wing	Fort Meade, Md.	Cryptologic operations
93rd Air Ground Operations Wing	Moody AFB, Ga.	Battlefield airmen operations and support
98th Range Wing	Nellis AFB, Nev.	Training, tactics development, target maintenance support
99th Air Base Wing	Nellis AFB, Nev.	Base support
325th FW	Tyndall AFB, Fla.	F-22
355th FW	Davis-Monthan AFB, Ariz.	A-10C, EC-130H (55th Wing), HC-130 & HH-60G (23rd Wing)
366th FW	Mountain Home AFB, Idaho	F-15E
388th FW	Hill AFB, Utah	F-16
432nd Wing	Creech AFB, Nev.	MQ-1, MQ-9
480th ISRW	JB Langley-Eustis, Va.	DCGS, cyber ISR, CFACC support, Signals intelligence integration
461st Air Control Wing	Robins AFB, Ga.	E-8C (active associate)
505th Command & Control Wing	Hurlburt Field, Fla.	C2 operational-level tactics, testing, training
552nd ACW	Tinker AFB, Okla.	E-3B/C/G
577th Weather Wing	Offutt AFB, Neb.	Weather information
601st Air & Space Operations Center	Tyndall AFB, Fla.	Plan/direct air operations
633rd ABW	JB Langley-Eustis, Va.	Joint base facilities support
Air Force Rescue Coordination Center	Tyndall AFB, Fla.	National search/rescue coordination
Air Force Technical Applications Center	Patrick AFB, Fla.	Nuclear treaty monitoring, nuclear event detection



The first newly upgraded operational B1-B Lancer prepares to take flight Jan. 21, 2014, at Dyess AFB, Texas.

USAF photo by SSgt. Richard Ebensberger

AETC

Air Education and Training Command

Headquarters JBSA-Randolph, Texas

Established July 1, 1993

Commander Gen. Robin Rand



PRIMARY MISSION

Recruit, train, and educate airmen through basic military training, initial and advanced technical training, and professional military education.

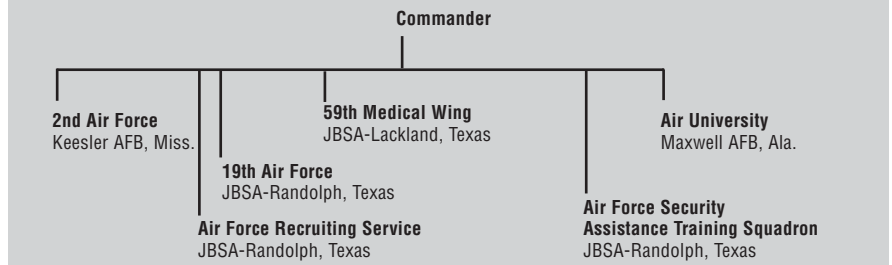
PERSONNEL

Active Duty	49,116
Civilian	14,076
Total	63,192

EQUIPMENT (TAI)

Fighter/Attack	137
Special operations forces	14
Tanker	25
Transport	29
Helicopter	53
Trainer	1,119

AETC STRUCTURE



Abbreviations: CSO: combat systems officer; JBSA: Joint Base San Antonio; NAS: Naval Air Station; ROTC: Reserve Officer Training Corps; JROTC: Junior Reserve Officer Training Corps.

MAJOR WINGS/CENTERS

LOCATION

AIRCRAFT/MISSION/WEAPON

12th Flying Training Wing	JBSA-Randolph, Texas	T-1A, T-6A, T-38C (CSO at NAS Pensacola, Fla.)
14th FTW	Columbus AFB, Miss.	T-1A, T-6A, T-38C (A-29 at Moody AFB, Ga.)
17th Training Wing (TRW)	Goodfellow AFB, Texas	Technical training
33rd Fighter Wing	Eglin AFB, Fla.	F-35
37th TRW	JBSA-Lackland, Texas	Basic military and technical training
42nd Air Base Wing	Maxwell AFB, Ala.	Base support
47th FTW	Laughlin AFB, Texas	T-1A, T-6A, T-38C
56th FW	Luke AFB, Ariz.	F-16, F-35
58th Special Operations Wing	Kirtland AFB, N.M.	CV-22, HC-130, HH-60, MC-130H, MC-130J, MC-130P, UH-1N
59th Medical Wing	JBSA-Lackland, Texas	Wilford Hall Ambulatory Surgical Center
71st FTW	Vance AFB, Okla.	T-1A, T-6A, T-38C
80th FTW	Sheppard AFB, Texas	T-6A, T-38C
81st TRW	Keesler AFB, Miss.	Technical training
82nd TRW	Sheppard AFB, Texas	Technical training
97th Air Mobility Wing	Altus AFB, Okla.	C-17, KC-135R
314th Airlift Wing	Little Rock AFB, Ark.	C-130J
502nd ABW	JBSA-Fort Sam Houston, Texas	JBSA facilities support
Air Force Institute of Technology	Wright-Patterson AFB, Ohio	Postgraduate education
Air Force Research Institute	Maxwell AFB, Ala.	Historical research
Carl A. Spaatz Center for Officer Education	Maxwell AFB, Ala.	Officer professional military education (PME)
Curtis E. LeMay Center for Doctrine Dev. & Education	Maxwell AFB, Ala.	Air Force doctrine development
Ira C. Eaker Center for Professional Dev.	Maxwell AFB, Ala.	Professional and technical continuing education
Jeanne M. Holm Center for Officer Accessions & Citizen Dev.	Maxwell AFB, Ala.	Officer training, ROTC/JROTC oversight
Muir S. Fairchild Research Information Center	Maxwell AFB, Ala.	Information resources
Thomas N. Barnes Center for Enlisted Education	Maxwell AFB, Ala.	Enlisted PME



Capt. Dave Markus (left), 559th Flying Training Squadron flight instructor, and Maj. Neil Gregory, 559th FTS student, perform a preflight inspection on a T-6 Texan II at JBSA-Randolph, Texas.

USAF photo by Joel Martinez

AFGSC

Air Force Global Strike Command

Headquarters Barksdale AFB, La.

Established Aug. 7, 2009

Commander Lt. Gen. Stephen W. Wilson



PRIMARY MISSION

Organize, train, equip, maintain, and provide ICBM forces and nuclear-capable bomber forces to combatant commanders.

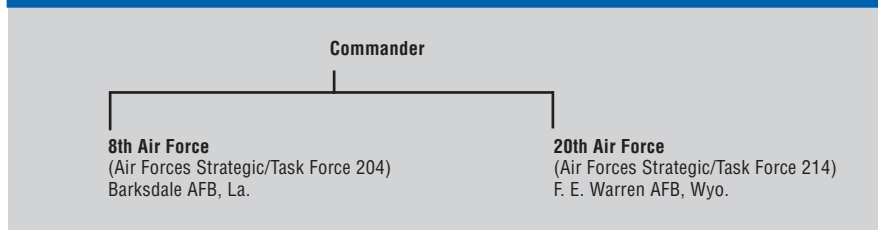
PERSONNEL

Active Duty	19,011
Civilian	2,343
Total	21,354

EQUIPMENT (TAI)

Bomber	75
Helicopter	26
Trainer	14
ICBM	450

AFGSC STRUCTURE



Note: USAF redesignated Strategic Air Command, established Dec. 13, 1944, as Air Force Global Strike Command and activated AFGSC on Aug. 7, 2009.

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
2nd Bomb Wing	Barksdale AFB, La.	B-52H
5th BW	Minot AFB, N.D.	B-52H
90th Missile Wing	F. E. Warren AFB, Wyo.	Minuteman III, UH-1N
91st MW	Minot AFB, N.D.	Minuteman III, UH-1N
341st MW	Malmstrom AFB, Mont.	Minuteman III, UH-1N
509th BW	Whiteman AFB, Mo.	B-2, T-38C
576th Flight Test Squadron	Vandenberg AFB, Calif.	ICBM testing
625th Strategic Operations Squadron	Offutt AFB, Neb.	ICBM-related analysis, targeting system operations, training



A B-52 Stratofortress from the 2nd Bomb Wing flies a mission during a binational exercise, Vigilant Shield 15, in Canada.

USAF photo by S/A. Justin Wright

AFMC

Air Force Materiel Command

Headquarters Wright-Patterson AFB, Ohio

Established July 1, 1992

Commander Gen. Janet C. Wolfenbarger



PRIMARY MISSION

Research, develop, procure, test, and sustain USAF weapon systems.

PERSONNEL

Active Duty	17,334
Civilian	59,223
Total	76,557

EQUIPMENT (TAI)

Bomber	5
Fighter/Attack	60
ISR/BM/C3	23
Tanker	2
Transport	24
Helicopter	5
Trainer	25

AFMC STRUCTURE

Commander

—	Air Force Life Cycle Management Center (AFLCMC)	Wright-Patterson AFB, Ohio
—	Air Force Nuclear Weapons Center (AFNWC)	Kirtland AFB, N.M.
—	Air Force Research Laboratory (AFRL)	Wright-Patterson AFB, Ohio
—	Air Force Sustainment Center (AFSC)	Tinker AFB, Okla.
—	Air Force Test Center (AFTC)	Edwards AFB, Calif.
—	National Museum of the US Air Force	Wright-Patterson AFB, Ohio

MAJOR UNITS

LOCATION

AIRCRAFT/MISSION/WEAPON

AFLCMC

Program Executive Officer—Agile Combat Support
 PEO—Armament
 PEO—Battle Management
 PEO—Business & Enterprise Systems
 PEO—C3I & Networks
 PEO—Fighters & Bombers
 PEO—ISR & SOF
 PEO—Mobility
 PEO—Strategic Systems
 PEO—Tanker
 66th Air Base Group
 88th Air Base Wing

Wright-Patterson AFB, Ohio
 Eglin AFB, Fla.
 Hanscom AFB, Mass.
 Maxwell AFB-Gunter Annex, Ala.
 Hanscom AFB, Mass.
 Wright-Patterson AFB, Ohio
 Wright-Patterson AFB, Ohio
 Wright-Patterson AFB, Ohio
 Kirtland AFB, N.M.
 Wright-Patterson AFB, Ohio
 Hanscom AFB, Mass.
 Wright-Patterson AFB, Ohio

Systems acquisition
 Systems acquisition
 Systems acquisition
 Systems acquisition
 Systems acquisition
 Systems acquisition
 Systems acquisition
 Systems acquisition
 Systems acquisition
 Base support
 Base support

AFNWC

Air Force Nuclear Weapons Capability Directorate
 377th Air Base Wing

Kirtland AFB, N.M.
 Kirtland AFB, N.M.

Nuclear weapons sustainment
 Nuclear operations, base support

AFRL

Aerospace Systems
 Air Force Office of Scientific Research
 Directed Energy
 Information
 Materials & Manufacturing
 Munitions
 Sensors
 Space Vehicles
 711th Human Performance Wing

Wright-Patterson AFB, Ohio
 Arlington, Va.
 Kirtland AFB, N.M.
 Rome, N.Y.
 Wright-Patterson AFB, Ohio
 Eglin AFB, Fla.
 Wright-Patterson AFB, Ohio
 Kirtland AFB, N.M.
 Wright-Patterson AFB, Ohio

Research & development
 Research
 R&D
 R&D
 R&D
 R&D
 R&D
 R&D
 Human performance evaluation/research

AFSC

Ogden Air Logistics Complex
 Oklahoma City ALC
 Warner Robins ALC
 72nd ABW
 75th ABW
 78th ABW
 309th Aerospace Maintenance & Regeneration Group
 448th Supply Chain Management Wing
 635th Supply Chain Operations Wing

Hill AFB, Utah
 Tinker AFB, Okla.
 Robins AFB, Ga.
 Tinker AFB, Okla.
 Hill AFB, Utah
 Robins AFB, Ga.
 Davis-Monthan AFB, Ariz.
 Tinker AFB, Okla.
 Scott AFB, Ill.

Weapons sustainment
 Weapons sustainment
 Weapons sustainment
 Base support
 Base/Utah Test & Training Range support
 Base support
 Aircraft maintenance/regeneration
 Planning/execution depot line repairable and consumables
 Global sustainment support

AFTC

Arnold Engineering Development Complex
 96th Test Wing

Arnold AFB, Tenn.
 Eglin AFB, Fla.

Flight, space, and missile ground testing
 A-10C, C-130, F-15, F-15E, F-16CG/CJ, F-35A/B/C, UH-1N,
 base support
 B-1, B-2, B-52, C-12, C-17, F-16, F-22, F-35A/B/C, RQ-4,
 T-38, base support

412th TW

Edwards AFB, Calif.

AFIMSC (P)

On Oct. 1, 2014, AFMC became the parent organization to several field operating agencies to include Air Force Security Forces Center, Air Force Civil Engineer Center, Air Force Installation Contracting Agency, Air Force Financial Management Center of Expertise, Air Force Financial Services Center, and the Air Force Services Activity. These entities were attached to the Air Force Installation and Mission Support Center (Provisional).

AFRC

Air Force Reserve Command

Headquarters Robins AFB, Ga.

Established Feb. 17, 1997

Commander Lt. Gen. James F. Jackson



PRIMARY MISSION

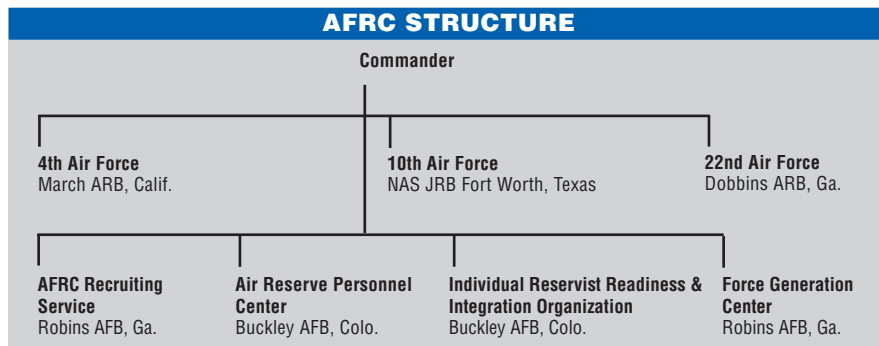
Provide strike, air mobility, special operations forces, rescue, aeromedical evacuation, aerial firefighting and spraying, weather reconnaissance, cyberspace operations, ISR, space, flying training, and other capabilities to support the Active Duty force and assist with domestic and foreign disaster relief.

PERSONNEL

Total (selected reserve)	69,784
Active Duty	463
Civilian (includes technicians)	12,356
Total	82,603

EQUIPMENT (TAI)

Bomber	18
Fighter/Attack	104
ISR/BM/C3	10



Tanker	68	Helicopter	15
Transport	145		

Abbreviations: AOC: Air & Space Operations Center; DCGS: Distributed Common Ground Station; ISR: intelligence, surveillance, and reconnaissance.

MAJOR GROUPS/WINGS	LOCATION	AIRCRAFT/MISSION/WEAPON
44th Fighter Group*	Tyndall AFB, Fla.	F-22, MQ-1, MQ-9
94th Airlift Wing	Dobbins ARB, Ga.	C-130H
301st Fighter Wing	NAS JRB Fort Worth, Texas	F-16
302nd AW	Peterson AFB, Colo.	C-130 (including Modular Airborne Firefighting System)
307th Bomb Wing	Barksdale AFB, La.	B-52
310th Space Wing	Schriever AFB, Colo.	Space control/operations/warning, information operations
315th AW*	JB Charleston, S.C.	C-17
340th Flying Training Group*	JB SA-Randolph, Texas	AT-38B, T-1, T-6, T-38
349th Air Mobility Wing*	Travis AFB, Calif.	C-5A/B/C, C-17, KC-10
403rd Wing	Keesler AFB, Miss.	C-130J, WC-130J (Hurricane Hunters)
413th Flight Test Group	Robins AFB, Ga.	Depot flight test
414th FG*	Seymour Johnson AFB, N.C.	F-15E
419th FW*	Hill AFB, Utah	F-16
433rd AW	JB SA-Lackland, Texas	C-5A/B, formal training unit
434th Air Refueling Wing	Grissom AFB, Ind.	KC-135R
439th AW	Westover ARB, Mass.	C-5B
440th AW	Pope Field, N.C.	C-130H
442nd FW	Whiteman AFB, Mo.	A-10C
445th AW	Wright-Patterson AFB, Ohio	C-17
446th AW*	JB Lewis-McChord, Wash.	C-17
452nd AMW	March ARB, Calif.	C-17, KC-135R
459th ARW	JB Andrews, Md.	KC-135R
476th FG*	Moody AFB, Ga.	A-10C
477th FG*	JB Elmendorf-Richardson, Alaska	F-22
482nd FW	Homestead ARB, Fla.	F-16
507th ARW	Tinker AFB, Okla.	KC-135R
512th AW*	Dover AFB, Del.	C-5M, C-17
513th Air Control Group*	Tinker AFB, Okla.	E-3
514th AMW*	JB McGuire-Dix-Lakehurst, N.J.	C-17, KC-10
624th Regional Support Group	JB Pearl Harbor-Hickam, Hawaii	Contingency aerial port, civil engineer, medical combat support
655th ISR Group	Wright-Patterson AFB, Ohio	ISR
908th AW	Maxwell AFB, Ala.	C-130H
910th AW	Youngstown ARS, Ohio	C-130H
911th AW	Pittsburgh Arpt., Pa.	C-130H
913th Airlift Group	Little Rock AFB, Ark.	C-130H
914th AW	Niagara Falls Arpt./ARS, N.Y.	C-130H, MQ-9
916th ARW	Seymour Johnson AFB, N.C.	KC-135R
919th Special Operations Wing	Duke Field, Fla.	C-146, MQ-1* (Cannon AFB, N.M.), U-28*
920th Rescue Wing	Patrick AFB, Fla.	HC-130N/P, HH-60G
924th FG	Davis-Monthan AFB, Ariz.	A-10C
926th Wing*	Nellis AFB, Nev.	F-16 (Nellis), MQ-1 and MQ-9 (Creech AFB, Nev.)
927th ARW*	MacDill AFB, Fla.	KC-135R
931st Air Refueling Group*	McConnell AFB, Kan.	KC-135R
932nd AW	Scott AFB, Ill.	C-40
934th AW	Minneapolis-St. Paul Arpt., Minn.	C-130H
940th Wing*	Beale AFB, Calif.	AOC, DCGS, RQ-4
943rd Rescue Group	Davis-Monthan AFB, Ariz.	HH-60G
944th FW*	Luke AFB, Ariz.	F-16
960th Cyberspace Operations Group	JB SA-Lackland, Texas	Cyberspace operations

*classic associate: active unit owns aircraft

AFSPC

Air Force Space Command

Headquarters Peterson AFB, Colo.

Established Sept. 1, 1982

Commander Gen. John E. Hyten



PRIMARY MISSION

Organize, train, equip, maintain, and provide space and cyberspace operations forces; develop, procure, and test space systems; sustain national space launch facilities.

PERSONNEL

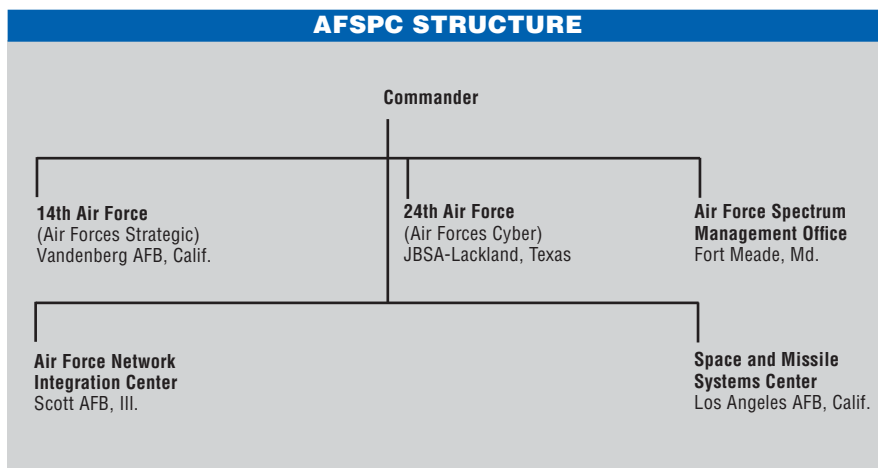
Active Duty	12,653
Civilian	7,318
Total	19,971

EQUIPMENT

Air Force Satellite Control Network
BMEWS
GEODSS
Launch/test ranges
Pave Phased Array Warning System
PARCS
Space surveillance radars

Satellite systems (on orbit):

AEHF	3
DCSC	7
DMSP	6
DSP	classified
GPS	38



Milstar	5	SBSS	1
SBIRS	2	WGS	6

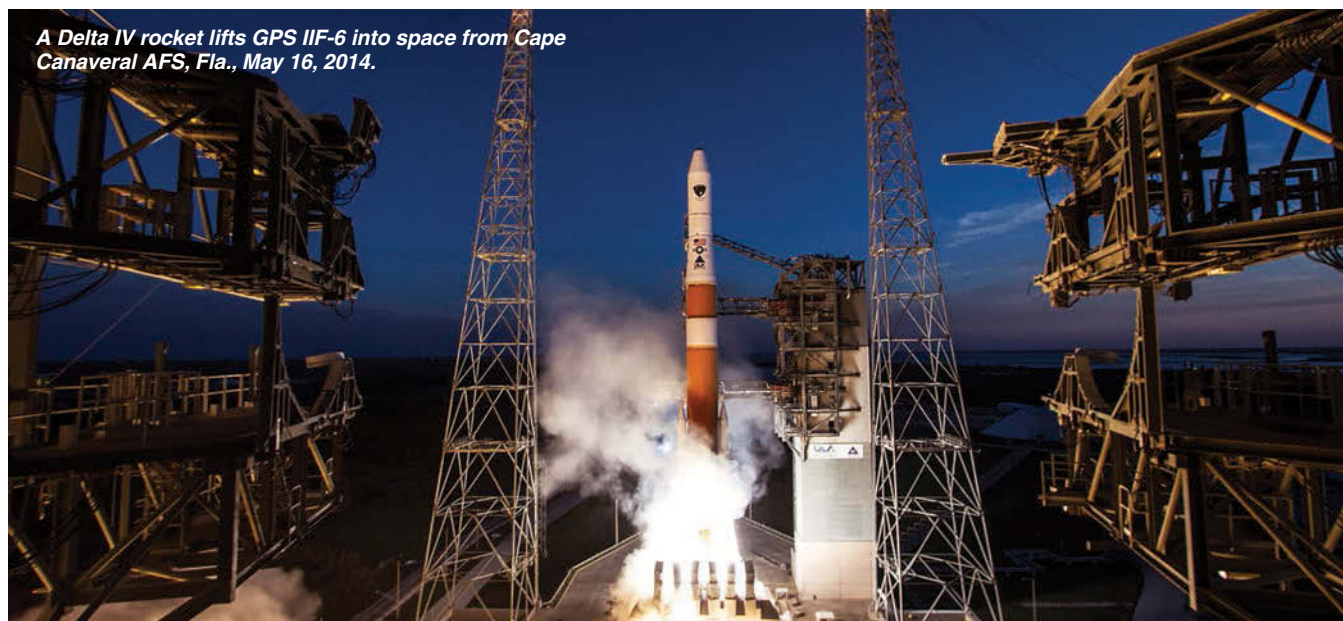
Abbreviations: BMEWS: Ballistic Missile Early Warning System; GEODSS: Ground-based Electro-Optical Deep Space Surveillance System; PARCS: Perimeter Acquisition Radar Attack Characterization System; for satellites, see Gallery of Weapons.

MAJOR GROUPS/WINGS

LOCATION

AIRCRAFT/MISSION/WEAPON

5th Combat Communications Group	Robins AFB, Ga.	Expeditionary, specialized communications/air traffic control
21st Space Wing	Peterson AFB, Colo.	Space control/warning
30th SW	Vandenberg AFB, Calif.	Space launch, ICBM test, launch range operations
45th SW	Patrick AFB, Fla.	Space launch, launch range operations
50th SW	Schriever AFB, Colo.	C2 space operations
61st Air Base Group	Los Angeles AFB, Calif.	Base support
67th Cyberspace Wing	JBSA-Lackland, Texas	Cyberspace operations
460th SW	Buckley AFB, Colo.	Space surveillance/warning
624th Operations Center	JBSA-Lackland, Texas	Plan/direct cyber operations
688th Cyberspace Wing	JBSA-Lackland, Texas	Information operations, engineering installation
821st Air Base Group	Thule AB, Greenland	Base support



A Delta IV rocket lifts GPS IIF-6 into space from Cape Canaveral AFS, Fla., May 16, 2014.

Photo courtesy of United Launch Alliance

AFSOC

Air Force Special Operations Command

Headquarters Hurlburt Field, Fla.

Established May 22, 1990

Commander Lt. Gen. Bradley A. Heithold



PRIMARY MISSION

Organize, train, equip, maintain, and provide special operations airpower forces to combatant commanders.

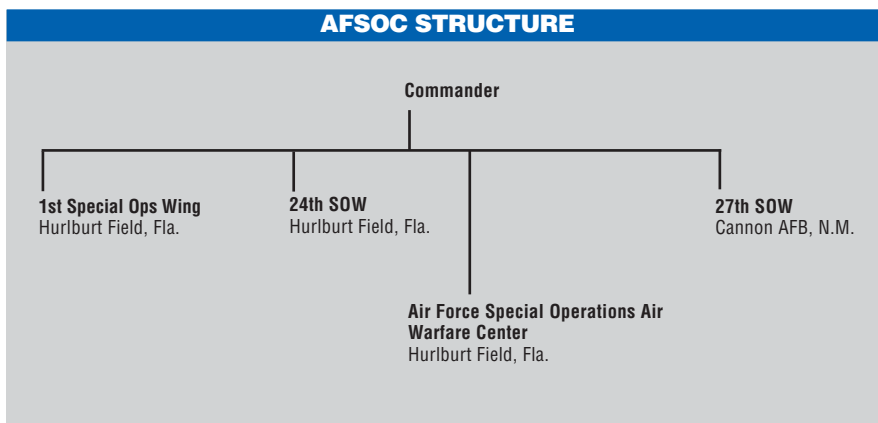
PERSONNEL

Active Duty	14,292
Civilian	1,579
Total	15,871

EQUIPMENT (TAI)

SOF	110
ISR/BM/C3	46

AFSOC STRUCTURE



MAJOR UNITS

LOCATION

AIRCRAFT/MISSION/WEAPON

1st Special Operations Wing	Hurlburt Field, Fla.	AC-130U, CV-22, MC-130H, MC-130P, U-28A
24th SOW	Hurlburt Field, Fla.	Special tactics operations
27th SOW	Cannon AFB, N.M.	AC-130J, AC-130W, CV-22, MC-130J, MQ-1, MQ-9
352nd Special Operations Group*	RAF Mildenhall, UK	MC-130J, CV-22
353rd SOG	Kadena AB, Japan	MC-130H, MC-130P
720th Special Tactics Group	Hurlburt Field, Fla.	Special tactics operations
724th STG	Pope Field, N.C.	Special tactics operations
Air Force Special Operations Air Warfare Center	Hurlburt Field, Fla.	Organizes, trains, and equips for special ops missions

* became a wing in March 2015

Members of the 352nd Special Operations Support Squadron deployed aircraft ground response element, assigned to RAF Mildenhall, UK, prepare to board a CV-22 Osprey during an exercise.



USAF photo by SrA Victoria H. Taylor

AMC

Air Mobility Command

Headquarters Scott AFB, Ill.

Established June 1, 1992

Commander Gen. Darren W. McDew



PRIMARY MISSION

Organize, train, equip, maintain, and provide air mobility forces to sustain worldwide airpower operations.

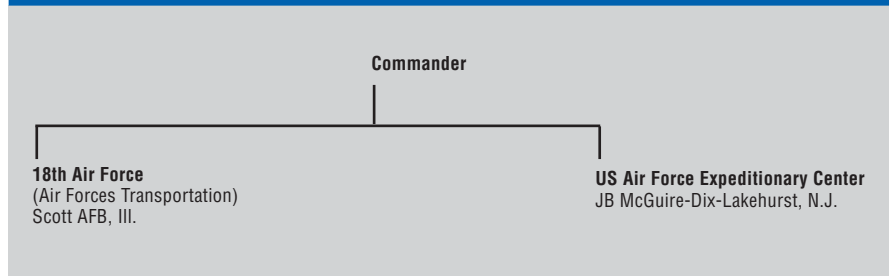
PERSONNEL

Active Duty	42,630
Civilian	8,344
Total	50,974

EQUIPMENT (TAI)

Tanker	168
Transport	288

AMC STRUCTURE



Abbreviations: AOC: Air & Space Operations Center; AA: active associate: ANG/AFRC own aircraft.

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
6th Air Mobility Wing	MacDill AFB, Fla.	C-37, KC-135R
19th Airlift Wing	Little Rock AFB, Ark.	C-130
22nd Air Refueling Wing	McConnell AFB, Kan.	KC-135R
43rd Airlift Group	Pope Field, N.C.	C-130 (active associate)
60th AMW	Travis AFB, Calif.	C-5, C-17, KC-10
62nd AW	JB Lewis-McChord, Wash.	C-17
87th Air Base Wing	JB McGuire-Dix-Lakehurst, N.J.	Joint base facilities support
89th AW	JB Andrews, Md.	C-20, C-32, C-37, C-40, VC-25
92nd ARW	Fairchild AFB, Wash.	KC-135
305th AMW	JB McGuire-Dix-Lakehurst, N.J.	C-17, KC-10
317th AG	Dyess AFB, Texas	C-130
319th ABW	Grand Forks AFB, N.D.	Base support
375th AMW	Scott AFB, Ill.	C-21, C-40 (AA), KC-135R (AA)
436th AW	Dover AFB, Del.	C-5, C-17
437th AW	JB Charleston, S.C.	C-17
515th Air Mobility Operations Wing	JB Pearl Harbor-Hickam, Hawaii	Contingency airfield operations
521st AMOW	Ramstein AB, Germany	Contingency airfield operations
618th AOC (Tanker Airlift Control Center)	Scott AFB, Ill.	Tanker Airlift Control Center operations
621st Contingency Response Wing	JB McGuire-Dix-Lakehurst, N.J.	Rapidly deployable bare base operations
627th Air Base Group	JB Lewis-McChord, Wash.	Base support



A "supermoon" rises over three C-5s and a C-17 on the flight line at Travis AFB, Calif.

USAF photo by Heide Couch

PACAF

Pacific Air Forces

Headquarters JB Pearl Harbor-Hickam, Hawaii

Established July 1, 1957

Commander Gen. Lori J. Robinson



PRIMARY MISSION

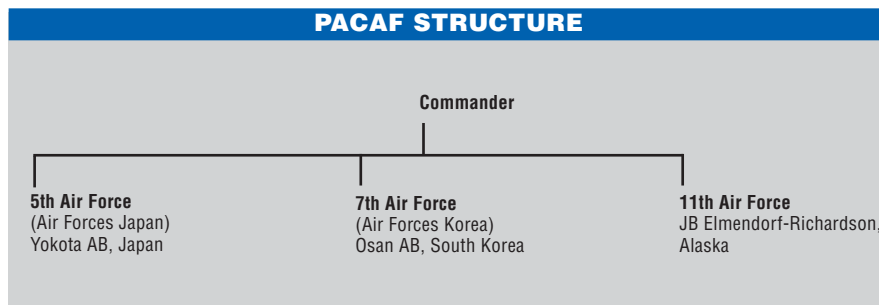
Provide US Pacific Command integrated expeditionary Air Force capabilities, including strike, air mobility, and rescue forces.

PERSONNEL

Active Duty	28,779
Civilian	7,652
Total	36,431

EQUIPMENT (TAI)

Fighter/Attack	262
ISR/BM/C3	4
Tanker	16
Transport	39
Helicopter	9



MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
1st Air Support Operations Group	JB Lewis-McChord, Wash.	Battlefield airmen operations/support
3rd Wing	JB Elmendorf-Richardson, Alaska	C-12, C-17, E-3, F-22
8th Fighter Wing	Kunsan AB, South Korea	F-16
15th Wing	JB Pearl Harbor-Hickam, Hawaii	C-17, C-37, C-40, F-22 (active associate), KC-135 (AA)
18th Wing	Kadena AB, Japan	E-3, F-15, HH-60G, KC-135R
35th FW	Misawa AB, Japan	F-16
36th Wing	Andersen AFB, Guam	Operational platform for rotating combat forces
51st FW	Osan AB, South Korea	A-10C, F-16
354th FW	Eielson AFB, Alaska	F-16
374th Airlift Wing	Yokota AB, Japan	C-12, C-130, UH-1N
607th Air & Space Operations Center	Osan AB, South Korea	Plan/direct air operations
607th ASOG	Osan AB, South Korea	Battlefield airmen operations and support
611th AOC	JB Elmendorf-Richardson, Alaska	Plan/direct air operations
611th Air Support Group	JB Elmendorf-Richardson, Alaska	Remote facility operations, communications, engineering
613th AOC	JB Pearl Harbor-Hickam, Hawaii	Plan/direct air operations
673rd Air Base Wing	JB Elmendorf-Richardson, Alaska	Joint base facilities support

An F-16 from the 36th Fighter Squadron at Osan Air Base flies over South Korea.



Photo courtesy of John M. Dibbs

USAFE-AFAFRICA

US Air Forces in Europe-Air Forces Africa

Headquarters Ramstein AB, Germany

Established Aug. 7, 1945

Commander Gen. Frank Gorenc



PRIMARY MISSION

Serves as the air component for US European Command and US Africa Command, directing air operations, including warfighting and humanitarian/peacekeeping actions, and maintains combat-ready forces for NATO responsibilities.

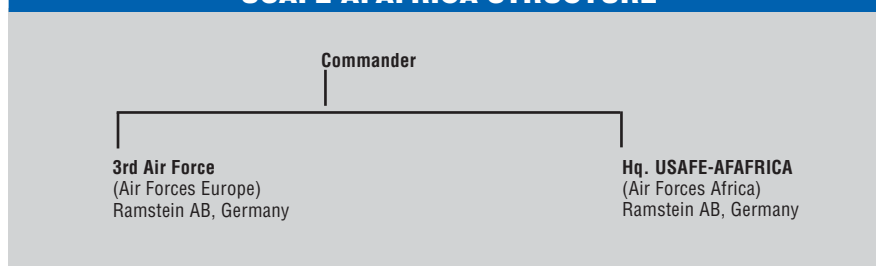
PERSONNEL

Active Duty	23,043
Civilian	5,782
Total	28,825

EQUIPMENT (TAI)

Fighter/Attack	158
Tanker	16
Transport	29
Helicopter	5

USAFE-AFAFRICA STRUCTURE



MAJOR UNITS

LOCATION

AIRCRAFT/MISSION/WEAPON

31st Fighter Wing	Aviano AB, Italy	F-16
39th Air Base Wing	Incirlik AB, Turkey	Operational location for deployed US and NATO forces
48th FW	RAF Lakenheath, UK	F-15, F-15E, HH-60G
52nd FW	Spangdahlem AB, Germany	F-16CJ
65th ABW	Lajes Field, the Azores	Operational location for en route forces
86th Airlift Wing	Ramstein AB, Germany	C-21, C-37, C-40, C-130J
100th Air Refueling Wing	RAF Mildenhall, UK	KC-135R
435th Air Ground Operations Wing	Ramstein AB, Germany	Battlefield airmen support/operations
501st Combat Support Wing	RAF Alconbury, UK	Facilities support for seven geographically separated units
603rd Air & Space Operations Center	Ramstein AB, Germany	Plan/direct air operations

An A-10C from the 355th Fighter Wing flies with two F-15C Eagles from the 493rd Fighter Squadron, RAF Lakenheath, UK, on March 13, 2015.



Photo by Jim Haseltine



Air National Guard

Headquarters Washington, D.C.

Established Sept. 18, 1947

Director Lt. Gen. Stanley E. Clarke III



PRIMARY MISSION

Provide combat capability to the Active Duty force and security for the homeland; support US domestic and foreign humanitarian and disaster relief.

PERSONNEL

Total (selected reserve) 106,380
Active Duty 208
Civilian (includes technicians) 24,154
Total 130,742

EQUIPMENT (TAI)

Fighter/Attack 595
SOF 4
ISR/BM/C3 88
Tanker 185
Transport 212
Helicopter 17

Abbreviations: AATTC: Advanced Airlift Tactics Training Center; AOC/G/S: air & space operations center/group/squadron; CA: classic associate; CACS: command and control squadron (space); CIRF: centralized intermediate repair facility; CRG: contingency response group; CRTCC: Combat Readiness Training Center; CSDC: Consolidated Storage and Deployment Center (medical); DTCO: Distributed Training Operations Center; EOD: explosive ordnance disposal; FTU: formal training unit; GA: Guardian Angel (pararescuemen, combat rescue officers, SERE specialists); ISR: intelligence, surveillance, & reconnaissance; MAFFS: Modular Airborne Firefighting System; MGS: mobile ground station (space); NOSS: network operations security squadron; RA: reserve associate; RAOC: regional air operations center; RCC: rescue coordination center; TACP: Tactical Air Control Party.

Wing/State	System/Mission	Wing/State	System/Mission
101st Air Refueling Wing (ME)	KC-135R, combat comm, cyber	149th FW (TX)	F-16, cyber, intel training
102nd Intelligence Wing (MA)	AOG, combat comm, DCGS	150th Special Ops Wing (NM)	RC-26, special ops training (CA)
103rd Airlift Wing (CT)	C-130H	151st ARW (UT)	KC-135R, cyber, intel
104th Fighter Wing (MA)	F-15C	152nd AW (NV)	C-130H, DCGS
105th AW (NY)	C-17, cyber	153rd AW (WY)	C-130H, MAFFS
106th Rescue Wing (NY)	HC-130, HH-60G, GA	154th Wing (HI)	C-17 (CA), F-22, KC-135R
107th AW (NY)	C-130 (RA), MQ-9 (planned 2017)	155th ARW (NE)	KC-135R
108th Wing (NJ)	KC-135R, C-40, CRG	156th AW (PR)	C-130E
109th AW (NY)	C-130H, LC-130	157th ARW (NH)	KC-135R
110th Attack Wing (MI)	MQ-9, AOG, cyber	158th FW (VT)	F-16 (F-35 planned), cyber training
111th Attack Wing (PA)	MQ-9, AOG, CSDC, cyber	159th FW (LA)	F-15C, combat comm, cyber, TACP
113th Wing (DC)	C-38, C-40, F-16	161st ARW (AZ)	KC-135R
114th FW (SD)	F-16	162nd Wing (AZ)	F-16, MQ-1, RC-26
115th FW (WI)	F-16	163rd RW (CA)	MQ-1, FTU
116th Air Control Wing (GA)	E-8C	164th AW (TN)	C-5A, C-17A
117th ARW (AL)	KC-135R, intel	165th AW (GA)	C-130H, CRTCC, TACP, tactical comm
118th Wing (TN)	MQ-9, cyber	166th AW (DE)	C-130H, aeromed, cyber
119th Wing (ND)	MQ-1, ISR	167th AW (WV)	C-5, C-17A, aeromed
120th FW (MT)	C-130H	168th ARW (AK)	KC-135R
121st ARW (OH)	KC-135R	169th FW (SC)	F-16
122nd FW (IN)	A-10C	171st ARW (PA)	KC-135R/T
123rd AW (KY)	C-130H, CRG, special tactics	172nd AW (MS)	C-17, aeromed
124th FW (ID)	A-10C, CACS, TACP	173rd FW (OR)	F-15C/D
125th FW (FL)	F-15C, RC-26	174th Attack Wing (NY)	MQ-9, AOC, CACS, TACP, FTU
126th ARW (IL)	KC-135R	175th Wing (MD)	A-10C, cyber
127th Wing (MI)	A-10C, KC-135R, special ops weather	176th Wing (AK)	C-17 (CA), C-130H, HC-130, HH-60G, GA, RAOC, RCC
128th ARW (WI)	KC-135R		F-16, TACP
129th RQW (CA)	MC-130H, HH-60G, GA	177th FW (NJ)	cyber, ISR, space
130th AW (WV)	C-130H	178th Wing (OH)	C-130H
131st Bomb Wing (MO)	B-2 (CA), AOG, combat comm	179th AW (OH)	F-16C
132nd Wing (IA)	MQ-9, DTCO	180th FW (OH)	DCGS, TACP
133rd AW (MN)	C-130H	181st IW (IN)	C-130H, combat comm, TACP
134th ARW (TN)	KC-135R	182nd AW (IL)	AOG, CIRF, cyber
136th AW (TX)	C-130H, combat comm	183rd FW (IL)	CACS, cyber, DCGS, NOSS, TACP
137th ARW (OK)	KC-135R (RA), cyber, TACP	184th IW (KS)	KC-135R
138th FW (OK)	F-16, cyber, TACP training	185th ARW (IA)	KC-135R, RC-26, AOG, TACP
139th AW (MO)	C-130H, AATTC (ANG/AFRC)	186th ARW (MS)	F-16, RC-26
140th Wing (CO)	C-21, F-16, MGS	187th FW (AL)	MQ-9
141st ARW (WA)	KC-135R, combat comm	188th FW (AR)	C-130H
142nd FW (OR)	F-15C, combat weather, special tactics	189th AW (AR)	KC-135R, combat weather
143rd AW (RI)	C-130J, combat comm, cyber	190th ARW (KS)	F-22 (CA), ISR
144th FW (CA)	F-15C	192nd FW (VA)	EC-130J, AOS, combat comm, cyber, TACP
145th AW (NC)	C-130H, aeromed, combat comm, MAFFS, TACP	193rd SOW (PA)	
146th AW (CA)	C-130J, MAFFS		
147th Reconnaissance Wing (TX)	MQ-1, RC-26, TACP	194th Regional Support Wing (WA)	combat comm, combat weather, cyber, ISR, TACP
148th FW (MN)	F-16CM, EOD		

FOAs, DRUs, and Auxiliary

■ 2015 USAF Almanac

Air Force Agency for Modeling and Simulation

Hq.: Orlando, Fla.

Estab.: June 3, 1996

Type: FOA

Mission: Oversee air, space, and cyberspace modeling and simulation requirements and joint interoperability.

Total Personnel: 20

Air Force Audit Agency

Hq.: Pentagon

Estab.: July 1, 1948

Type: FOA

Mission: Provide independent and quality internal audit service.

Total Personnel: 572

Air Force Civil Engineer Center

Hq.: JBSA-Lackland, Texas

Estab.: Oct. 1, 2012

Type: FOA

Mission: Deliver integrated engineering and environmental management and technical services.

Total Personnel: 1,154

Activated with the merger of the Air Force Center for Engineering and the Environment, Air Force Real Property Agency, and Air Force Civil Engineer Support Agency. Attached to AFMC's Air Force Installation and Mission Support Center (Provisional) on Oct. 1, 2014.

Air Force Cost Analysis Agency

Hq.: Arlington, Va.

Estab.: Aug. 1, 1992

Type: FOA

Mission: Perform independent cost and risk analyses and provide special studies to aid long-range planning.

Total Personnel: 110

Air Force District of Washington

Hq.: JB Andrews, Md.

Estab.: July 15, 1994

Type: DRU

Mission: Orchestrate support for National Capital Region activities; train, equip, and provide forces for contingency, homeland, and ceremonial support operations.

Total Personnel: 4,475

Air Force Financial Services Center

Hq.: Ellsworth AFB, S.D.

Estab.: Sept. 14, 2007

Type: FOA

Mission: Process travel transactions for Active Duty, Guard, and Reserve military personnel and Air Force civilians.

Total Personnel: 98

Attached to AFMC's Air Force Installation and Mission Support Center (Provisional) on Oct. 1, 2014.

Air Force Flight Standards Agency

Hq.: Oklahoma City

Estab.: Oct. 1, 1991

Type: FOA

Mission: Develop, standardize, evaluate, and certify policy, procedures, and equipment for flight operations and centrally manage air traffic control and landing systems.

Total Personnel: 144

Air Force Historical Research Agency

Hq.: Maxwell AFB, Ala.

Estab.: May 25, 1979

Type: FOA

Mission: Research, record, and disseminate history; collect, preserve, and manage historical document collection and oral history program; determine unit lineage and honors; verify aerial victory credits.

Total Personnel: 44

Air Force Inspection Agency

Hq.: Kirtland AFB, N.M.

Estab.: Aug. 1, 1991

Type: FOA

Mission: Provide independent assessments of operations and activities; conduct nuclear surety inspection oversight, training, and certification; serve as primary action arm of SECAF inspection system.

Total Personnel: 104



CMSgt. Trevor Shattuck, a reserve career field manager with the Air Force Civil Engineer Center, gives a presentation.

USAF photo by SrA Daniel Phelps

Air Force Installation Contracting Agency

Hq.: Wright-Patterson AFB, Ohio

Estab.: Oct. 1, 2013

Type: FOA

Mission: Provide contracting solutions for mission and installation operations.

Total Personnel: 689

Attached to AFMC's Air Force Installation and Mission Support Center (Provisional) on Oct. 1, 2014.

Air Force Intelligence Analysis Agency

Hq.: JB Anacostia-Bolling, D.C.

Estab.: Feb. 2, 2001

Type: FOA

Mission: Provide intelligence, special security services, and imagery products; analyze foreign air and air defense tactics and training; manage USAF national imagery collection and interagency civil air analysis; direct global tactics analysis reporting program for theater air components.

Total Personnel: 122

Inactivated on Oct. 14, 2014.

Air Force Legal Operations Agency

Hq.: JB Andrews, Md.

Estab.: Sept. 1, 1991

Type: FOA

Mission: Administer military justice programs; provide legal research technology and train legal professionals; support the Department of Justice in civil or criminal litigation pertaining to the Air Force.

Total Personnel: 777

Air Force Medical Operations Agency

Hq.: JBSA-Lackland, Texas

Estab.: July 1, 1992

Type: FOA

Mission: Oversee execution of surgeon general policies; provide leadership for medical personnel and medical treatment facilities; promote a cost-effective, modern, and prevention-based health care continuum.

Total Personnel: 352

Air Force Medical Support Agency

Hq.: JBSA-Lackland, Texas

Estab.: July 1, 1992

Type: FOA

Mission: Develop surgeon general plans and programs; provide medical expeditionary capabilities; define and execute health care policy.

Total Personnel: 317

Air Force Mortuary Affairs Operations

Hq.: Dover AFB, Del.

Estab.: Jan. 6, 2009

Type: FOA

Mission: Ensure respectful handling of fallen; provide care, service, and support to family of the fallen; transfer remains.

Total Personnel: 31



USAF photo by SSgt. Andrew Lee

Special Agent David Ohlinger (I) and SSgt. Timothy Hessel, from the Office of Special Investigations, at a shooting range.

Air Force Office of Special Investigations

Hq.: Quantico, Va.

Estab.: Aug. 1, 1948

Type: FOA

Mission: Provide investigative service to USAF commanders; identify, exploit, and neutralize criminal, terrorist, and intelligence threats; combat threats to information systems and technologies; defeat fraud affecting acquisitions and base-level capabilities.

Total Personnel: 2,331

Air Force Operational Test and Evaluation Center

Hq.: Kirtland AFB, N.M.

Estab.: Jan. 1, 1974

Type: DRU

Mission: Test and evaluate new weapon systems.

Total Personnel: 558

Air Force Operations Group

Hq.: Pentagon

Estab.: July 26, 1977

Type: FOA

Mission: Provide 24-hour watch on current operations; train and staff Crisis Action Team; develop weather data for National Command Authority, JCS, National Military Command Center, Army Operations Center, and other federal agencies.

Total Personnel: 43

Air Force Personnel Center

Hq.: JBSA-Randolph, Texas

Estab.: Oct. 1, 1995

Type: FOA

Mission: Identify proper grades, specialties, and skill levels for USAF mission; manage assignments; monitor professional development; plan and schedule expeditionary forces; oversee airmen and family readiness centers; assist casualty reporting and missing in action/prisoner of war actions.

Total Personnel: 2,446

Formerly the Air Force Military Personnel Center and the Air Force Civilian Personnel Management Center. The Air Force Manpower Agency and Air Force Services formally merged with AFPC on June 1, 2012.

DRU: Direct Reporting Unit
FOA: Field Operating Agency
JBSA: Joint Base San Antonio



A Civil Air Patrol Cessna 182T.

Air Force Personnel Operations Agency

Hq.: JBSA-Randolph, Texas

Estab.: Aug. 15, 1993

Type: FOA

Mission: Analyze personnel life cycle; provide information technology applications; develop and operate officer, enlisted, and civilian models.

Total Personnel: 245

Air Force Petroleum Agency

Hq.: Fort Belvoir, Va.

Estab.: Dec. 18, 2006

Type: FOA

Mission: Provide fuel-related technical, operational, and analytical support, planning, new technology development, and standards management.

Total Personnel: 93

Air Force Public Affairs Agency

Hq.: JBSA-Lackland, Texas

Estab.: Oct. 1, 2008

Type: FOA

Mission: Develop and sustain public affairs products; provide combat camera and graphics support; test emerging technologies; manage PA personnel deployments.

Total Personnel: 283

Air Force Review Boards Agency

Hq.: JB Andrews, Md.

Estab.: June 1, 1980

Type: FOA

Mission: Manage military and civilian appellate processes; serve as lead agent for DOD Physical Disability Board of Review.

Total Personnel: 98

Air Force Safety Center

Hq.: Kirtland AFB, N.M.

Estab.: Aug. 1, 1991

Type: FOA

Mission: Manage mishap prevention, risk management, and nuclear surety programs; provide flight, ground, weapons, human factors, and space safety technical assistance; oversee major command mishap investigations and evaluate corrective actions for applicability and implementation USAF-wide; direct safety education programs.

Total Personnel: 100

Air Force Security Forces Center

Hq.: JBSA-Lackland, Texas

Estab.: March 17, 1997

Type: FOA

Mission: Organize, train, and equip security forces; develop force protection doctrine, programs, and policies; identify and deliver emerging force protection and force application solutions; manage corrections program and DOD military working dog activities.

Total Personnel: 354

Attached to AFMC's Air Force Installation and Mission Support Center (Provisional) on Oct. 1, 2014.

Air Force Weather Agency

Hq.: Offutt, Neb.

Estab.: Oct. 15, 1997

Type: FOA

Mission: Provide air and space weather information to DOD, coalition, and national users; standardize training and equipment for USAF weather forces.

Total Personnel: 1,481

Became the 557th Weather Wing on March 27, 2015.

ANG Readiness Center

Hq.: JB Andrews, Md.

Estab.: August 1997

Type: FOA

Mission: Ensure field units have resources to train and equip forces for state and federal missions; sustain airmen and help shape leadership capability.

Total Personnel: 732

Civil Air Patrol

Hq.: Maxwell AFB, Ala.

Estab.: Dec. 1, 1941

Type: Auxiliary

Mission: Provide operational capabilities to support aerial and ground search and rescue, disaster relief, a nationwide communications network, and counterdrug and homeland security missions; conduct leadership training, technical education, scholarships, and career education for CAP Cadet Program; promote aerospace education.

Total Volunteers: 57,893

US Air Force Academy

Hq.: Colorado Springs, Colo.

Estab.: April 1, 1954

Type: DRU

Mission: Develop and inspire young men and women to become USAF officers with knowledge, character, and discipline.

Total Personnel: 3,225

Guide to Air Force Installations Worldwide

■ 2015 USAF Almanac

Active Duty Installations

This section includes Air Force-owned and -operated facilities around the world. (It also lists the former USAF bases now under other service leadership as joint bases.) The section does not list all units or agencies at each base. Many USAF installations also host numerous tenants, including other USAF major command units and civil, DOD, federal, and other service entities.

Altus AFB, Okla. 73523. **Nearest city:** Altus. **Phone:** 580-482-8100. **Owning command:** AETC. **Unit/mission:** 97th AMW (AETC), training. **History:** activated January 1943. Inactivated May 1945. Reactivated August 1953.

Andersen AFB, Guam, APO AP 96543. **Nearest city:** Yigo. **Phone:** 671-366-1110. **Owning command:** PACAF. **Units/missions:** 9th Operations Group Det. 3 (ACC), RPA operations; 22nd SOPS Det. 5 (AFSPC), space operations; 36th Wing (PACAF), support; 36th CRG (PACAF), bare base operations; 44th APS (AFRC), aerial port operations; 254th ABG (ANG), support, bare base operations (254th RED HORSE); 724th ASTF (AFRC); 734th AMS (AMC), air transportation services. **History:** activated 1945 as North Field. Renamed 1949 for Brig. Gen. James R. Andersen, lost at sea Feb. 26, 1945. Became part of Joint Region Marianas 2009.

Arnold AFB, Tenn. 37389. **Nearest city:** Manchester. **Phone:** 931-454-3000. **Owning command:** AFTC/AFMC. **Unit/mission:** Arnold Engineering Development Complex (AETC/AFMC), flight, space, and missile ground testing. **History:** dedicated June 25, 1951. Named for Gen. of the Air Force Henry H. "Hap" Arnold.

Aviano AB, Italy, APO AE 09604. **Nearest city:** Aviano. **Phone:** 011-39-0434-30-1110. **Owning command:** USAFE-AFAFRICA. **Units/missions:** 31st FW (USAFE-AFAFRICA), fighter operations; 724th AMS (AMC), air transportation services. **History:** dates from 1911 as Italian air base. USAF began operations 1954.

Barksdale AFB, La. 71110. **Nearest city:** Bossier City. **Phone:** 318-456-1110. **Owning command:** AFGSC. **Units/missions:** 2nd BW (AFGSC), bomber operations; 307th BW (AFRC), bomber operations, training; Hq. AFGSC, management;

Hq. 8th Air Force (AFGSC), operational leadership; Global Power Museum (AFGSC). **History:** activated Feb. 2, 1933. Named for Lt. Eugene H. Barksdale, WWI airman killed in August 1926 crash.

Beale AFB, Calif. 95903. **Nearest city:** Marysville. **Phone:** 530-634-3000. **Owning command:** ACC. **Units/missions:** 7th SWS (AFSPC), missile warning; 9th RW (ACC), ISR, RPA operations; 548th ISRG (ACC), DCGS; 940th Wing (AFRC), C2, ISR, RPA operations. **History:** opened October 1942 as Army's Camp Beale. Named for Edward F. Beale, a former Navy officer who became a hero of the Mexican-American War and early developer of California, as well as a senior appointee/diplomat for four Presidents. Transferred to USAF 1948. Designated AFB April 1951.

Buckley AFB, Colo. 80011. **Nearest city:** Denver. **Phone:** 720-847-9011. **Owning command:** AFSPC. **Units/missions:** 140th Wing (ANG), air mobility, fighter operations, mobile missile warning; 460th SW (AFSPC), space surveillance, missile warning; 566th IS (ACC), intelligence; Air Reserve Personnel Center, Guard and Reserve personnel support. **History:** activated April 1, 1942, as gunnery training facility. ANG assumed control from Navy 1959. Became Active Duty Air Force facility Oct. 1, 2000. Named for 1st Lt. John H. Buckley, WWI flier, killed Sept. 17, 1918.

Cannon AFB, N.M. 88103. **Nearest city:** Clovis. **Phone:** 575-784-4131. **Owning command:** AFSOC. **Unit/mission:** 27th SOW (AFSOC), special 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.

Cape Canaveral AFS, Fla. 32925. **Nearest city:** Cocoa Beach. **Phone:** 321-853-1110. **Owning command:** AFSPC. **Unit/mission:** 5th SLS (AFSPC), space launch operations. **History:** formerly NAS Banana River. Site of Joint Long Range Proving Ground 1949. USAF took sole control 1950. Combined with NASA to form John F. Kennedy Space Center 1973. Designated Cape Canaveral AS 1974.

Cape Cod AFS, Mass. 02561. **Nearest city:** Sandwich. **Phone:** 508-968-3283. **Owning command:** AFSPC. **Unit/mission:** 6th SWS (AFSPC), missile warning. **History:** established April 4, 1980, as Cape Cod Missile Early Warning Station. Renamed Jan. 5, 1982.

Cavalier AFS, N.D. 58220. **Nearest city:** Cavalier. **Phone:** n/a. **Owning command:** AFSPC. **Unit/mission:** 10th SWS (AFSPC), missile warning. **History:** established 1975 as Army's Mickelsen Complex, an anti-ballistic missile facility. All but perimeter acquisition radar inactivated 1976. USAF took radar operational control 1977 and site control 2007.

Cheyenne Mountain AFS, Colo. 80914. **Nearest city:** Colorado Springs. **Phone:** 719-474-1110. **Owning command:** AFSPC. **Units/missions:** 721st MSG (AFSPC), support; NORAD/NORTHCOM Alternate Command Center, Integrated Tactical Warning and Attack Assessment operations, training. **History:** operational April 20, 1966.

Clear AFS, Alaska, APO AP 99704. **Nearest city:** Fairbanks. **Phone:** n/a. **Owning command:** AFSPC. **Units/missions:** 13th SWS (AFSPC), 213th SWS (ANG), missile warning. **History:** dates from 1961.

Columbus AFB, Miss. 39710. **Nearest city:** Columbus. **Phone:** 662-434-1110. **Owning command:** AETC. **Unit/mission:** 14th FTW (AETC), training. **History:** activated 1942 for pilot training.

Creech AFB, Nev. 89191. **Nearest city:** Indian Springs. **Phone:** 702-652-1110. **Owning command:** ACC. **Units/missions:** 78th ATKS, 91st ATKS (AFRC), 232nd Operations Sq. (ANG), 432nd Wing (ACC), RPA operations; 799th ABG (ACC), support. **History:** activated 1942 as Army camp, air-to-air gunnery training. Closed 1947. Reopened 1948 and in 1951 became a USAF auxiliary field. In 1980s, officially named Indian Springs Air Force Auxiliary Field. In 2005, renamed Creech AFB for Gen. Wilbur L. "Bill" Creech, commander, Tactical Air Command, 1978 to 1984.

Davis-Monthan AFB, Ariz. 85707. **Nearest city:** Tucson. **Phone:** 520-228-3900. **Owning**

command: ACC. **Units/missions:** 55th ECG (ACC), electronic combat operations; 214th RG (ANG), RPA operations; 309th Aerospace Maintenance & Regeneration Group (AFMC), aerospace vehicle storage, regeneration; 355th FW (ACC), fighter operations; 563rd RQG (ACC); 924th FG (AFRC), fighter operations; 943rd RQG (AFRC), personnel recovery operations; Hq. 12th Air Force (ACC), operational leadership. **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.

Dover AFB, Del. 19902. **Nearest city:** Dover. **Phone:** 302-677-3000. **Owning command:** AMC. **Units/missions:** 436th AW (AMC), 512th AW (AFRC), air mobility operations; Air Force Mortuary Affairs Operations (USAF). **History:** activated December 1941. Inactivated 1946. Reactivated February 1951.

Dyess AFB, Texas 79607. **Nearest city:** Abilene. **Phone:** 325-696-1110. **Owning command:** ACC. **Units/missions:** 7th BW (ACC), bomber operations; 317th AG (AMC), air mobility operations. **History:** activated April 1942. Inactivated January 1946. Reopened April 1956. Renamed December 1956 for Lt. Col. William E. Dyess, WWII pilot who escaped from a Japanese prison camp, killed in P-38 crash in December 1943.

Edwards AFB, Calif. 93524. **Nearest city:** Rosamond. **Phone:** 661-227-1110. **Owning command:** AFMC. **Units/missions:** 412th TW (AFMC), T&E, base support; Hq. Air Force Test Center (AFMC), T&E management; US Air Force Test Pilot School (AFMC), training. **History:** Muroc Bombing and Gunnery Range established September 1933. Designated Muroc AAB 1942. Renamed in 1949 for Capt. Glen W. Edwards, killed June 5, 1948, in crash of YB-49 "Flying Wing."

Eglin AFB, Fla. 32542. **Nearest city:** Niceville-Valparaiso. **Phone:** 850-882-1110. **Owning command:** AFMC. **Units/missions:** 20th SPCS (AFSPC), space surveillance; 33rd FW (AETC), training; 53rd Wing (ACC), T&E; 96th TW (AFMC), T&E, base support; Air Force Armament Museum (AFMC); Munitions Directorate (AFMC), R&D;

PEO-Armament (AFMC), acquisition. **History:** activated 1935. Named for Lt. Col. Frederick I. Eglin, WWI flier killed in aircraft accident Jan. 1, 1937.

Eielson AFB, Alaska 99702. **Nearest city:** Fairbanks. **Phone:** 907-377-1110. **Owning command:** PACAF. **Units/missions:** 168th ARW (ANG), air mobility operations; 354th FW (PAC-AF), aggressor force, fighter, Red Flag-Alaska operations, Joint Pacific Alaska Range Complex support; Arctic Survival School (AETC), training. **History:** activated October 1944. Named for Carl Ben Eielson, Arctic aviation pioneer who died in Arctic rescue mission November 1929.

Ellsworth AFB, S.D. 57706. **Nearest city:** Rapid City. **Phone:** 605-385-5056. **Owning command:** ACC. **Units/missions:** 28th BW (ACC), bomber operations; Air Force Financial Services Center (USAF). **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.

Fairchild AFB, Wash. 99011. **Nearest city:** Spokane. **Phone:** 509-247-1212. **Owning command:** AMC. **Units/missions:** 92nd ARW (AMC), 141st ARW (ANG), air mobility operations; USAF SERE School (AETC), training. **History:** activated January 1942. Named for Gen. Muir S. Fairchild, USAF vice chief of staff at his death in 1950.

F. E. Warren AFB, Wyo. 82005. **Nearest city:** Cheyenne. **Phone:** 307-773-1110. **Owning command:** AFGSC. **Units/missions:** 90th MW (AFGSC), ICBM operations; 153rd CACS (ANG), space C2 operations; Hq. 20th Air Force (AFGSC), operational leadership; Warren ICBM and Heritage Museum. **History:** activated as Fort D. A. Russell July 4, 1867. Renamed 1930 for Francis Emory Warren, Wyoming Senator and first state governor. Reassigned to USAF 1949.

Goodfellow AFB, Texas 76908. **Nearest city:** San Angelo. **Phone:** 325-654-1110. **Owning command:** AETC. **Unit/mission:** 17th TRW (AETC), training. **History:** established August 1940. Officially activated January 1941. Named for 1st Lt. John J. Goodfellow Jr., WWI observation airplane pilot killed in combat Sept. 14, 1918.

Acronyms & Abbreviations

AAB	Army Air Base
AAF	Army Airfield
AB	Air Base
ABG	Air Base Group
ABW	Air Base Wing
ACC	Air Combat Command
ACG	Air Control Group
ACS	Air Control Squadron
ACTS	Air Combat Training Squadron
ACW	Air Control Wing
AETC	Air Education & Training Command
AFB	Air Force Base
AFDW	Air Force District of Washington
AFGSC	Air Force Global Strike Command
AFISRA	Air Force ISR Agency
AFMC	Air Force Materiel Command
AFNWC	Air Force Nuclear Weapons Center
AFOSI	Air Force Office of Special Investigations
AFRC	Air Force Reserve Command
AFRICOM	US Africa Command
AFRL	Air Force Research Laboratory
AFS	Air Force Station
AFSOC	Air Force Special Operations Command
AFSPC	Air Force Space Command
AFTC	Air Force Test Center
AFWA	Air Force Weather Agency
AG	Airlift Group
AGOW	Air Ground Operations Wing
AGS	Air Guard Station
ALC	Air Logistics Complex
AMC	Air Mobility Command
AMOG	Air Mobility Operations Group
AMOW	Air Mobility Operations Wing
AMS	Air Mobility Squadron
AMW	Air Mobility Wing
ANG	Air National Guard
ANGB	Air National Guard Base
ANGS	Air National Guard Station
AOC	Air & Space Operations Center
AOG	Air & Space Operations Group
APS	Aerial Port Squadron
ARB	Air Reserve Base
ARG	Air Refueling Group
Arpt.	Airport
ARS	Air Refueling Squadron or Air Reserve Station
ARW	Air Refueling Wing
AS	Air Station or Airlift Squadron
ASOG	Air Support Operations Group
ASOS	Air Support Operations Squadron
ASTF	Aeromedical Staging Flight
ATKS	Attack Squadron
ATKW	Attack Wing
AW	Airlift Wing
BW	Bomb Wing
C2	command & control
C3I	command, control, communications, & intelligence
C4	command, control, communications, & computers
CACS	Command & Control Squadron
CBCS	Combat Communications Squadron
CCG	Combat Communications Group
CCW	Command & Control Wing
CENTCOM	US Central Command
CG	Communications Group
CIRF	Centralized Intermediate Repair Facility
CRG	Contingency Response Group
CRW	Contingency Response Wing
CSAR	combat search & rescue
CTS	Combat Training Squadron
CW	Cyberspace Wing
DCGS	Distributed Common Ground Station
DMOC	Distributed Mission Operations Center
DTOC	Distributed Training Operations Center
ECG	Electronic Combat Group
EIS	Engineering Installation Squadron
EOD	explosive ordnance disposal
FG	Fighter Group

USAF photo by SrA. Zachary Hada



A B-52H lands near a B-1B at Ellsworth AFB, S.D., during a runway reconstruction project in 2014.

[illegible]

Grand Forks AFB, N.D. 58205. **Nearest city:** Grand Forks. **Phone:** 701-747-1110. **Owning command:** AMC. **Units/missions:** 69th RG (ACC), RPA operations; 319th ABW (AMC), support. **History:** activated 1956. Named after town of Grand Forks, whose citizens bought the property for the Air Force.

Hanscom AFB, Mass. 01731. **Nearest city:** Boston. **Phone:** 781-225-1110. **Owning command:** AFMC. **Units/missions:** 66th ABG (AFMC), support; PEO-Battle Management (AFMC), PEO-C3I & Networks (AFMC), acquisition. **History:** activated 1941. Named for Laurence G. Hanscom, a pre-WWII advocate of private aviation, killed in lightplane accident 1941.

Hill AFB, Utah 84056. **Nearest city:** Salt Lake City. **Phone:** 801-777-1110. **Owning command:** AFMC. **Units/missions:** 75th ABW (AFMC), support; 388th FW (ACC), fighter, Utah Test & Training Range operations; 419th FW (AFRC), fighter operations; 748th SCMG (AFMC), systems life cycle support; AFNWC ICBM Systems Directorate (AFMC), ICBM acquisition, support; Hill Aerospace Museum (AFMC); Ogden ALC (AFMC), weapons maintenance, repair. **History:** activated 1940. Named for Maj. Ployer P. Hill, killed Oct. 30, 1935, test flying first B-17.

Holloman AFB, N.M. 88330. **Nearest city:** Alamogordo. **Phone:** 575-572-1110. **Owning command:** ACC. **Units/missions:** 49th Wing (ACC), RPA training; 54th FG (AETC), fighter operations; 96th TG (AFMC), test; 429th ACTS (AFRC), RPA training. **History:** activated 1941. Named for Col. George Holloman, guided-missile pioneer.

Hurlburt Field, Fla. 32544. **Nearest city:** Fort Walton Beach. **Phone:** 850-884-7190. **Owning command:** AFSOC. **Units/missions:** 1st SOW (AFSOC), special operations; 24th SOW (AFSOC), special tactics operations; 39th IOS (AFSPC), training; 361st ISRG (ACC), ISR operations; 505th CCW (ACC), C2, ISR TTP development, test; 556th RED HORSE (AFRC), 823rd RED HORSE (ACC), bare base operations; Air Force Combat Weather Center (AFWA), T&E, training; Air Force Special Operations Air Warfare Center (AFSOC), training; Hq. AFSOC, management. **History:** activated 1943. Named for Lt. Donald W. Hurlburt, WWII pilot killed Oct. 1, 1943.

Incirlik AB, Turkey, APO AE 09824. **Nearest city:** Adana. **Phone:** (cmcl. from CONUS) 011-90-322-316-1110. **Owning command:** USAFE-AFAFRICA. **Units/missions:** 39th ABW (USAFE-AFAFRICA), support; 728th AMS (AMC), air transportation services. **History:** activated 1954. Named Adana AB Feb. 21, 1955. Renamed Incirlik AB Feb. 28, 1958.

JB Anacostia-Bolling, D.C. 20032. **Nearest city:** Washington, D.C. **Phone:** 703-545-6700. **Bolling owning command:** AFDW. **Units/missions:** 11th Operations Group (AFDW), support; 579th MDG (AFDW), clinic operations; Hq. Surgeon General (USAF). **History:** site activated October 1917 with Army air and Navy elements. Formed joint base under Navy lead 2010. Naval Support Facility Anacostia named for adjacent Anacostia River. Bolling named for Col. Raynal C. Bolling, first high-ranking Army Air Service officer killed in WWI.

JB Andrews, Md. 20762. **Nearest city:** Washington, D.C. **Phone:** 301-981-1110. **Owning**

command: AFDW. **Units/missions:** 11th Wing (AFDW), helicopter operations, support; 79th MDW (AFDW); 89th AW (AMC), air mobility operations; 113th Wing (ANG), air mobility, fighter operations; 459th ARW (AFRC), air mobility operations; 844th CG (AFDW), cyber operations; Air Force Review Boards Agency (USAF); ANG Readiness Center (ANG), support. **History:** Andrews activated May 1943. NAF Washington dates from 1919 at Anacostia (above); moved to Andrews 1958. Formed JB Andrews-NAF Washington under Air Force lead 2010. Andrews named for Lt. Gen. Frank M. Andrews, military air pioneer and WWII commander of the European Theater, killed in aircraft accident May 3, 1943, in Iceland.

JB Charleston, S.C. 29404. **Nearest city:** Charleston. **Phone:** 843-963-1110. **Owning command:** AMC. **Units/missions:** 315th AW (AFRC), 437th AW (AMC), air mobility operations; 628th ABW (AMC), support. **History:** activated 1942. Inactivated March 1946. Reactivated August 1953. Formed joint base with Naval Weapons Station Charleston under Air Force lead 2010. Named for city of Charleston.

JB Elmendorf-Richardson, Alaska 99506. **Nearest city:** Anchorage. **Phone:** 907-552-1110. **Owning command:** PACAF. **Units/missions:** 3rd Wing (PACAF), air mobility, C2, fighter operations; 176th Wing (ANG), air mobility, personnel recovery operations; 477th FG (AFRC), fighter operations; 673rd ABW (PACAF), support; Alaskan NORAD Region, operational leadership; Hq. 11th Air Force (PACAF), operational leadership; Hq. Alaskan Command (PACOM), management; Joint Task Force Alaska (NORTHCOM), operational leadership. **History:** activated July 1940. Formed as joint base under Air Force lead 2010. Elmendorf named for Capt. Hugh Elmendorf, killed Jan. 13, 1933, flying an experimental fighter. Richardson named for Army Brig. Gen. Wilds P. Richardson, who served in Alaska territory from 1897 to 1917.

JB Langley-Eustis, Va. 23665. **Nearest city:** Hampton. **Phone:** 757-764-1110. **Langley owning command:** ACC. **Units/missions:** 1st FW (ACC), 192nd FW (ANG), fighter operations; 480th ISRW (ACC), ISR operations; 633rd ABW (ACC), support; Air Force Command & Control Integration Center (ACC), C2 development; Hq. ACC, management. **History:** activated Dec. 30, 1916. Formed as joint base under Air Force lead 2010. Langley is first military base in US purchased and built specifically for military aviation. Langley named for aviation pioneer and scientist Samuel Pierpont Langley, who died 1906. Eustis named for Brevet Brig. Gen. Abraham Eustis, first commanding officer of Fort Monroe, Va.

JB Lewis-McChord, Wash. 98438. **Nearest city:** Tacoma. **Phone:** 253-982-1110. **McChord owning command:** AMC. **Units/missions:** 62nd AW (AMC), 446th AW (AFRC), air mobility operations; 627th ABG (AMC), support; Western Air Defense Sector (NORAD/ANG), warning & control. **History:** Lewis established 1917; McChord activated May 5, 1938. Formed as joint base under Army lead 2010. Lewis named for Capt. Meriwether Lewis of Lewis and Clark Expedition. McChord named for Col. William C. McChord, killed Aug. 18, 1937.

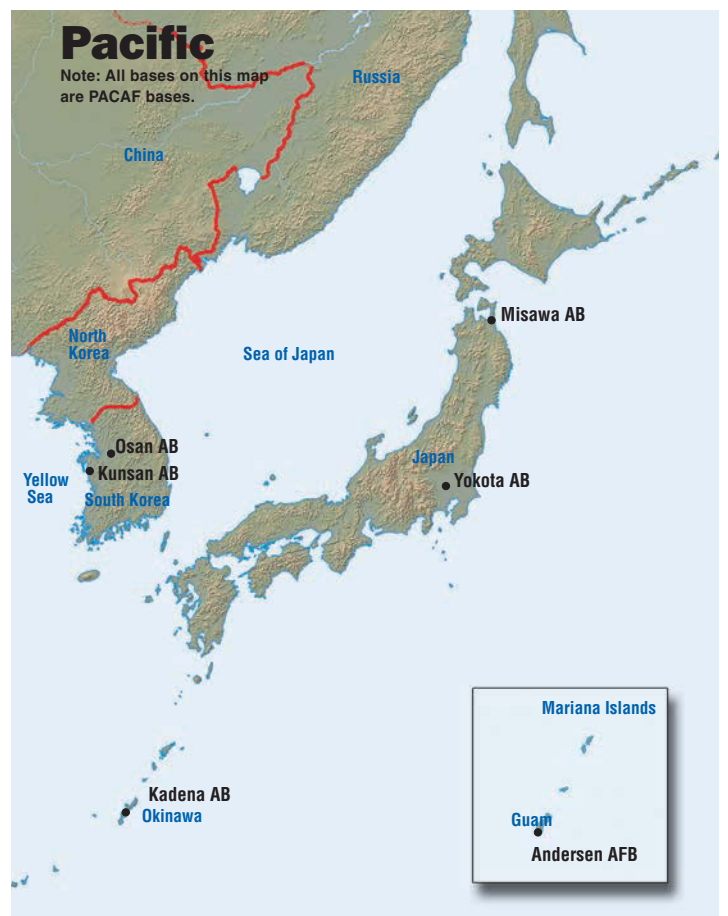
JB McGuire-Dix-Lakehurst, N.J. 08641. **Nearest city:** Wrightstown. **Phone:** 609-754-1100. **Owning command:** AMC. **Units/missions:** 87th ABW (AMC), support; 108th Wing (ANG), air mobility, bare base operations; 305th AMW (AMC), 514th

Acronyms & Abbreviations, Continued

FLTS	Flight Test Squadron
FTG	Flying Training Group
FTU	Formal Training Unit
FTW	Flying Training Wing
FW	Fighter Wing
IOF	Information Operations Flight
IOS	Information Operations Squadron
IOW	Information Operations Wing
IS	Intelligence Squadron
ISR	intelligence, surveillance, & reconnaissance
ISRG	ISR Group
ISRW	ISR Wing
IW	Intelligence Wing
IWS	Information Warfare Squadron
JB	Joint Base
JBSA	Joint Base San Antonio
JNGB	Joint National Guard Base
JRB	Joint Reserve Base
MAFFS	Modular Airborne Firefighting System
MDG	Medical Group
MDW	Medical Wing
MOH	Medal of Honor
MSG	Mission Support Group
MW	Missile Wing
NAF	Naval Air Facility
NAS	Naval Air Station
NORTHCOM	US Northern Command
PACAF	Pacific Air Forces
PACOM	US Pacific Command
PEO	Program Executive Officer
R&D	research & development
RED HORSE	Rapid Engineer Deployable Heavy Operational Repair Squadron, Engineers
RG	Reconnaissance Group
ROPS	Range Operations Squadron
RPA	remotely piloted aircraft
RQG	Rescue Group
RQS	Rescue Squadron
RQW	Rescue Wing
RS	Reconnaissance Squadron
RSG	Regional Support Group
RW	Reconnaissance Wing
SCMG	Supply Chain Management Group
SCMW	Supply Chain Management Wing
SCOW	Supply Chain Operations Wing
SERE	survival, evasion, resistance, & escape
SLS	Space Launch Squadron
SMC	Space and Missile Systems Center
SOCOM	US Special Operations Command
SOF	Special Operations Forces
SOG	Special Operations Group
SOPS	Space Operations Squadron
SOW	Special Operations Wing
SPCS	Space Control Squadron
STRATCOM	US Strategic Command
STS	Special Tactics Squadron
SW	Space Wing
SWS	Space Warning Squadron
T&E	Test & Evaluation
TACC	Tanker Airlift Control Center
TACP	tactical air control party
TG	Test Group
TRANSCOM	US Transportation Command
TRG	Training Group
TRW	Training Wing
TTP	tactics, techniques, & procedures
TW	Test Wing
USAFE AFAFRICA	US Air Forces in Europe-Air Forces Africa
WEG	Weapons Evaluation Group
WF	Weather Flight
WPS	Weapons Squadron

AMW (AFRC), air mobility operations; 621st CRW (AMC), bare base operations; US Air Force Expeditionary Center (AMC), training. **History:** McGuire activated 1941 as Fort Dix AAB. Closed after WWII. Reopened as McGuire 1948. Dix activated 1917. Navy purchased Army's Camp

Major Active Duty Air Force Bases Overseas



Kendrick in 1921 for airship station, renamed Lakehurst for city of Lakehurst, N.J. Formed as joint base under Air Force lead 2009. McGuire named for Maj. Thomas B. McGuire Jr., P-38 pilot, second leading US ace of WWII, MOH recipient, killed in action Jan. 7, 1945. Dix named for Maj. Gen. John Adams Dix, War of 1812 and Civil War veteran and US Senator.

JB Pearl Harbor-Hickam, Hawaii 96853. **Nearest city:** Honolulu. **Phone:** 808-449-7110. **Hickam owning command:** PACAF. **Units/missions:** 15th Wing (PACAF), 154th Wing (ANG), air mobility, fighter operations; 515th AMOW (AMC); 613th AOC (PACAF), C2 operations; 624th RSG (AFRC), bare base operations; 647th ABG (PACAF), support; Hq. PACAF, management, operational leadership. **History:** Pearl Harbor established 1908. Hickam dedicated 1935. Activated 1938. Formed as joint base under Navy lead 2010. Hickam named for Lt. Col. Horace M. Hickam, aviation pioneer killed in crash in Texas Nov. 5, 1934.

JB San Antonio, Texas 78234. **Nearest city:** San Antonio. **Phone:** 210-221-1211. **Major components:** Fort Sam Houston, JBASA-Lackland, and JBASA-Randolph. (See entries below for Lackland and Randolph.) **Unit/mission:** 502nd ABW (AETC), located at Fort Sam Houston, support. **History:** established 2009 to consolidate the installation management and support functions for the military facilities in San Antonio as part of BRAC 2005.

JBASA-Lackland, Texas 78236. **Nearest city:** San Antonio. **Phone:** 210-671-2908. **Owning command:** AETC. **Units/missions:** 37th TRW (AETC), training; 59th MDW (AETC), ambulatory surgical, management, training; 67th CW (AFSPC), network defense operations; 149th FW (ANG), cyber, fighter operations; 433rd AW (AFRC), air mobility operations, C-5 FTU; 688th IOW (AFSPC), information operations, engineering infrastructure services; 802nd MSG (AETC), support; Air Force Civil Engineer Center (USAF), engineering services; Air Force Legal Operations Agency (USAF); Air Force Medical Operations Agency (USAF); Air Force Medical Support Agency (USAF); Hq. 24th Air Force (AFSPC), operational leadership; Hq. 25th Air Force (ACC), operational leadership; Hq. Air Force Security Forces Center (USAF), management. **History:** activated 1941 as part of Kelly Field. Designated independent installation July 1942 as San Antonio Aviation Cadet Center. Placed under Joint Base San Antonio installation management umbrella 2009. (Also see JBASA entry.) Named 1947 for Brig. Gen. Frank

D. Lackland, early commandant of Kelly Field flying school, who died 1943. (Note: Several USAF agencies reside within Port San Antonio, the business development area created from the former Kelly AFB, but maintain JBASA-Lackland mailing addresses.)

JBASA-Randolph, Texas 78150. **Nearest city:** San Antonio. **Phone:** 210-652-1110. **Owning command:** AETC. **Units/missions:** 12th FTW (AETC), training; 340th FTG (AFRC), training; 902nd MSG (AETC), support; Air Force Personnel Center (USAF), management; Air Force Recruiting Service (AETC), management; Hq. AETC, management. **History:** dedicated June 1930. Placed under Joint Base San Antonio installation management umbrella 2009. (Also see JBASA entry.) Named for Capt. William M. Randolph, killed Feb. 17, 1928.

Kadena AB, Japan, APO AP 96368. **Nearest city:** Naha. **Phone:** 011-81-6117-34-1110. **Owning command:** PACAF. **Units/missions:** 18th Wing (PACAF), air mobility, fighter, ISR, personnel recovery operations; 82nd RS (ACC), reconnaissance; 353rd SOG (AFSOC), special operations; 390th IS (ACC), intelligence; 733rd AMS (AMC), air transportation services. **History:** occupied by US forces April 1945. Named for city of Kadena on island of Okinawa.

Keesler AFB, Miss. 39534. **Nearest city:** Biloxi. **Phone:** 228-377-1110. **Owning command:** AETC. **Units/missions:** 81st TRW (AETC), training; 403rd Wing (AFRC), air mobility operations, weather reconnaissance; Hq. 2nd Air Force (AETC), operational leadership. **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.

Kirtland AFB, N.M. 87117. **Nearest city:** Albuquerque. **Phone:** 505-846-1110. **Owning command:** AFMC. **Units/missions:** 58th SOW (AETC), 150th SOW (ANG), special operations, CSAR training; 377th ABW (AFMC), support, nuclear operations; Air Force Inspection Agency (USAF); 705th CTS-DMOC (ACC), virtual training; Air Force Operational T&E Center (USAF); AFNWC (AFMC), acquisition, sustainment; Air Force Safety Center (USAF), management; Directed Energy Directorate (AFMC), R&D; PEO-Strategic Systems (AFMC), acquisition; Space Development & Test Directorate (AFSPC), test; Space Vehicles Directorate (AFMC), R&D. **History:** activated January 1941. Named for Col. Roy C. Kirtland, aviation pioneer who died May 2, 1941.

Kunsan AB, South Korea, APO AP 96264. **Nearest city:** Gunsan City. **Phone:** 011-82-63-470-1110. **Owning command:** PACAF. **Units/missions:** 8th FW (PACAF), fighter operations; 731st AMS (AMC), air transportation services. **History:** built by the Japanese in 1938. US operations began in April 1951.

Lajes Field, Azores, Portugal, APO AE 09720. **Nearest city:** Praia de Vitoria. **Phone:** 011-351-295-57-6161. **Owning command:** USAF-AFAPRICA. **Units/missions:** 65th ABW, support; 729th AMS (AMC), air transportation services. **History:** US operations began 1943.

Laughlin AFB, Texas 78843. **Nearest city:** Del Rio. **Phone:** 830-298-3511. **Owning command:** AETC. **Unit/mission:** 47th FTW, training. **History:** activated July 1942. Named for 1st Lt. Jack Thomas Laughlin, Del Rio native, B-17 pilot, killed Jan. 29, 1942.

Little Rock AFB, Ark. 72099. **Nearest city:** Jacksonville. **Phone:** 501-987-1110. **Owning command:** AMC. **Units/missions:** 19th AW (AMC), air mobility operations; 913th AG (AFRC), 189th AW (ANG), air mobility operations, training; 314th AW (AETC), training. **History:** activated Oct. 9, 1955.

Los Angeles AFB, Calif. 90245. **Nearest city:** El Segundo. **Phone:** 310-653-1110. **Owning command:** AFSPC. **Units/missions:** 61st ABG (AFSPC), support; Hq. Space and Missile Systems Center (AFSPC), acquisition, R&D. **History:** Designated Los Angeles AFS April 30, 1964. Redesignated Los Angeles AFB Sept. 15, 1987. SMC, activated July 1, 1992, dates from Air Research and Development Command's Western Development Division, activated July 1, 1954.

Luke AFB, Ariz. 85309. **Nearest city:** Phoenix. **Phone:** 623-856-1110. **Owning command:** AETC. **Units/missions:** 56th FW (AETC), training, Barry M. Goldwater Range operations; 944th FW (AFRC), training. **History:** activated 1941. Named for 2nd Lt. Frank Luke Jr., observation balloon-busting ace of WWI and first American aviator to receive MOH, killed in action Sept. 29, 1918.

MacDill AFB, Fla. 33621. **Nearest city:** Tampa. **Phone:** 813-828-1110. **Owning command:** AMC. **Units/missions:** 6th AMW (AMC), 927th ARW (AFRC), air mobility operations; Hq. CENTCOM, operational leadership; Hq. SOCOM, operational leadership; Hq. Joint Communications Support Element, C4 operations, management; Joint Special Operations University (SOCOM), education. **History:** activated April 15, 1941. Named

Airmen refuel an F-15C at Kadena AB, Japan.



USAF photo by Naoto Anezawa



An F-22 Raptor taxis at Nellis AFB, Nev., during Red Flag 15-1.

for Col. Leslie MacDill, killed in aircraft accident Nov. 8, 1938.

Malmstrom AFB, Mont. 59402. Nearest city: Great Falls. **Phone:** 406-731-1110. **Owning command:** AFGSC. **Units/missions:** 341st MW (AFGSC), ICBM operations; 819th RED HORSE (ACC/ANG), bare base operations. **History:** activated Dec. 15, 1942. Named for Col. Einar A. Malmstrom, WWII fighter commander killed in air accident Aug. 21, 1954.

Maxwell AFB, Ala. 36112. Nearest city: Montgomery. **Phone:** 334-953-1110. **Owning command:** AETC. **Units/missions:** 42nd ABW (AETC), support; 908th AW (AFRC), air mobility operations; Air Force Historical Research Agency (USAF), historical documentation, research; Air University (AETC); Hq. Civil Air Patrol (USAF), management; Hq. Air Force Judge Advocate General Corps (USAF), management; PEO-Business & Enterprise Systems (AFMC), acquisition. **History:** activated 1918 at the site of the Wright brothers' flight school. Named for 2nd Lt. William C. Maxwell, killed in air accident Aug. 12, 1920.

McConnell AFB, Kan. 67221. Nearest city: Wichita. **Phone:** 316-759-6100. **Owning command:** AMC. **Units/missions:** 22nd ARW (AMC), air mobility operations; 184th IW (ANG), cyber, DCGS, space C2, TACP operations; 931st ARG (AFRC), air mobility operations. **History:** activated June 5, 1951. Named for three Wichita natives, the McConnell brothers—Lt. Col. Edwin M. (died Sept. 1, 1997), Capt. Fred J. (died in a private airplane crash Oct. 25, 1945), and 2nd Lt. Thomas L. (killed July 10, 1943)—all WWII B-24 pilots.

Minot AFB, N.D. 58705. Nearest city: Minot. **Phone:** 701-723-1110. **Owning command:** AFGSC. **Units/missions:** 5th BW (AFGSC), bomber operations; 91st MW (AFGSC), ICBM operations. **History:** activated January 1957. Named after city of Minot, whose citizens donated \$50,000 toward purchase of the land.

Misawa AB, Japan, APO AP 96319. Nearest city: Misawa. **Phone:** 011-81-176-53-5181, ext. 226-3075. **Owning command:** PACAF. **Unit/mission:** 35th FW (PACAF), fighter operations. **History:** occupied by US forces September 1945.

Moody AFB, Ga. 31699. Nearest city: Valdosta. **Phone:** 229-257-1110. **Owning command:** ACC. **Units/missions:** 23rd Wing (ACC), fighter, personnel recovery operations; 93rd AGOW (ACC), battlefield airmen operations, expeditionary force protection, support; 476th FG (AFRC), fighter operations. **History:** activated June 1941. Named for Maj. George P. Moody, killed May 5, 1941.

Mountain Home AFB, Idaho 83648. Nearest city: Mountain Home. **Phone:** 208-828-2111. **Owning command:** ACC. **Unit/missions:** 366th FW (ACC), fighter operations, range management. **History:** activated August 1943 as B-24 training base. Inactivated October 1945. Reactivated December 1948. Inactivated April 1950. Reactivated 1951.

Nellis AFB, Nev. 89191. Nearest city: Las Vegas. **Phone:** 702-652-1110. **Owning command:** ACC. **Units/missions:** 57th Wing (ACC), combat training; 99th ABW (ACC), support; 820th RED HORSE (ACC), bare base operations; 926th Wing (AFRC), associate missions at Creech, Eglin, Hurlburt, Nellis, Schriever; USAF Warfare Center (ACC), operational testing, tactics development, training; Nevada Test and Training Range (ACC), range management, operations. **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.

Offutt AFB, Neb. 68113. Nearest city: Bellevue. **Phone:** 402-294-1110. **Owning command:** ACC. **Units/missions:** 55th Wing (ACC), 170th Group (ANG), operations (C2, electronic attack, ISR), support, training; Air Force Weather Agency (USAF) (became 577th Weather Wing (ACC) in March 2015), management; Hq. STRATCOM, operational leadership. **History:** activated 1896 as Army's Fort Crook. Used for airships from 1918 and aircraft cross-country stop from 1921. Landing field named May 10, 1924, for 1st Lt. Jarvis J. Offutt, WWI pilot who died Aug. 13, 1918. Served as bomber production facility January 1942 to September 1945. Redesignated Offutt Field June 1946. Redesignated Offutt AFB with Jan. 13, 1948, transfer to USAF.

Osan AB, South Korea, APO AP 96278. Nearest city: Seoul. **Phone:** 011-82-0505-784-1110.

Owning command: PACAF. **Units/missions:** 5th RS (ACC), reconnaissance operations; 51st FW (PACAF), fighter operations; 694th ISRG (ACC), DCGS operations; 731st AMS (AMC), air transportation services; Hq. 7th Air Force (PACAF), operational leadership. **History:** originally designated K-55. Runway opened December 1952. Renamed Osan AB 1956 for nearby town that was the scene of first fighting in July 1950 between US and North Korean forces.

Patrick AFB, Fla. 32925. Nearest city: Cocoa Beach. **Phone:** 321-494-1110. **Owning command:** AFSPC. **Units/missions:** 45th SW (AFSPC), space launch operations; 114th ROPS (ANG), launch range support; 920th RQW (AFRC), personnel recovery operations; Air Force Technical Applications Center (ACC), nuclear monitoring. **History:** activated 1940. Named for Maj. Gen. Mason M. Patrick, Chief of American Expeditionary Forces' Air Service in WWI and Chief of the Air Service/Air Corps, 1921 to 1927.

Peterson AFB, Colo. 80914. Nearest city: Colorado Springs. **Phone:** 719-556-7321. **Owning command:** AFSPC. **Units/missions:** 21st SW (AFSPC), missile warning, space operations, support; 52nd AS (AMC) (active associate), 200th AS (ANG), air mobility operations; 302nd AW (AFRC), air mobility, MAFFS operations; Hq. AFSPC, management; Hq. NORAD, Hq. NORTHCOM, operational leadership. **History:** activated 1942. Named for 1st Lt. Edward J. Peterson, killed Aug. 8, 1942.

Pope Field, N.C. 28308. Nearest city: Fayetteville. **Phone:** 910-394-1110. **Units/missions:** 18th ASOG (ACC), combat weather, TACP operations; 21st STS (AFSOC), special tactics operations; 43rd AG (AMC), 440th AW (AFRC), air mobility operations; USAF Combat Control School (AFSOC), training. **History:** activated 1919. Under BRAC 2005, Pope AFB became Pope Field, part of Fort Bragg, March 1, 2011. Named for 1st Lt. Harley H. Pope, WWI pilot, killed Jan. 7, 1919.

RAF Lakenheath, UK, APO AE 09461. Nearest city: Cambridge. **Phone:** 011-44-1638-52-1110. **Owning command:** USAF-AFAPRICA. **Unit/**

mission: 48th FW, fighter, personnel recovery operations. **History:** began as Royal Air Force decoy field in 1930s. Activated as RAF airfield November 1941. USAF bombers arrived August 1948. USAF took administrative control May 1951. Named after nearby village.

RAF Mildenhall, UK, APO AE 09459. Nearest city: Cambridge. **Phone:** 011-44-1638-54-1110. **Owning command:** USAFE-AFAFRICA. **Units/missions:** 95th RS (ACC), reconnaissance operations; 100th ARW (USAFE-AFAFRICA), air mobility operations; 352nd SOG (AFSOC), special operations; 488th IS (ACC), intelligence operations; 727th AMS (AMC), air transportation services. **History:** activated as RAF bomber base October 1934. Named after nearby town. US bomber operations began July 1950. Strategic Air Command had control from October 1951 to July 1959, when USAFE took over.

Ramstein AB, Germany, APO AE 09094. Nearest city: Ramstein. **Phone:** 011-49-6371-47-1110. **Owning command:** USAFE-AFAFRICA. **Units/missions:** 86th AW (USAFE-AFAFRICA), air mobility operations, support (including Kaiserslautern Military Community); 435th AGOW (USAFE-AFAFRICA), bare base, combat communications, combat weather, TACP operations; 521st AMOW (AMC), air transportation services; 603rd AOC (USAFE-AFAFRICA), C2 operations; Hq. 3rd AF (USAFE-AFAFRICA), operational leadership; Hq. USAFE-AFAFRICA, management, operational leadership. **History:** originally Landstuhl AB, activated August 1952. Reactivated December 1957 as Ramstein-Landstuhl AB; later redesignated Ramstein AB.

Robins AFB, Ga. 31098. Nearest city: Warner Robins. **Phone:** 478-926-1110. **Owning command:** AFMC. **Units/missions:** 78th ABW (AFMC), support; 94th APS (AFRC), aerial port operations; 116th ACW (ANG), 461st ACW (ACC), C2 operations; 638th SCMG (AFMC), systems life cycle support; 689th CCW (AFSPC), combat communications operations; Hq. AFRC, management; Warner Robins ALC (AFMC), weapons maintenance, repair. **History:** activated March 1942. Named for Brig. Gen. Augustine Warner Robins, an early chief of the Army Air Corps' Materiel Division, who died June 16, 1940.

Schriever AFB, Colo. 80912. Nearest city: Colorado Springs. **Phone:** 719-567-1110. **Owning command:** AFSPC. **Units/missions:** 50th SW (AFSPC), 310th SW (AFRC), space operations; US Air Force Warfare Center-Space (ACC/AFSPC), R&D. **History:** activated as Falcon AFS Sept. 26, 1985. Redesignated AFB June 13, 1988. Renamed for Gen. Bernard A. Schriever June 5, 1998.

Scott AFB, Ill. 62225. Nearest city: Belleville. **Phone:** 618-256-1110. **Owning command:** AMC. **Units/missions:** 126th ARW (ANG), 375th AMW (AMC), air mobility operations; 618th AOC (TACC) (AMC), planning/directing worldwide air mobility operations; 635th SCOW (AFMC), global logistics support; 932nd AW (AFRC), air mobility operations; Air Force Network Integration Center (AFSPC), network integration, engineering, simulation; Hq. 18th Air Force (AMC), operational leadership; Hq. AMC, management; Hq. TRANSCOM, operational leadership. **History:** activated June 14, 1917. Named for Cpl. Frank S. Scott, first enlisted man to die in an aircraft accident, killed Sept. 28, 1912.

Seymour Johnson AFB, N.C. 27531. Nearest city: Goldsboro. **Phone:** 919-722-1110. **Owning command:** ACC. **Units/missions:** 4th FW (ACC), 414th FG (AFRC), fighter operations; 567th RED HORSE (ACC), bare base operations; 916th ARW (AFRC), air mobility operations. **History:** activated Sept. 12, 1942. Named for Navy Lt. Seymour A. Johnson, Goldsboro native, killed March 5, 1941.

Shaw AFB, S.C. 29152. Nearest city: Sumter. **Phone:** 803-895-1110. **Owning command:** ACC. **Units/missions:** 20th FW (ACC), fighter operations; Hq. 9th Air Force (ACC), management (Hq. Air Forces Central in Southwest Asia, operational leadership). **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.

Sheppard AFB, Texas 76311. Nearest city: Wichita Falls. **Phone:** 940-676-1110. **Owning command:** AETC. **Units/missions:** 80th FTW (AETC), Euro-NATO Joint Jet Pilot Training program; 82nd TRW (AETC), training. **History:** activated June 14, 1941. Named for US Sen. Morris E. Sheppard, who died April 9, 1941.

Spangdahlem AB, Germany, APO AE 09126. Nearest city: Bitburg. **Phone:** 011-49-6565-61-1110. **Owning command:** USAFE-AFAFRICA. **Units/missions:** 52nd FW (USAFE-AFAFRICA), fighter operations; 726th AMS (AMC), air transportation services. **History:** built by French 1951 and turned over to US 1952. Named after nearby town.

Thule AB, Greenland, APO AE 09074. Nearest city: Qaanaaq. **Phone:** (through Cheyenne Mountain AFS operator) 719-474-1110. **Owning command:** AFSPC. **Units/missions:** 12th SWS (AFSPC), missile warning; 821st ABG (AFSPC), support. **History:** dates from 1946 as a Danish-American radio and weather station. USAF Ballistic Missile Early Warning System radar began operations 1961.

Tinker AFB, Okla. 73145. Nearest city: Oklahoma City. **Phone:** 405-739-2026. **Owning command:** AFMC. **Units/missions:** 72nd ABW (AFMC), support; 137th ARW (ANG), air mobility, cyber, TACP operations; 448th SCMW (AFMC), supply chain management; 507th ARW (AFRC), air mobility operations; 513th ACG (AFRC), 552nd ACW (ACC), C2 operations; Hq. Air Force Sustainment Center (AFMC), weapon systems sustainment; Oklahoma City ALC (AFMC), weapon systems maintenance, repair, overhaul. **History:** activated March 1942. Named for Maj. Gen. Clarence L. Tinker, who went down at sea June 7, 1942, leading a group of LB-30 bombers against Japan.

Travis AFB, Calif. 94535. Nearest city: Fairfield. **Phone:** 707-424-1110. **Owning command:** AMC. **Units/missions:** 60th AMW (AMC), 349th AMW (AFRC), air mobility operations; 570th CRG, 571st CRG (AMC), bare base operations; David Grant USAF Medical Center. **History:** activated May 17, 1943. Named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950.

Tyndall AFB, Fla. 32403. Nearest city: Panama City. **Phone:** 850-283-1113. **Owning command:** ACC. **Units/missions:** 53rd WEG (ACC), T&E; 101st AOG (ANG), C2 operations; 325th FW (ACC), 325th FW Associate Unit (ANG), training; 601st AOC (ACC/ANG), plan/direct air operations; Air Force Rescue Coordination Center (ACC), plan/direct inland rescue operations; Hq. Continental US NORAD Region (NORAD)/1st Air Force

(Air Forces Northern) (ACC/ANG), operational leadership. **History:** activated Dec. 7, 1941. Named for 1st Lt. Frank B. Tyndall, WWI fighter pilot killed July 15, 1930.

US Air Force Academy, Colo. 80840. Nearest city: Colorado Springs. **Phone:** 719-333-1110. **Owning command:** USAF. **Units/missions:** 10th ABW (USAF), support; 306th FTG (AETC), training; USAFA (USAF), education. **History:** established April 1, 1954, at Lowry AFB, Colo. Moved to permanent location in Colorado Springs August 1958.

Vance AFB, Okla. 73705. Nearest city: Enid. **Phone:** 580-213-5000. **Owning command:** AETC. **Unit/mission:** 71st FTW (AETC), training. **History:** activated November 1941. Named for Lt. Col. Leon R. Vance Jr., Enid native, 1939 West Point graduate, and MOH recipient, killed July 26, 1944.

Vandenberg AFB, Calif. 93437. Nearest city: Lompoc. **Phone:** 805-606-1110. **Owning command:** AFSPC. **Units/missions:** 21st SOPS (AFSPC), space operations; 30th SW (AFSPC), space and launch range operations; 381st TRG (AETC), training; 576th FLTS (AFSPC), test; Hq. 14th Air Force (AFSPC), operational leadership; Joint Space Operations Center (STRATCOM), space C2 operations. **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.

Whiteman AFB, Mo. 65305. Nearest city: Knob Noster. **Phone:** 660-687-1110. **Owning command:** AFGSC. **Units/missions:** 72nd Test & Evaluation Squadron (AFGSC), T&E; 131st BW (ANG), bomber operations; 325th WPS (ACC), tactics training; 442nd FW (AFRC), fighter operations; 509th BW (AFGSC), bomber operations. **History:** activated 1942. Named for 2nd Lt. George A. Whiteman, first pilot to die in aerial combat during the attack on Pearl Harbor.

Wright-Patterson AFB, Ohio 45433. Nearest city: Dayton. **Phone:** 937-257-1110. **Owning command:** AFMC. **Units/missions:** 88th ABW (AFMC), support; 445th AW (AFRC), air mobility operations; 591st SCMG (AFMC), systems life cycle support; Air Force Institute of Technology (AETC), education; PEO-Agile Combat Support, PEO-Fighters & Bombers, PEO-ISR & SOF, PEO-Mobility, PEO-Tanker (AFMC), acquisition; Hq. Air Force Life Cycle Management Center (AFMC), acquisition and development; Hq. AFMC, management; Hq. AFRL (AFMC), R&D; National Air & Space Intelligence Center (USAF), foreign aerospace analysis; National Museum of the US Air Force (AFMC); Wright-Patterson Medical Center (AFMC). **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.

Yokota AB, Japan, APO AP 96328. Nearest city: Tokyo. **Phone:** 011-81-311-755-1110. **Owning command:** PACAF. **Units/missions:** 374th AW (PACAF), air mobility, personnel recovery operations; 515th AMOG (AMC), air transportation services; Hq. 5th Air Force (PACAF), Hq. US Forces Japan (PACOM), operational leadership. **History:** opened as Tama AAF by Japan 1939. Turned over to US forces and renamed Yokota AB Sept. 6, 1945.

ANG and AFRC Installations

This section consolidates Air National Guard and Air Force Reserve Command facilities, listing them by base names or according to the airport facilities they share. Some ANG and AFRC units are located on USAF bases and are included under those bases in the "Active Duty Installations" section. In addition, some Air Force Reserve Individual Mobilization Augmentees serve with various USAF and DOD commands and agencies.

Abraham Lincoln Capital Arpt., Ill. 62707. Nearest city: Springfield. **Phone:** 217-757-1219. **Component:** ANG. **Unit/missions:** 183rd FW, C2, CIRF, cyber operations.

Allen C. Thompson Field/Jackson Arpt., Miss. 39232. Nearest city: Jackson. **Phone:** 601-936-8370. **Component:** ANG. **Unit/missions:** 172nd AW, aeromedical evacuation, air mobility operations.

Alpena County Regional Arpt., Mich. 49707. Nearest city: Alpena. **Phone:** 989-354-6210. **Component:** ANG. **Unit/mission:** Alpena Combat Readiness Training Center.

Atlantic City Arpt., N.J. 08234. Nearest city: Egg Harbor Township. **Phone:** 609-645-6000. **Component:** ANG. **Unit/missions:** 177th FW, fighter, TACP operations.

Bangor Arpt., Maine 04401. Nearest city: Bangor. **Phone:** 866-359-2264. **Component:** ANG. **Unit/missions:** 101st ARW, air mobility, combat communications, cyber operations.

Barnes Arpt., Mass. 01085. Nearest city: Westfield. **Phone:** 413-568-9151. **Component:** ANG. **Unit/mission:** 104th FW, fighter operations.

Birmingham Arpt., Ala. 35217. Nearest city: Birmingham. **Phone:** 205-714-2000. **Component:** ANG. **Units/missions:** 99th ARS (AMC) (active associate), air mobility operations; 117th ARW, air mobility, intelligence operations.

Boise Air Terminal (Gowen Field), Idaho 83705. Nearest city: Boise. **Phone:** 208-422-5322. **Component:** ANG. **Unit/missions:** 124th FW, fighter, space C2, TACP operations. **History:** named for Lt. Paul R. Gowen, killed in B-10 crash in Panama July 11, 1938.

Bradley Arpt., Conn. 06026. Nearest city: Hartford. **Phone:** 860-292-2526. **Component:** ANG. **Unit/mission:** 103rd AW, air mobility operations. **History:** named for Lt. Eugene M. Bradley, killed in P-40 crash August 1941.

Burlington Arpt., Vt. 05403. Nearest city: Burlington. **Phone:** 802-660-5215. **Component:** ANG. **Units/missions:** 158th FW, fighter operations; 229th IOS, cyber training.

Channel Islands ANG, Calif. 93041. Nearest city: Oxnard. **Phone:** 805-986-8000. **Component:** ANG. **Unit/missions:** 146th AW, air mobility, MAFFS operations.

Charlotte/Douglas Arpt., N.C. 28208. Nearest city: Charlotte. **Phone:** 704-391-4100. **Component:** ANG. **Unit/missions:** 145th AW, aeromedical evacuation, air mobility, combat communications, MAFFS, TACP operations.

Cheyenne Arpt., Wyo. 82009. Nearest city: Cheyenne. **Phone:** 307-772-6110. **Component:** ANG. **Unit/missions:** 153rd AW, air mobility, MAFFS operations.

Des Moines Arpt., Iowa 50321. Nearest city: Des Moines. **Phone:** 800-257-1693. **Component:** ANG. **Unit/missions:** 132nd Wing, DTOC, RPA operations.

Dobbins ARB, Ga. 30069. Nearest city: Atlanta. **Phone:** 678-655-5000. **Component:** AFRC. **Units/missions:** 94th AW, aeromedical evacuation, air mobility operations; Hq. 22nd Air Force, operational leadership. **History:** activated 1943. Named for Capt. Charles Dobbins, pilot killed in WWII.

Duke Field, Fla. 32542. Nearest city: Crestview. **Phone:** 850-883-6347. **Component:** AFRC. **Unit/mission:** 919th SOW, special operations. **History:** named for Lt. Robert L. Duke, pilot killed Dec. 29, 1943, in test flight.

Duluth Arpt., Minn. 55811. Nearest city: Duluth. **Phone:** 218-788-7210. **Component:** ANG. **Unit/missions:** 148th FW, EOD, fighter operations.

Eastern West Virginia Arpt. (Shepherd Field), W. Va. 25401. Nearest city: Martinsburg. **Phone:** 304-616-5100. **Component:** ANG. **Unit/missions:** 167th AW, aeromedical evacuation, air mobility operations.

Ellington Field, Texas 77034. Nearest city: Houston. **Phone:** 281-929-2337. **Component:** ANG. **Unit/missions:** 147th RW, ISR, RPA, TACP operations. **History:** named for Lt. Eric L. Ellington, pilot killed November 1913.

Forbes Field, Kan. 66619. Nearest city: Topeka. **Phone:** 785-862-1234. **Component:** ANG. **Unit/missions:** 190th ARW, air mobility, combat weather operations. **History:** named for Maj. Daniel H. Forbes Jr., pilot killed June 5, 1948, test-flying Northrop YB-49 "Flying Wing."

Fort Smith Arpt., Ark. 72903. Nearest city: Fort Smith. **Phone:** 479-573-5100. **Component:** ANG. **Unit/missions:** 188th Wing, RPA, ISR.

Fort Wayne Arpt., Ind. 46809. Nearest city: Fort Wayne. **Phone:** 260-478-3210. **Component:** ANG. **Unit/mission:** 122nd FW, fighter operations.

Francis S. Gabreski Arpt., N.Y. 11978. Nearest city: Westhampton Beach. **Phone:** 631-723-7400. **Component:** ANG. **Unit/mission:** 106th RQW, personnel recovery operations. **History:** named for Col. Francis S. Gabreski, WWII and Korean War ace.

Fresno Yosemite Arpt., Calif. 93727. Nearest city: Fresno. **Phone:** 559-454-5100. **Component:** ANG. **Unit/missions:** 144th FW, fighter, ISR operations.

General Mitchell Arpt., Wis. 53207. Nearest city: Milwaukee. **Phone:** 414-944-8410. **Component:** ANG. **Unit/mission:** 128th ARW, air mobility operations. **History:** named for Brig. Gen. William "Billy" Mitchell.

Greater Peoria Arpt., Ill. 61607. Nearest city: Peoria. **Phone:** 800-942-3771. **Component:** ANG.



SrA. Quori Allard runs a final check on an F-16C at Atlantic City Arpt., N.J.

ANG photo by TSgt. Matt Hecht

Air Reserve Component Bases



Unit/missions: 182nd AW, air mobility, combat communications, TACP operations.

Great Falls Arpt., Mont. 59404. **Nearest city:** Great Falls. **Phone:** 406-791-0159. **Component:** ANG. **Unit/mission:** 120th AW, air mobility operations, RED HORSE.

Greeley ANG, Colo. 80631. **Nearest city:** Greeley. **Phone:** 720-259-5001. **Component:** ANG. **Unit/mission:** 137th SWS, mobile missile warning. **History:** activated January 1996.

Grissom ARB, Ind. 46971. **Nearest city:** Kokomo. **Phone:** 765-688-5211. **Component:** AFRC. **Unit/mission:** 434th ARW, air mobility operations. **History:** activated January 1943 as NAS Bunker Hill. Reactivated June 1954 as Bunker Hill AFB. Renamed May 1968 for Lt. Col. Virgil I. "Gus" Grissom, killed Jan. 27, 1967, in Apollo capsule fire. Realigned as AFRC base Oct. 1, 1994.

Gulfport-Biloxi Arpt., Miss. 39507. **Nearest city:** Gulfport. **Phone:** 228-214-6002. **Component:** ANG. **Unit/mission:** Trent Lott Combat Readiness Training Center.

Hancock Field, N.Y. 13211. **Nearest city:** Syracuse. **Phone:** 1-800-982-3696. **Component:** ANG. **Unit/missions:** 174th ATKW, ISR, RPA, space C2, TACP operations; ISR, RPA training.

Harrisburg Arpt., Pa. 17057. **Nearest city:** Middletown. **Phone:** 717-948-2200. **Component:** ANG. **Unit/missions:** 193rd SOW, C2, combat communications, cyber, special, TACP operations.

Hector Arpt., N.D. 58102. **Nearest city:** Fargo. **Phone:** 701-451-2110. **Component:** ANG. **Unit/mission:** 119th Wing, RPA operations.

Hensley Field AGS, Texas 75211. **Nearest city:** Dallas. **Phone:** 972-619-4444. **Component:** ANG. **Unit/mission:** 254th CCG, combat communications.

Homestead ARB, Fla. 33039. **Nearest city:** Homestead. **Phone:** 786-415-7000. **Component:** AFRC. **Units/mission:** 20th Operations Group Det. 2 (ACC) (active associate), 125th FW Det. 1 (ANG), 482nd FW (AFRC), fighter operations.

Hulman Arpt., Ind. 47803. **Nearest city:** Terre Haute. **Phone:** 812-877-5311. **Component:** ANG. **Unit/missions:** 181st IW, DCGS, TACP operations.

Jacksonville Arpt., Fla. 32218. **Nearest city:** Jacksonville. **Phone:** 904-741-7100. **Component:** ANG. **Unit/missions:** 125th FW, fighter, ISR operations.

Joe Foss Field, S.D. 57104. **Nearest city:** Sioux Falls. **Phone:** 605-988-5700. **Component:** ANG. **Unit/mission:** 114th FW, fighter operations. **History:** named for ANG Brig. Gen. Joseph J. Foss, WWII USMC ace and MOH recipient, former governor, former AFA national president and board chairman, and founder of the South Dakota ANG.

Key Field, Miss. 39307. **Nearest city:** Meridian. **Phone:** 601-484-9000. **Component:** ANG. **Unit/missions:** 186th ARW, air mobility, C2, ISR, TACP operations. **History:** named after Fred and Al Key, air-to-air refueling pioneers and 1935 flight endurance record holders for 27 days aloft in *Ole Miss*, on permanent display at the National Air and Space Museum.

Klamath Falls Arpt./Kingsley Field, Ore. 97603. **Nearest city:** Klamath Falls. **Phone:** 800-864-6264. **Component:** ANG. **Unit/mission:** 173rd

FW (active associate), training. **History:** named for 2nd Lt. David R. Kingsley, MOH recipient, killed June 23, 1944, on Ploesti, Romania, oil field bombing mission.

Lambert-St. Louis Arpt., Mo. 63044. **Nearest city:** St. Louis. **Phone:** 314-527-7000. **Component:** ANG. **Units/missions:** 131st MSG, support; Jefferson Barracks: 157th AOG, C2 operations; 239th CBCS, combat communications.

Lincoln Arpt., Neb. 68524. **Nearest city:** Lincoln. **Phone:** 402-458-1234. **Component:** ANG. **Unit/mission:** 155th ARW, air mobility operations.

Louisville Arpt./AGS (Standiford Field), Ky. 40213. **Nearest city:** Louisville. **Phone:** 502-413-4400. **Component:** ANG. **Unit/missions:** 123rd AW, air mobility, bare base, special tactics operations.

Luis Munoz Marin Arpt., Puerto Rico 00979. **Nearest city:** San Juan. **Phone:** 787-253-5101. **Component:** ANG. **Unit/mission:** 156th AW, air mobility operations, weather reconnaissance.

Mansfield Lahm Arpt., Ohio 44903. **Nearest city:** Mansfield. **Phone:** 419-520-6100. **Component:** ANG. **Unit/mission:** 179th AW, air mobility operations. **History:** named in 1948 for nearby city and aviation pioneer Brig. Gen. Frank P. Lahm.

March ARB, Calif. 92518. **Nearest city:** Riverside. **Phone:** 951-655-1110. **Components:** ANG/AFRC. **Units/missions:** 163rd RW (ANG), RPA operations, training; 452nd AMW (AFRC), air mobility operations; Hq. 4th Air Force (AFRC), operational leadership. **History:** activated March 1, 1918. Named for 2nd Lt. Peyton C. March Jr., who died of crash injuries Feb. 18, 1918.

Martin State Arpt., Md. 21220. **Nearest city:** Baltimore. **Phone:** 410-918-6001. **Component:** ANG. **Unit/missions:** 175th Wing, cyber, fighter operations.

McEntire JNGB, S.C. 29044. **Nearest city:** Columbia. **Phone:** 803-647-8300. **Component:** ANG. **Units/missions:** 169th FW, 495th FG, Det. 157 (active associate), fighter operations. **History:** named for ANG Brig. Gen. B. B. McEntire Jr., killed in F-104 accident 1961.

McGhee Tyson Arpt., Tenn. 37777. **Nearest city:** Knoxville. **Phone:** 865-336-3205. **Component:** ANG. **Units/missions:** 134th ARW, air mobility operations; 119th CACS, space C2 operations; 228th CBCS, combat communications; I. G. Brown ANG Training and Education Center. **History:** named for Naval aviator Lt. j.g. Charles McGhee Tyson, killed in WWI.

Memphis Arpt., Tenn. 38118. **Nearest city:** Memphis. **Phone:** 901-291-7111. **Component:** ANG. **Unit/mission:** 164th AW, air mobility operations.

Minneapolis-St. Paul Arpt./ARS, Minn. 55450. **Nearest city:** Minneapolis. **Phone:** 612-713-1110. **Components:** ANG/AFRC. **Units/missions:** 133rd AW (ANG), air mobility operations; 934th AW (AFRC), air mobility, cyber operations.

Moffett Field, Calif. 94035. **Nearest city:** Mountain View. **Phone:** 650-603-9129. **Component:** ANG. **Unit/mission:** 129th RQW, personnel recovery operations. **History:** activated as NAS Sunnyvale April 1933. Renamed Moffett Field June 1933 for Rear Adm. William A. Moffett, killed in crash of USS *Akron* airship April 4, 1933.

Montgomery Regional Arpt., Ala. 36108. **Nearest city:** Montgomery. **Phone:** 334-394-7200. **Component:** ANG. **Unit/missions:** 187th FW, fighter, ISR operations. **History:** originally named

for Ens. Clarence Dannelly, Navy pilot killed in WWII.

Nashville Arpt., Tenn. 37217. **Nearest city:** Nashville. **Phone:** 615-660-8000. **Component:** ANG. **Unit/missions:** 118th Wing, cyber, RPA operations.

NAS JRB Fort Worth, Texas 76127. **Nearest city:** Fort Worth. **Navy-hosted switchboard:** 817-782-5000. **ANG Phone:** 817-852-3136. **Components:** ANG/AFRC. **Units/missions:** 136th AW (ANG), air mobility, combat communications operations; 301st FW (AFRC), fighter operations; Hq. 10th Air Force (AFRC), operational leadership.

NAS JRB New Orleans, La. 70143. **Nearest city:** New Orleans. **Phone:** 504-391-8600. **Component:** ANG. **Units/missions:** 122nd ASOS (Pineville, La.), TACP; 159th FW, fighter operations; 214th EIS, cyber operations; 236th CBCS (Hammond, La.), combat communications.

New Castle County Arpt., Del. 19720. **Nearest city:** Wilmington. **Phone:** 302-323-3300. **Component:** ANG. **Unit/missions:** 166th AW, aeromedical evacuation, air mobility, cyber operations.

Niagara Falls Arpt./ARS, N.Y. 14304. **Nearest city:** Niagara Falls. **Phone:** 716-236-2000. **Components:** ANG/AFRC. **Units/missions:** 107th Wing (ANG), RPA operations; 914th AW (AFRC), air mobility operations.

Otis ANGB, Mass. 02542. **Nearest city:** Falmouth. **Phone:** 508-968-4003. **Component:** ANG. **Units/missions:** 102nd IW, C2, DCGS operations; 253rd CCG, combat communications. **History:** named for 1st Lt. Frank J. Otis, Massachusetts ARNG flight surgeon and pilot killed in 1937 crash.

Pease Intl. Tradeport ANG, N.H. 03803. **Nearest city:** Portsmouth. **Phone:** 603-430-3577. **Component:** ANG. **Units/mission:** 64th ARS (AMC) (active associate), 157th ARW (ANG), air mobility operations. **History:** site of former Portsmouth AFB, activated June 1956. Renamed Sept. 7, 1957, for Capt. Harl Pease Jr., MOH recipient, B-17 pilot killed in WWII. Base closed March 31, 1991.

Pittsburgh Arpt./ARS, Pa. 15108. **Nearest city:** Coraopolis. **AFRC phone:** 412-474-8511. **ANG phone:** 412-776-8010. **Components:** ANG/AFRC. **Units/missions:** 171st ARW (ANG), air mobility operations; 911th AW (AFRC), aeromedical evacuation, air mobility operations.

Portland Arpt., Ore. 97218. **Nearest city:** Portland. **Phone:** 503-335-4000. **Components:** ANG/AFRC. **Units/missions:** 123rd WF (ANG), combat weather operations; 125th STS (ANG), special tactics operations; 142nd FW (ANG), fighter operations; 304th RQS (AFRC), personnel recovery operations.

Quonset State Arpt. (Quonset ANGB), R.I. 02852. **Nearest city:** North Kingstown. **Phone:** 401-886-1200. **Component:** ANG. **Units/missions:** 102nd IWS, cyber operations; 143rd AW, air mobility operations; 281st CCG (North Smithfield, R.I.), combat communications.

Reno/Tahoe Arpt. (May Field), Nev. 89502. **Nearest city:** Reno. **Phone:** 775-788-4500. **Component:** ANG. **Unit/missions:** 152nd AW, air mobility, DCGS operations. **History:** named for Maj. Gen. James A. May, Nevada adjutant general, 1947 to 1967.

Rickenbacker ANGB, Ohio 43217. **Nearest city:** Columbus. **Phone:** 614-492-3408. **Component:**

ANG. Unit/mission: 121st ARW, air mobility operations. **History:** activated 1942. Formerly Lockbourne AFB. Renamed May 7, 1974, for Capt. Edward V. Rickenbacker. Base transferred from Strategic Air Command to ANG April 1, 1980.

Rosecrans Memorial Arpt., Mo. 64503. Nearest city: St. Joseph. **Phone:** 816-236-3300. **Component:** ANG. **Units/missions:** 139th AW (ANG), air mobility operations; Advanced Airlift Tactics Training Center (ANG/AFRC).

Salt Lake City Arpt., Utah 84116. Nearest city: Salt Lake City. **Phone:** 801-245-2200. **Component:** ANG. **Units/missions:** 151st ARW, air mobility operations; 101st IOF, 130th EIS, cyber operations; 169th IS, intelligence operations.

Savannah Hilton Head Arpt., Ga. 31408. Nearest city: Garden City. **Phone:** 912-966-8223. **Component:** ANG. **Unit/missions:** 165th AW, air mobility, tactical communications, TACP operations, Combat Readiness Training Center.

Schenectady County Arpt. (Stratton ANGB), N.Y. 12302. Nearest city: Scotia. **Phone:** 518-344-2300. **Component:** ANG. **Unit/mission:** 109th AW, air mobility operations, Antarctic support.

Selfridge ANGB, Mich. 48045. Nearest city: Mount Clemens. **Phone:** 586-239-5576. **Component:** ANG. **Unit/missions:** 127th Wing, air mobility, fighter, special operations weather operations. **History:** activated July 1917. Transferred to Michigan ANG July 1971. Named for 1st Lt. Thomas E. Selfridge, killed Sept. 17, 1908, at Fort Myer, Va., when airplane piloted by Orville Wright crashed.

Sioux Gateway Arpt./Col. Bud Day Field, Iowa 51111. Nearest city: Sioux City. **Phone:** 712-

233-0200. **Component:** ANG. **Unit/mission:** 185th ARW, air mobility operations. **History:** activated as Sioux City AAB in July 1942. Closed in December 1945. Reopened in September 1946 as Sioux City ARB. Returned to joint civil-military use. Named in 2002 for retired Col. George E. "Bud" Day, a Vietnam War POW and MOH recipient.

Sky Harbor Arpt., Ariz. 85034. Nearest city: Phoenix. **Phone:** 602-302-9000. **Component:** ANG. **Unit/mission:** 161st ARW, air mobility operations.

Springfield-Beckley Arpt., Ohio 45502. Nearest city: Springfield. **Phone:** 800-851-4503. **Component:** ANG. **Unit/missions:** 178th Wing, cyber, ISR, space operations.

Stewart ANGB, N.Y. 12550. Nearest city: Newburgh. **Phone:** 845-563-2000. **Component:** ANG. **Unit/missions:** 105th AW, air mobility, cyber operations. **History:** Stewart AFB until 1969. Acquired by state of New York 1970.

Toledo Express Arpt., Ohio 43558. Nearest city: Swanton. **Phone:** 419-868-4250. **Component:** ANG. **Unit/mission:** 180th FW, fighter operations.

Truax Field, Wis. 53704. Nearest city: Madison. **Phone:** 800-438-3489. **Component:** ANG. **Unit/missions:** 115th FW, fighter, ISR operations (active associate). **History:** activated June 1942 as AAF base. Taken over by Wisconsin ANG April 1968. Named for Lt. T. L. Truax, killed in P-40 training accident 1941.

Tucson Arpt., Ariz. 85706. Nearest city: Tucson. **Phone:** 520-295-6192. **Component:** ANG. **Unit/missions:** 162nd Wing, fighter, ISR, RPA (at Davis-Monthan AFB, Ariz.) operations, training.

Tulsa Arpt., Okla. 74115. Nearest city: Tulsa. **Phone:** 918-833-7000. **Component:** ANG. **Unit/missions:** 138th FW, fighter, cyber operations, TACP training.

Volk Field ANGB, Wis. 54618. Nearest city: Madison. **Phone:** 608-427-1210. **Component:** ANG. **Unit/missions:** Combat Readiness Training Center; 128th ACS, C2 operations. **History:** named for Lt. Jerome A. Volk, first Wisconsin ANG pilot to be killed in the Korean War.

Westover ARB, Mass. 01022. Nearest city: Chicopee. **Phone:** 413-557-1110. **Component:** AFRC. **Unit/mission:** 439th AW, air mobility operations. **History:** dedicated April 6, 1940. Named for Maj. Gen. Oscar Westover, Chief of the Air Corps, killed Sept. 21, 1938.

W. K. Kellogg Arpt., Mich. 49015. Nearest city: Battle Creek. **Phone:** 269-969-3234. **Component:** ANG. **Unit/missions:** 110th ATKW, C2, cyber, RPA operations.

Will Rogers ANGB, Okla. 73159. Nearest city: Oklahoma City. **Phone:** 405-686-5221. **Component:** ANG. **Units/missions:** 137th ARW (reserve associate), air mobility operations; 146th ASOS, TACP operations; 205th EIS, cyber operations.

Yeager Arpt., W.Va. 25311. Nearest city: Charleston. **Phone:** 304-341-6249. **Component:** ANG. **Unit/missions:** 130th AW, air mobility, ISR operations. **History:** named for Brig. Gen. Charles E. "Chuck" Yeager.

Youngstown ARS, Ohio 44473. Nearest city: Youngstown. **Phone:** 330-609-1000. **Component:** AFRC. **Unit/mission:** 910th AW, air mobility operations.

C-130s on the ramp at Minneapolis-St. Paul Arpt./ARS, Minn.



Staff photo by Aaron M. U. Church

Gallery of USAF Weapons

Note: Inventory numbers are total active inventory figures as of Sept. 30, 2014.

By Aaron M. U. Church, Associate Editor

2015 USAF Almanac

BOMBER AIRCRAFT

B-1 Lancer

Brief: A long-range bomber capable of penetrating enemy defenses and delivering the largest weapon load of any aircraft in the inventory.

COMMENTARY

The B-1A was initially proposed as replacement for the B-52, and four prototypes were developed and tested in 1970s before program cancellation in 1977. The program was revived in 1981 as B-1B. The vastly upgraded aircraft added 74,000 lb of usable payload, improved radar, and reduced radar cross section, but cut maximum speed to Mach 1.2. The B-1B first saw combat in Iraq during Desert Fox in December 1998. Its three internal weapons bays accommodate a substantial payload of weapons, including a mix of different weapons in each bay. Lancer production totaled 100 aircraft. The bomber's blended wing/body configuration, variable-geometry design, and turbofan engines provide long range and loiter time. The B-1B has been upgraded with GPS, smart weapons, and mission systems. Offensive avionics include SAR for tracking, targeting, and engaging moving vehicles and terrain following. GPS-aided INS lets aircrews autonomously navigate without ground-based navigation aids and precisely engage targets. Sniper pod was added in 2008. Ongoing mods include Vertical Situation Display Upgrade, Central Integrated Test System, and Fully Integrated Data Link (FIDL). FIDL includes Link 16 and Joint Range Extension data link, enabling permanent secure LOS/BLOS/C2. Adding secure voice communications is considered an urgent operation need. FIDL adds Ethernet to enable rapid airborne retargeting.

Extant Variant(s)

- B-1B. Upgraded production version of the canceled B-1A.

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, Texas (B-1B).

Production: 104.

Inventory: 63.

Aircraft Location: Dyess AFB, Texas; Edwards AFB, Calif.; Eglin AFB, Fla.; Ellsworth AFB, S.D.

Contractor: Boeing (formerly Rockwell), AIL Systems, General Electric.

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

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

Dimensions: span 137 ft (spread forward) to 79 ft (swept aft), length 146 ft, height 34 ft.

Weight: max T-O 477,000 lb.

Ceiling: more than 30,000 ft.

Performance: speed 900+ mph at S-L, range intercontinental.

Armament: 84 Mk 82 (500-lb) or 24 Mk 84 (2,000-lb) general-purpose bombs; 84 Mk 62 (500-lb) or 8 Mk 65 (2,000-lb) Quick Strike naval mines; 30 CBU-87/89 cluster bombs or 30 CBU-103/104/105 WCMDs; 24 GBU-31 or 15 GBU-38 JDAMs/GBU-54 LJDAM; 24 AGM-158A JASSM or JASSM-ER.

B-2 Spirit

Brief: Stealthy, long-range bomber capable of nuclear and conventional weapon delivery worldwide.

COMMENTARY

The B-2 is a flying wing that combines LO stealth design with high aerodynamic efficiency. Spirit was first used in combat against Serb targets during Allied Force on March 24, 1999. B-2 production was completed in three successive capability blocks and all aircraft were upgraded to Block 30 standards with AESA radar. AESA paves the way for future advanced weapons integration including Long-Range Standoff (LRSO) missile and B61-12 bomb. The aircraft's smoothly blended "fuselage" holds two weapons bays capable of carrying nearly 60,000 lb of weapons in various combinations. The B-2 lacks a vertical tail surface, and quadruple-redundant digital fly-by-wire

flight controls actuate trailing edge surfaces that combine aileron, elevator, and rudder functions. New EHF satcom and high-speed computer upgrade recently entered full production. Both are part of the Defensive Management System-Modernization (DMS-M). Efforts are underway to develop a new VLF receiver for alternative comms. Weapons integration includes the improved GBU-57 Massive Ordnance Penetrator and JASSM-ER and future weapons such as GBU-53 SDB II, GBU-56 Laser JDAM, JDAM-5000, and LRSO. Flexible Strike Package mods will feed GPS data to the weapons bays to allow weapons to be guided before release, to thwart jamming. It also will move stores management to a new integrated processor. Phase 2 will allow nuclear and conventional weapons to be carried simultaneously to increase flexibility. The Air Force is looking to equip the bomber with wide-band nuclear C2 under the Family of Advanced Beyond Line of Sight Terminals (FAB-T) program.

Extant Variant(s)

- B-2A. Production aircraft upgraded to Block 30 standards.

Function: Long-range heavy bomber.

Operator: AFGSC, AFMC, ANG.

First Flight: July 17, 1989.

Delivered: from Dec. 17, 1993.

IOC: April 1997, Whiteman AFB, Mo.

Production: 21.

Inventory: 20.

Aircraft Location: Edwards AFB, Calif.; Whiteman AFB, Mo.

Contractor: Northrop Grumman, Boeing, Vought.

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

Accommodation: two pilots, on zero/zero ACES II ejection seats.

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

Weight: max T-O 336,500 lb.

Ceiling: 50,000 ft.

Performance: speed high subsonic, estimated unrefueled range 5,000 miles.

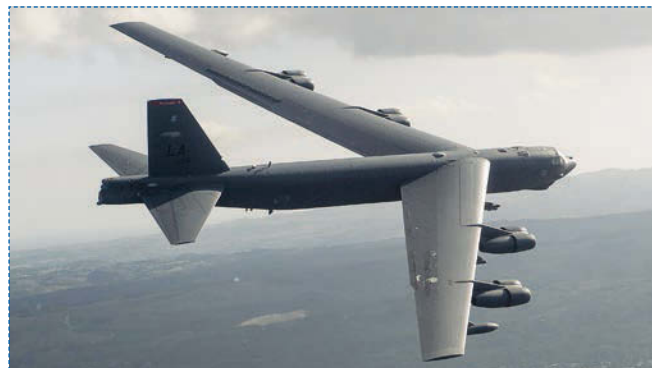
Armament: Nuclear: 16 B61-7 or B83, or 8 B61-11 bombs (on rotary launchers). Conventional: 80 Mk 62 (500-lb) sea mines, 80 Mk 82 (500-lb) bombs, 80 GBU-38 JDAMs, or 34 CBU-87/89 munitions (on rack assemblies); or 16 GBU-31 JDAMs, 16 Mk 84 (2,000-lb) bombs, 16 AGM-154 JSOWs, 16 AGM-158 JASSMs, or eight GBU-28 LGBs.

B-52 Stratofortress

Brief: Long-range bomber capable of free-fall nuclear or conventional weapon delivery or cruise missile carriage.

COMMENTARY

The B-52H is the last serving variant of the Stratofortress. The B-52H first flew in 1960, and 102 were delivered between May 1961 and October 1962. The aircraft is USAF's only nuclear cruise missile carrier. Its multimission capability includes long-range precision strike, CAS, air interdiction, defense suppression, and maritime surveillance. The B-52H can carry targeting pods



B-52H Stratofortress (TSgt. Jason Robertson)

and employ GPS/INS guided weapons, which it did for the first time during Operation Iraqi Freedom in 2003. The Internal Weapons Bay Upgrade will enable smart weapons to be carried internally. A test aircraft was retrofitted with the new Conventional Rotary Launcher for the first time in 2014. The upgrade will roughly double smart weapon capacity while reducing drag to increase range. Future weapons integration includes the GBU-54 Laser JDAM, AGM-158B JASSM-ER, MALD, and MALD-J jammer variant. The B-52's ECM suite combines electronic detection, jamming, and IR countermeasures to defeat air defenses. The overall B-52 System Improvements project is replacing key obsolescent components. The Combat Network Communications Technology (CONECT) program is replacing the aircraft's old cockpit displays and communications and enabling functions such as machine-to-machine retasking and retargeting. CONECT recently delivered its first upgraded airframe. Communications Navigation Surveillance/Air Traffic Management (CNS/ATM) replaces the B-52's analog systems with globally compatible digital systems. Several B-52s are being modified to conventional-only capability to comply with New START nuclear arms reduction agreement. AFGSC recently tested a podded AESA radar to enhance the aircraft's all-weather/contested-airspace operations.

Extant Variant(s)

• B-52H. Last serving variant of the dual-capable nuclear and conventional bomber.

Function: Long-range heavy bomber.

Operator: AFGSC, AFMC, AFRC.

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

Delivered: 1955-October 1962.

IOC: June 19, 1955.

Production: 744.

Inventory: 76.

Aircraft Location: Barksdale AFB, La.; Edwards AFB, Calif.; 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 EWO.

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

Weight: max T-O 488,000 lb.

Ceiling: 50,000 ft.

Performance: speed 650 mph, range 10,000+ miles.

Armament: Nuclear: 12 AGM-86B ALCMs externally, and eight ALCMs or gravity weapons internally. Conventional: AGM-86C/D CALCMs, Mk 62 sea mines, Mk 82/84 bombs, CBU-87/89 cluster bombs, CBU-103/104/105 WCMDs, GBU-31/38 JDAMs, AGM-158A JASSMs, and GBU-10/12/28 LGBs.

FIGHTER AND ATTACK AIRCRAFT

A-10 Thunderbolt II

Brief: Twin-engine aircraft designed for CAS against a wide range of ground targets, including tanks and armored vehicles.

COMMENTARY

The A-10C is an A-10A with precision engagement modifications, including color cockpit MFDs, hands-on throttle and stick, digital stores management, improved fire-control system, GPS guided weapons, Litening/Sniper pods, advanced data links, and integrated sensors. A-10C reached IOC and deployed to combat for the first time in 2007. It combines a large and diverse weapons payload, long loiter times, austere airfield capability, maneuverability, and wide combat radius. Using night vision and targeting pods, it is capable of operating under 1,000-ft ceilings in darkness. The aircraft has 11 hardpoints for up to 16,000 lb of ordnance. Its 30 mm gun can destroy heavy armor, and its titanium cockpit tub protects the pilot. Current upgrades include advanced IFF and open-architecture software to allow quick integration of future weapons and sensors. Although fleetwide wing replacements are ongoing, USAF is seeking to divest the fleet. Congress barred retiring the jets, but permitted the service to place 36 in backup flying or inventory status for the duration of FY15 to ease budget constraints.

Extant Variant(s)

• A-10C. Upgraded version of the A-10A ground attack aircraft.

Function: Attack.

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

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

Delivered: October 1975-March 1984.

IOC: October 1977.

Production: 713.

Inventory: 297.

Aircraft Location: Barksdale AFB, La.; Boise Air Terminal, Idaho; Davis-Monthan AFB, Ariz.; Eglin AFB, Fla.; Fort Wayne Arpt., Ind.; Martin State Arpt., Md.; Moody AFB, Ga.; Nellis AFB, Nev.; Osan AB, South Korea; Selfridge ANGB, Mich.; 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.

Dimensions: span 57.5 ft, length 53.3 ft, height 14.7 ft.

Weight: max T-O 51,000 lb.

Ceiling: 45,000 ft.

Performance: speed 518 mph, range 800 miles.

Armament: one 30 mm, seven-barrel GAU-8/A Gatling gun (1,174 rd), straight HEI, or anti-armor HE/armor-piercing incendiary (API). Combat mix incl various types of free-fall or guided bombs such as Mk 82, Mk 84, GBU-10/12/38,



A-10C Thunderbolt II (SrA. Brett Clashman)

CBU-87, various WCMDs, illumination rockets/flares, AGM-65 Mavericks, and AIM-9 Sidewinders.

F-15 Eagle

Brief: Supersonic, highly maneuverable, all-weather tactical fighter designed to swiftly gain and maintain combat air superiority.

COMMENTARY

The F-15 was the world's dominant air superiority fighter for more than 30 years. F-15C/Ds began replacing F-15A/B in 1979 and combined superior maneuverability and acceleration, range, weapons, and avionics. The aircraft accounted for 34 of the 37 USAF air-to-air kills during its first combat employment, in

Acronyms

ACTD	Advanced Concept Technology Demonstration
AE	aeromedical evacuation
AEHF	Advanced Extremely High Frequency
AESA	active electronically scanned array
AFDW	Air Force District of Washington
AGM	air-to-ground missile
AIM	air intercept missile
ALCM	Air Launched Cruise Missile
AMRAAM	Advanced Medium-Range Air-to-Air Missile
ATP	advanced targeting pod
AvFID	Aviation Foreign Internal Defense
BLOS	beyond line of sight
BLU	bomb live unit
BM	battle management
C2	command and control
C3	command, control, & communications
CALCM	Conventional Air Launched Cruise Missile
CAS	close air support
CBU	cluster bomb unit
CEM	combined effects munition
CEP	circular error probable
CFT	conformal fuel tank
COTS	commercial off the shelf
CSAR	combat search and rescue
CSO	combat systems officer
DARPA	Defense Advanced Research Projects Agency
EA	electronic attack
ECM	electronic countermeasures
EELV	Evolved Expendable Launch Vehicle
EHF	extremely high frequency
Elint	electronic intelligence
EO	electro-optical
ER	extended range
EW	electronic warfare
EWO	electronic warfare officer
FAB-T	Family of Advanced Beyond Line of Sight Terminals
FLIR	forward-looking infrared
FMV	full-motion video
FYDP	Future Years Defense Program
GATM	Global Air Traffic Management
GBU	guided bomb unit
GCS	ground control station
GPS	Global Positioning System
HARM	High-speed Anti-Radiation Missile
HE	high-explosive
HUD	head-up display
IFF	identification, friend or foe
IIR	imaging infrared

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the 1991 Gulf War. The aircraft includes internal EW countermeasures suite, additional 2,000 lb of internal fuel, and provision for CFTs. Tactical capabilities were enhanced with the initiation of the Multistage Improvement Program. The final 43 production aircraft received the F-15E-designed APG-70 radar. Ongoing F-15C/D mods include AESA radar and a new mission computer slated for LRIP in FY15. The Talon Hate program deploys four F-15 developmental jam-proof data link pods to PACOM for uncompromised data-relay in high-end threat areas. Due to budget pressure, USAF clipped FY15 funding from the Eagle Passive/Active Warning Survivability System (EPAWSS). EPAWSS is considered crucial to future operations in highly contested environments. USAF plans to retire 51 aircraft over the FYDP, sustaining the remaining aircraft through at least 2035. Future upgrades include developing new digital cockpit displays. Nellis was to cease F-15 operations in March 2015.

Extant Variant(s)

- F-15C/D. Upgraded version of the original F-15A/B air superiority fighter.

Function: Air superiority fighter.

Operator: ACC, AFMC, PACAF, USAF, USAF-AFACRICA, ANG.

First Flight: July 27, 1972.

Delivered: November 1974-85.

IOC: September 1975.

Production: 874.

Inventory: 213 (F-15C); 36 (F-15D).

Aircraft Location: Barnes Arpt., Mass.; Eglin AFB, Fla.; Fresno ANGB, Calif.; Jacksonville Arpt., Fla.; Kadena AB, Japan; Kingsley Field (Klamath Falls), Ore.; NAS JRB New Orleans, La.; Nellis AFB, Nev.; Portland Arpt., Ore.; RAF Lakenheath, UK.

Contractor: McDonnell Douglas (now Boeing), Raytheon.

Power Plant: Two Pratt & Whitney F100-PW-220 turbofan engines, each 23,450 lb thrust; or two P&W F100-PW-229 turbofan engines with afterburners, each 29,000 lb thrust.

Accommodation: pilot (C); two pilots (D).

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

Weight: max T-O 68,000 lb.

Ceiling: 60,000 ft.

Performance: F-15C: speed Mach 2.5, ferry range 2,878 miles (3,450 miles with CFTs and three external tanks).

Armament: one internally mounted M61A1 20 mm six-barrel cannon (940 rd); four AIM-9 Sidewinders and four AIM-120 AMRAAMs or eight AIM-120s, carried externally.

F-15E Strike Eagle

Brief: Heavily modified two-seat dual-role F-15 designed for all-weather deep interdiction and weapons delivery as well as air-to-air combat.

COMMENTARY

F-15E is an upgraded heavyweight, multirole F-15. It saw combat for the first time during Desert Storm in 1991. The F-15E can maneuver at nine Gs throughout the flight envelope. Its advanced cockpit controls and displays include a wide-field-of-view HUD, and its avionics permit all-weather day/night engagement. The F-15E carries LANTIRN, Sniper, and Litening ATPs on dedicated pylons. A SAR pod provides surveillance and reconnaissance capability. The F-15E's large, varied ordnance load of precision weapons and 20 mm cannon gives it potent ground attack capability. Radar guided and IR-homing missiles give it an additional air-to-air capability. Aircraft are equipped with Link 16 and ARC-210 BLOS satcom. Ongoing upgrades include AESA radar, more capable mission computer, and helmet mounted cockpit cueing. EPAWSS mods have been slowed. USAF expects to complete fatigue testing in 2016 to determine SLEP requirements to reach 2035 or beyond. The Air Force launched development of passive IR Search and Track (IRST) in FY15.

Extant Variant(s)

- F-15E. Multirole fighter aircraft based on the F-15 air superiority fighter.

Function: Multirole fighter.

Operator: ACC, AFMC, USAF, USAF-AFACRICA.

First Flight: Dec. 11, 1986.

Delivered: April 1988-2004.

IOC: September 1989.

Production: 236.

Inventory: 220.



F-15E Strike Eagle (A1C Trevor T. McBride)

Aircraft Location: Eglin AFB, Fla.; Mountain Home AFB, Idaho; Nellis AFB, Nev.; RAF Lakenheath, UK; Seymour Johnson AFB, N.C.

Contractor: McDonnell Douglas (now Boeing), Raytheon.

Power Plant: two Pratt & Whitney F100-PW-220, each 23,450 lb thrust; or two F100-PW-229 turbofans with afterburners, each 29,000 lb thrust.

Accommodation: pilot and WSO.

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

Weight: max T-O 81,000 lb.

Ceiling: 50,000 ft.

Performance: speed Mach 2.5, ferry range 2,400 miles with CFTs and three external tanks.

Armament: one internally mounted M61A1 20 mm six-barrel cannon (500 rd); four AIM-9 Sidewinders and four AIM-120 AMRAAMs or eight AIM-120s; most air-to-surface weapons in USAF inventory (nuclear and conventional).

F-16 Fighting Falcon

Brief: Highly maneuverable multirole fighter proven in air-to-air combat, SEAD, and air-to-surface attack.

COMMENTARY

The F-16 is the workhorse of USAF's fighter fleet and among the most maneuverable fighters ever built. It is a lightweight fighter capable of carrying the majority of PGMs. The F-16 flew in combat for the first time in the 1991 Gulf War, flying more sorties than any other type. The F-16C/D was introduced in 1984, at F-16 production Block 25. It featured Multinational Staged Improvement Program (MSIP) II cockpit, airframe, and core avionics upgrades and added the increased-range APG-68 radar. Block 25s added AMRAAM as a baseline weapon, and Block 30/32 added MSIP III mods, new engines, and additional weapons including HARM. Block 40/42 was first delivered in 1988 and introduced the LANTIRN pod, enabling automatic terrain following for high-speed night and all-weather penetration and attack with PGMs. It also included wide-angle HUD and featured increased takeoff weight, expanded flight envelope, and higher G limits. Block 50/52 was first delivered in 1991 and is optimized for SEAD, employing HARM and a longer range fire-control radar. It also added the uprated F110-GE-129 and F100-PW-229 engines and upgradable cockpit controls and displays. Weapons improvements included Sniper and Litening ATPs and ROVER downlink to coordinate with joint terminal attack controllers (JTACs) on the ground. All Block 40/42 and 50/52 F-16s received the Common Configuration Implementation Program (CCIP), standardizing the cockpit configurations with color MFDs, modular mission computer, helmet mounted cueing, and Link 16. The Air Force is evaluating both blocks for a SLEP due to airframe fatigue. All F-16Ds were briefly grounded after canopy-sill cracking was discovered during 2014. SLEP would include structural mods to extend the service life of 300 aircraft by six to eight years. The Air Force canceled the Combat Avionics Programmed Extension Suite (CAPES) due to budget cuts. CAPES would have added AESA radar, new cockpit display, data link enhancements, and improved defensive suite considered essential against emergent threats. Newly fielded ground collision avoidance equipment aims to cut the leading cause of aircraft and crew loss.

Extant Variant(s)

- F-16C/D Block 30. MSIP II upgraded with new engines, flown by ANG and AFRC.

- F-16CG Block 40/42. Aircraft optimized for night and all-weather attack.

- F-16CJ Block 50/52. Aircraft optimized for SEAD with new long-range radar, engines, and weapons.

Function: Multirole fighter.

Operator: ACC, AETC, AFMC, PACAF, USAF, USAF-AFACRICA, ANG, AFRC.

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

Delivered: January 1979-2005.

IOC: October 1980, Hill AFB, Utah.

Production: 2,206.

Inventory: 814 (F-16C); 157 (F-16D).

Aircraft Location: Aviano AB, Italy; Edwards AFB, Calif.; Eglin AFB, Fla.; Eielson AFB, Alaska; Hill AFB, Utah; Holloman AFB, N.M.; Homestead ARB, Fla.; Kunsan AB, South Korea; Luke AFB, Ariz.; Misawa AB, Japan; NAS JRB Fort Worth, Texas; Nellis AFB, Nev.; Osan AB, South Korea; Shaw AFB, S.C.; Spangdahlem AB, Germany; and ANG in Alabama, Arizona, Colorado, District of Columbia (flying out of Maryland), Minnesota, New Jersey, Ohio, Oklahoma, South Carolina, South Dakota, Texas, Vermont, Wisconsin.

Contractor: Lockheed Martin, Northrop Grumman.

Power Plant: Block 40: one General Electric F110-GE-100 (29,000 lb thrust); Block 42: one Pratt & Whitney F100-PW-220 (24,000 lb thrust); Block 50: one F110-GE-129 (29,000 lb thrust); Block 52: one F100-PW-229 (29,000 lb thrust).

Accommodation: pilot.

Dimensions: span 32.8 ft, length 49.3 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: speed Mach 2, ferry range 2,002+ miles.

Armament: one M61A1 20 mm cannon (500 rd); up to six air-to-air missiles, AGMs, and ECM pods externally.

F-22 Raptor

Brief: Fifth generation, multirole fighter designed to penetrate advanced anti-air threats and achieve air dominance.

COMMENTARY

The F-22 is USAF's newest operational fighter, built for day, night, and adverse weather full-spectrum operations. Features include six LCD color cockpit displays, APG-77 radar, EW system with RWR and missile launch



F-22A Raptor (SSgt. Vernon Young Jr.)

detector, JTIDS, IFF system, laser gyroscope inertial reference, and GPS. The Raptor flew its first operational sortie during Noble Eagle in 2006 and debuted in combat during Inherent Resolve over Iraq and Syria in 2014. Four aircraft successfully employed 1,000-lb JDAMs against ISIS militant ground targets on the aircraft's first combat sortie on Sept. 22, 2014. It combines stealth, supercruise, high maneuverability, and integrated avionics to counter anti-access threats. Its integrated avionics and data links permit simultaneous multitarget engagement. Advanced flight controls and thrust vectoring high-performance engines lend great maneuverability. Ongoing Reliability, Availability, and Maintainability Maturation Program (RAMMP) develops and integrates Increment 3.1 mods for retrofit to combat-coded F-22s, enhancing ground attack capabilities. RAMMP includes upgraded SAR ground mapping, threat geolocation, EA capability, and integration of SDB I. Increment 3.2 will enter operational testing in FY15 and add AIM-120D AMRAAM and AIM-9X.

Extant Variant(s)

• F-22A. Upgraded production model fifth generation air dominance fighter.

Function: Multirole air superiority fighter.

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

First Flight: Sept. 7, 1997.

Delivered: 2002 (first production representative aircraft).

IOC: Dec. 15, 2005.

Production: 195.

Inventory: 187.

Aircraft Location: Edwards AFB, Calif.; JB Elmendorf-Richardson, Alaska; JB Langley-Eustis, Va.; JB Pearl Harbor-Hickam, Hawaii; Nellis AFB, Nev.; Tyndall AFB, Fla.

Contractor: Lockheed Martin, Boeing.

Power Plant: two Pratt & Whitney F119-PW-100 turbofans, each 35,000 lb thrust.

Accommodation: pilot.

Dimensions: span 44.5 ft, length 62 ft, height 16.6 ft.

Weight: max T-O 83,500 lb.

Ceiling: above 50,000 ft.

Performance: speed Mach 2 with supercruise capability, ferry range 1,850+ miles with two external wing fuel tanks.

Armament: one internal M61A2 20 mm gun (480 rds); two AIM-9 Sidewinders stored inside internal weapons bays; six AIM-120 AMRAAMs (air-to-air loadout) or two AIM-120s and two GBU-32 JDAMs (air-to-ground loadout) in main internal weapons bay.

F-35 Lightning II

Brief: Stealthy, next generation, joint service strike aircraft.

COMMENTARY

The F-35 is a joint and multinational program aimed at developing and fielding an affordable, highly common family of next generation strike fighters. USAF's F-35A will replace F-16 and A-10 fleets with a stealthy multirole fighter designed to enter heavily defended enemy airspace and engage targets in any environment. The F-35A can carry up to 18,000 lb of weapons on 10 stations including four internal bays for maximum stealth, and three additional hard points on each wing. A USAF test pilot first flew the F-35 in 2008, and the service received its first production aircraft—AF-7—on Jan. 30, 2008, as part of LRIP Lot 1. The joint schoolhouse at Eglin received its first F-35A in 2011 and was cleared to begin flight operations in early 2012. Nellis launched its first operational test mission in 2013, and the first of 144 F-35As slated to train USAF and international pilots arrived at Luke on March 11, 2014. The FY16 budget would procure another 44 F-35As. The fleet was briefly grounded in 2014 following an engine fire traced to compressor component friction. Aircraft were cleared for limited flight as fixes were being implemented through the end of 2014. Initial operational capability planned for August 2016 is threatened by maintenance personnel shortage. All variants are still in development and testing. Development is scheduled for completion in 2017.

Extant Variant(s)

• F-35A. Conventional takeoff and landing (CTOL) variant for the Air Force.

Acronyms, Continued

Imint	imagery intelligence
INS	inertial navigation system
IOC	initial operational capability
IP	Internet protocol
IR	infrared
ISR	intelligence, surveillance, & reconnaissance
JASSM	Joint Air-to-Surface Standoff Missile
JDAM	Joint Direct Attack Munition
JSOW	Joint Standoff Weapon
JSUPT	Joint Specialized Undergraduate Pilot Training
JTIDS	Joint Tactical Information Distribution System
LANTIRN	Low-Altitude Navigation & Targeting Infrared for Night
LCD	liquid crystal display
LGB	laser guided bomb
LJDAM	Laser Joint Direct Attack Munition
LO	low observable
LOS	line of sight
LRIP	low-rate initial production
LRSO	Long-Range Standoff missile
MALD	Miniature Air Launched Decoy
Masint	measurement & signature intelligence
MFD	multifunction display
MTI	military training instructor
n/a	not available
NSAv	nonstandard aviation
NVG	night vision goggles
PGM	precision guided munition
PSP	Precision Strike Package
ROVER	Remotely Operated Video Enhanced Receiver
RPA	remotely piloted aircraft
RWR	radar warning receiver
SAR	synthetic aperture radar
satcom	satellite communications
SDB	Small Diameter Bomb
SEAD	suppression of enemy air defenses
SHF	super high frequency
shp	shaft horsepower
Sigint	signals intelligence
S-L	sea level
SLEP	service life extension program
SOF	special operations forces
STOL	short takeoff and landing
TACAN	tactical air navigation
TBD	to be determined
TF/TA	terrain-following/terrain-avoidance
T-O	takeoff
USAF	US Air Force Academy
VLF	very low frequency
WCMD	Wind-Corrected Munitions Dispenser
WSO	weapon systems officer

• F-35B. Short takeoff and vertical landing (STOVL) variant for USMC.

• F-35C. Carrier-capable variant for USN.

Function: Multirole fighter.

Operator: AETC, AFMC. Planned: ACC, PACAF, USAF-AFACRICA, ANG.

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

Delivered: April 2011 (first production aircraft).

IOC: 2016 (USAF).

Production: planned: 1,763 USAF (F-35A); 680 Navy and Marine Corps (F-



F-35A Lightning II (SSgt. Joely Santiago)

35B&C); unspecified number to Britain, seven other development partners, and foreign military sales customers.

Inventory: 38 (USAF).

Aircraft Location: Edwards AFB, Calif.; Eglin AFB, Fla.; Luke AFB, Ariz.; Nellis AFB, Nev.; future locations include Burlington ANG, Vt.; Hill AFB, Utah; RAF Lakenheath, UK; others TBD.

Contractor: Lockheed Martin, with BAE Systems, Northrop Grumman, Pratt & Whitney.

Power Plant: F-35A: one Pratt & Whitney F135-PW-100, 40,000 lb thrust.

Accommodation: pilot.

Dimensions: span 35 ft, length 51.4 ft, height 14.4 ft.

Weight: max T-O 70,000 lb.

Ceiling: 50,000 ft.

Performance: speed Mach 1.6 with full internal weapons load, range 1,380 miles.

Armament: F-35A: one exterior mounted 25 mm GAU-22/A cannon; standard internal loadout: two AIM-120 AMRAAMs and two GBU-31 JDAMs.

SPECIAL OPERATIONS AIRCRAFT

AC-130U Spectre

Brief: Modified C-130H armed with side-firing weapons and sensors optimized for precision night and all weather CAS, long-endurance interdiction, and armed reconnaissance.

COMMENTARY

Gunship modified with gun systems, electronic and EO sensors, fire-control systems, enhanced navigation systems, sophisticated communications, defensive systems, in-flight refueling capability. AFSOC retired the last AC-130H from the 27th Special Operations Wing at Cannon AFB, N.M., in January 2014 and plans a phased drawdown of the AC-130U fleet as next generation AC-130Js are delivered. The AC-130U serves with 1st SOW, Hurlburt Field, Fla. AC-130Us were initially converted from C-130H airframes by Rockwell and delivered to 4th SOS in 1994-95. Thirteen aircraft were modified by Rockwell, and four conversions were done by Boeing in recent years. All AC-130U weapons can be subordinated to the APQ-180 digital fire-control radar, FLIR, or all-light-level television (ALLTV) for adverse weather attack operations.

Extant Variant(s)

- AC-130H Spectre. Second generation gunship converted from AC-130E/C-130H.

- AC-130U Spooky. Third generation gunship based on C-130H.

Function: Attack.

Operator: AFSOC.

First Flight: 1967.

Delivered: 1968-present.

IOC: 1996.

Production: 43; incl four more recent conversions.

Inventory: six AC-130H; 17 AC-130U.

Aircraft Location: Hurlburt Field, Fla.

Contractor: Lockheed Martin (airframe); Boeing (formerly Rockwell).

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: two pilots, navigator, fire-control officer, EWO; flight engineer, TV operator, IR detection set operator, loadmaster, four aerial gunners.

Dimensions: span 132.6 ft, length 97.8 ft, height 38.5 ft.

Weight: gross 155,000 lb.

Ceiling: 25,000 ft.

Performance: speed 300 mph, range 1,300 miles.

Armament: one 25 mm Gatling gun, plus one 40 mm and one 105 mm cannon.

AC-130J Ghost Rider

Brief: Modified MC-130J armed with side-firing weapons, low-yield PGMs, and sensors optimized for CAS and air interdiction, specifically suited to urban operations.

COMMENTARY

A next generation gunship based on a significantly modified C-130J including fully integrated digital avionics cockpit, GPS/INS, integrated defensive systems and color weather radar, and Precision Strike Package. PSP includes a mission management console, robust communications suite, two EO/IR sensors, advanced fire-control equipment, PGM delivery capability, and trainable cannons. Designed to provide ground forces with a persistent direct-fire platform suited to urban operations and to deliver precision low-yield munitions. The prototype flew its first post-conversion flight from Eglin AFB, Fla., in January 2014. Airframes will be delivered as MC-130Js for postdelivery modification. FY15 funding supports conversion of two additional gunships, but weapon and sensor integration problems have delayed operational test and evaluation to the end of 2015. Future upgrades include adding a 105 mm gun starting with the third aircraft and integrate laser guided SDB and laser guided Hellfire missiles. Aircrew will grow from seven to nine.

Extant Variant(s)

- AC-130J Ghost Rider. Next generation gunship based on the MC-130J.

Function: Attack.

Operator: AFSOC.

First Flight: April 5, 1996 (basic C-130J).

Delivered: from 2014 (prototype)

IOC: 2017 (planned).

Production: 32 (to be converted from new-build MC-130Js).

Inventory: one.

Aircraft Location: Cannon AFB, N.M. (initial).



AC-130W Stinger II (A1C Ericka Engblom)

Contractor: Lockheed Martin.

Power Plant: four Rolls Royce AE 2100D3 turboprops, each 4,591 shp.

Accommodation: two pilots, two CSOs, three gunners.

Dimensions: span 132.6 ft, length 97.7 ft, height 38.8 ft.

Weight: max T-O 164,000 lb.

Ceiling: 28,000 ft., 42,000 lb payload.

Performance: speed 416 mph, range 3,000 miles.

Armament: 30 mm GAU-23/A cannon; 105 mm cannon; PGMs.

AC-130W Stinger II

Brief: Modified C-130H variant primarily designed for armed overwatch and reconnaissance, as well as direct ordnance delivery to support ground troops.

COMMENTARY

The AC-130W is a C-130H significantly modified to include improved navigation, threat detection, countermeasures, communications suites, and a standoff Precision Strike Package. PSP mod includes a mission management console, communications suite, and flight deck hardware. The airframes were originally modified as MC-130W Combat Spear variants, tasked with infiltration/exfiltration and in-flight refueling of SOF helicopters. In November 2010 USAF introduced the roll on/roll off PSP, changing the name to Dragon Spear, to meet a new USSOCOM requirement for additional gunships. The aircraft performs armed overwatch and CAS reconnaissance over friendly positions for threat prevention. AC-130Ws maintain a limited mobility capability, but also provide strike coordination, nontraditional ISR, and C2. USAF changed the aircraft's designation to AC-130W Stinger II in 2012, after adding further enhancements, including an improved PSP. Plans call for the new-build C-130J gunships to replace AC-130Ws, which on average are more than 24 years old. SDB capability was deployed in 2012.

Extant Variant(s)

- AC-130W Stinger II. Converted MC-130W armed with PSP and PGMs.

Function: Attack, armed reconnaissance.

Operator: AFSOC.

First Flight: circa 2006 (Combat Spear).

Delivered: November 2010 (Dragon Spear).

IOC: 2010 (Dragon Spear).

Production: 12 (converted).

Inventory: 12.

Aircraft Location: Cannon AFB, N.M.

Contractor: Lockheed Martin.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: two pilots, two CSOs, flight engineer, two special mission aviators.

Dimensions: span 132.6 ft, length 98.8 ft, height 38.5 ft.

Weight: max T-O 155,000 lb.

Ceiling: 28,000 ft.

Performance: speed 300 mph, range 2,875 miles.

Armament: 30 mm GAU-23/A Bushmaster II chain gun; PGMs, incl GBU-39 SDB and AGM-176A Griffin.

C-145 Skytruck

Brief: Militarized STOL multipurpose utility aircraft used for foreign internal defense and light SOF mobility missions.

COMMENTARY

The C-145 is a Polish-built PZL Mielec M-28 Skytruck high-wing STOL aircraft with nonretractable landing gear capable of austere operations. USSOCOM assets are operated by AFSOC as a nonstandard fleet initially supporting small combat teams. The aircraft first deployed in 2011 to Afghanistan. It is reconfigurable for 2,400 lb of cargo airdrop, casualty evacuation, CSAR, and humanitarian missions. C-145As later shifted to partnership capacity building missions. The fleet is operated by the 6th SOS combat aviation advisors and AFRC's 711th SOS (classic associate) at Duke Field, Fla. FY15 plans call for fleet reduction from 16 to five airframes.

Extant Variant(s)

- C-145A. Militarized civilian M-28 Skytruck used for SOF support and training.

Function: Foreign training and light mobility.

Operator: AFSOC, AFRC (classic associate).
First Flight: July 1993 (PZL M-28).
Delivered: from 2009.
IOC: n/a.
Production: 16.
Inventory: USSOCOM-owned.
Aircraft Location: Duke Field, Fla.
Contractor: PZL Mielec (Sikorsky subsidiary)
Power Plant: two Pratt & Whitney PT6A-65B turboprops, 1,100 shp.
Accommodation: crew: two pilots, one loadmaster. Load: 16 passengers or 10 paratroopers; up to four litters; max cargo 5,000 lb.
Dimensions: span 72.3 ft, length 43 ft, height 16.1 ft.
Weight: max T-O 16,534 lb.
Ceiling: 25,000 ft.
Performance: speed 256.5 mph, range 1,161.5 miles.

C-146 Wolfhound

Brief: Militarized commuter airliner that provides flexible and responsive mobility support to SOF worldwide.

COMMENTARY

The German-built Dornier 328 was purchased by USSOCOM, modified by Sierra Nevada Corp., and designated C-146. The aircraft are operated by AFSOC as a nonstandard fleet providing direct support to SOF teams worldwide, often from semiprepared airfields. Modifications include ARC-231, PRC-117, and Iridium communications suite, troop/cargo-capable cabin, casualty evacuation capability, NVG compatibility, and STOL austere operations enhancements. The aircraft first deployed in support of USAFRICOM operations in 2011.

Extant Variant(s)

- C-146A. Preowned civil Dornier 328 modified for SOF airlift.

Function: Multimission mobility.

Operator: AFSOC.

First Flight: December 1991 (Do 328).

Delivered: from 2011.

IOC: n/a.

Production: 17 (converted).

Inventory: USSOCOM-owned.

Aircraft Location: Cannon AFB, N.M.

Contractor: Fairchild-Dornier; Sierra Nevada Corp.

Power Plant: two Pratt & Whitney 119C turboprops, 2,150 shp.

Accommodation: crew: two pilots, one loadmaster. Load: 27 passengers; up to four litters; max cargo 6,000 lb.

Dimensions: span 69.6 ft, length 68.8 ft, height 23.8 ft.

Weight: max T-O 30,843 lb.

Ceiling: 31,000 ft.

Performance: speed 335 mph, range 2,070 miles (2,000 lb cargo).

CV-22 Osprey

Brief: Long-range, multimission tilt-rotor designed to combine the lifting capability of a helicopter with the speed of a fixed wing aircraft.

COMMENTARY

The V-22 is a medium-lift vertical takeoff and landing (VTOL) tilt-rotor operated by the Air Force and Marine Corps. Air Force CV-22Bs operated by AFSOC are equipped with a fully integrated precision navigation suite, a digital cockpit management system, FLIR, integrated NVG HUD, TF/TA radar, digital map system, robust self-defense avionics, and secure anti-jam communications. The CV-22 deployed for the first time to Africa in November 2008 and saw combat for the first time in Iraq in 2009. Its primary mission is clandestine long-range, all-weather penetration of denied areas to infiltrate, exfiltrate, and resupply SOF. The CV-22 is designed to operate from land bases, austere forward operating locations, and air-capable ships without reconfiguration. It is also fully equipped to operate under nuclear, biological, and chemical (NBC) warfare conditions. The 10 Europe-based CV-22s will shift to an as yet unnamed base in Germany with the planned closure of RAF Mildenhall, UK. FY15 budget was to fund CV-22 production line shutdown and Pacific region squadron standup.



CV-22B Osprey (A1C Hayden K. Hyatt)



MC-130P Combat Shadow (MSgt. Michael Farris)

Extant Variant(s)

- CV-22B. Air Force special operations variant of the V-22 Osprey.

Function: Multimission lift.

Operator: AETC, AFSOC.

First Flight: March 19, 1989 (V-22).

Delivered: from 2006.

IOC: 2009.

Production: 50 planned (CV-22; incl two replacements).

Inventory: 41.

Aircraft Location: Hurlburt Field, Fla.; Kirtland AFB, N.M.; RAF Mildenhall, UK.

Contractor: Boeing, Bell Helicopter Textron.

Power Plant: two Rolls Royce-Allison AE1107C turboshafts, each 6,200 shp.

Accommodation: crew: two pilots; two flight engineers. Load: 24 troops seated, 32 troops on floor, or 10,000 lb cargo.

Dimensions: span 84.6 ft, length 57.3 ft, height 22.1 ft, rotor diameter 38 ft.

Weight: max vertical T-O 52,870 lb; max rolling T-O 60,500 lb.

Ceiling: 25,000 ft.

Performance: cruise speed 277 mph, combat radius 575 miles with one internal auxiliary fuel tank, self-deploy 2,100 miles with one in-flight refueling.

Armament: one .50-caliber machine gun on ramp.

MC-130P/H Combat Shadow/Combat Talon

Brief: Modified C-130 tasked with day, night, and adverse weather special operations force insertion and air-drop resupply, and rotary wing aerial refueling.

COMMENTARY

The MC-130 is a special operations mobility aircraft, primarily used to conduct infiltration, resupply, and exfiltration of SOF. MC-130E/Hs are equipped with TF/TA radars, precision navigation systems using INS/GPS, and electronic and IR countermeasures for self-protection. All models capable of aerial refueling as a receiver and tanker. The aircraft are capable of airdrop, using Joint Precision Airdrop System, and operating from austere and unmarked strips. Fourteen MC-130E were converted from C-130Es. MC-130H were converted from base-model C-130H to supplement the existing Combat Talon I and Combat Shadow fleets in the late 1980s and early 1990s. MC-130Hs have integrated glass cockpit and a state-of-the-art pod-based aerial refueling system. MC-130Ps (previously HC-130N/P) are a specialized aerial refueling version designed to support SOF and were delivered in the mid-1980s. Mods include fully integrated INS/GPS system, NVG-compatible interior and exterior lighting, FLIR, radar and missile warning receivers, chaff/flare dispensers, and satellite and data-burst communications. The last MC-130E retired in 2014, and plans call for retiring MC-130Ps in 2015.

Extant Variant(s)

- MC-130P Combat Shadow. SOF support and aerial refueling tanker fielded in 1986.
- MC-130H Combat Talon II. SOF support and aerial refueling tanker fielded in 1991.

Function: Special operations airlift/aerial refueling.

Operator: AETC, AFSOC, ANG, AFRC.

First Flight: circa 1965 MC-130E; 1984 MC-130H.

Delivered: initially 1966.

IOC: 1986 MC-130P; 1991 MC-130H.

Production: 22 new-build MC-130Hs.

Inventory: 16 MC-130P; 20 MC-130H.

Aircraft Location: Duke Field and Hurlburt Field, Fla.; Kadena AB, Japan; Kirtland AFB, N.M.; Moffett Field, Calif.

Contractor: Lockheed Martin (airframe), Boeing.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: MC-130H crew: two pilots, navigator, EWO; flight engineer, two loadmasters. MC-130H load: 77 troops, 52 paratroops, or 57 litters.

Dimensions: span 132.6 ft, height 38.5 ft, length 99.8 ft.

Weight: max T-O 155,000 lb.

Ceiling: 33,000 ft.

Performance: speed 290 mph, range 4,000+ miles (MC-130P); speed 300 mph, range 3,105 miles (MC-130H).

MC-130J Commando II

Brief: Modified C-130J optimized for low-level clandestine operations, aerial refueling of rotary wing aircraft, and resupply of special operations forces.

COMMENTARY

MC-130J is a specialized tanker variant of the C-130J, designed for clandestine formation or single-ship intrusion of hostile territory missions to provide air refueling of special operations forces vertical-lift and tilt-rotor assets. It also enables infiltration, exfiltration, and resupply of SOF by airdrop or air-land operations. Mods include fully integrated INS/GPS systems, color LCDs, NVG lighting, HUDs, integrated defensive systems, digital moving map display, EO/IR system, dual satcom for voice/data, enhanced cargo handling system, and enhanced service life wing. MC-130Js have a secondary mission of leaflets airdrop. The aircraft has fully populated CSO and auxiliary flight deck stations. Improvements over MC-130P reduce crew size, leaving the CSO to handle helicopter refueling process, normally run by the flight engineer. MC-130J loadmasters handle other flight engineer and communications operator functions. USAF officially changed the name from Combat Shadow II to Commando II in March 2012. The aircraft is replacing legacy MC-130E and MC-130P tankers. MC-130Js fully replaced Europe-based legacy MC-130s at RAF Mildenhall, UK, in 2014 and were in the process of replacing legacy Pacific-based airframes at Kadena AB, Japan. FY15 funding supports procurement of seven airframes.

Extant variant(s):

- MC-130J. New-build aircraft based on the standard-length fuselage C-130J.

Function: Special operations airlift/aerial refueling.

Operator: AETC, AFSOC.

First Flight: April 20, 2011.

Delivered: September 2011.

IOC: 2011.

Production: 37 (planned).

Inventory: 20.

Aircraft Location: Cannon AFB, N.M.; Kirtland AFB, N.M.; RAF Mildenhall, UK.

Contractor: Lockheed Martin (airframe), Boeing.

Power Plant: four Rolls Royce AE2100D3 turboprops, each 4,591 shp.

Accommodation: crew: two pilots, CSO; two loadmasters. Load: n/a.

Dimensions: span 132.6 ft, length 97.8 ft, height 38.8 ft.

Weight: max T-O 164,000 lb.

Ceiling: 28,000 ft with 42,000 lb payload.

Performance: speed 416 mph, range 3,000 miles.

U-28A

Brief: A militarized single-engine turboprop used for tactical airborne ISR support to special operations teams.

COMMENTARY

The U-28A is a modified Pilatus PC-12 aircraft employed on worldwide special operations missions. Mission specific mods include advanced radio-communications suite, aircraft survivability equipment, EO sensors, and advanced navigation systems. The USSOCOM-owned aircraft are operated by AFSOC as a nonstandard fleet. AFSOC first employed the aircraft during Enduring Freedom and Iraqi Freedom. AFRC provides associate instructors for flight training. USSOCOM planned to replace the U-28 fleet with MC-12s divested by ACC in FY15, but was prohibited by Congress.

Extant Variant(s)

- U-28A. Special operations variant of the civilian Pilatus PC-12.

Function: Tactical reconnaissance.

Operator: AFSOC, AFRC.

First Flight: circa 1994 (PC-12).

Delivered: 2006.

IOC: n/a.

Production: 36 (converted).

Inventory: USSOCOM-owned.

Aircraft Location: Cannon AFB, N.M.; Hurlburt Field, Fla.

Contractor: Pilatus Aircraft Ltd.

Power Plant: single Pratt & Whitney PT6A-67B, 1,200 shp.



E-4B National Airborne Operations Center (USAF photo)

Accommodation: two pilots, one CSO, one tactical systems officer.

Dimensions: span 53.3 ft, length 47.3 ft, height 14 ft.

Weight: max T-O 10,935 lb.

Ceiling: 30,000 ft.

Performance: speed 253 mph, range 1,725 miles.

ISR/BM/C3 AIRCRAFT

E-3 Sentry

Brief: Heavily modified Boeing 707-320B used to provide all-weather air surveillance, command, and control.

COMMENTARY

The E-3 is a battle management airborne warning and control system (AWACS), capable of surveillance over land or water from the Earth's surface to the stratosphere, at a range exceeding 200 miles. It is capable of simultaneously coordinating the movement of hundreds of strike, support, and cargo aircraft and integrates C2, BM, target detection, and target tracking on a single platform. The aircraft operate in direct subordination to joint or combined air operations centers. E-3Bs were upgraded in 1994 with greatly enhanced computing capabilities, jam-resistant communications, austere maritime surveillance capability, upgraded radios, and five additional mission consoles. They also received Block 30/35 mods completed in 2001. The Air Force is installing interim next generation IFF capability to ensure Block 30/35 aircraft meet new IFF requirements until the entire fleet is upgraded to Block 40/45 standards in 2020. The Block 40/45 upgrade is the most comprehensive rework in the aircraft's history, and upgraded airframes are designated E-3Gs. Block 40/45 enhances tracking and identification, mission effectiveness, system reliability, and lowers the aircraft's life-cycle cost. Modifications include new open architecture mission computers, automated processes to reduce operator workload, new operator consoles, improved electronic support measures (ESM), passive surveillance capability, and full next generation IFF. Six airframes are undergoing Block 40/45 modification under LRIP. The first aircraft was redelivered in July 2014, and USAF is upgrading another 18 airframes under full-rate production. USAF was barred from divesting seven airframes in FY15.

Extant Variant(s)

- E-3B. Block 30/35 upgraded aircraft.

- E-3C. Block 30/35 upgraded aircraft with additional advanced capabilities.

- E-3G. Block 40/45 upgraded aircraft.

Function: Battle management/early warning/C2.

Operator: ACC, PACAF, AFRC.

First Flight: Oct. 31, 1975 (full avionics).

Delivered: March 1977-84.

IOC: 1977.

Production: 31.

Inventory: 21 E-3B; five E-3C; five E-3G.

Aircraft Location: JB Elmendorf-Richardson, Alaska; Kadena AB, Japan; Tinker AFB, Okla.

Contractor: Boeing, Northrop Grumman (radar), Lockheed Martin (computer).

Power Plant: four Pratt & Whitney TF33-PW-100A turbofans, each 21,000 lb thrust.

Accommodation: four flight crew, 13-19 mission specialists.

Dimensions: span 145.8 ft, length 152.9 ft, height 41.8 ft.

Weight: max T-O 335,000 lb.

Ceiling: above 35,000 ft.

Performance: speed 360 mph, range 5,000+ miles.

E-4 National Airborne Operations Center

Brief: Militarized Boeing 747 modified as airborne operations and nuclear command and control center.

COMMENTARY

The E-4B is a highly survivable flying C3 center from which national leaders can direct US nuclear and conventional forces, execute emergency war orders, and coordinate actions by civil authorities. The aircraft is hardened against the effects of nuclear explosions, including electromagnetic pulse (EMP). It has state-of-the-art communications and data processing equipment including EHF Milstar satellite terminals and six-channel International Maritime Satellite terminals. A triband radome houses SHF communications antenna. All aircraft have undergone Modernization Block 1 upgrades, enhancing electronic and communications infrastructure with COTS hardware and software. Ongoing development includes replacing Milstar-based data links with AEHF compatible FAB-T. The Air Force plans to begin testing an upgraded prototype aircraft in FY16. Other important development activities include a replacement for the E-4's VLF transmitter and modernized navigation and air traffic management systems.

Extant Variant(s)

- E-4B. Modified Boeing 747-200 equipped as a NAOC.

Function: Nuclear command and control.

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.

Aircraft Location: Offutt AFB, Neb.

Contractor: Boeing, Rockwell, Raytheon.

Power Plant: four General Electric CF6-50E2 turbofans, each 52,500 lb thrust.



E-8C JSTARS (Northrop Grumman photo)

Accommodation: up to 112 flight crew and mission crew.

Dimensions: span 195.7 ft, length 231.3 ft, height 63.4 ft.

Weight: max T-O 800,000 lb.

Ceiling: above 30,000 ft.

Performance: speed 602 mph, range 7,130 miles.

E-8 JSTARS

Brief: Modified Boeing 707 used to locate, classify, and track moving ground targets.

COMMENTARY

The E-8C is used to provide theater ground and air commanders with surveillance data to support attack operations. The E-8 evolved from the Army and Air Force Joint Surveillance Target Attack Radar System program. The first two aircraft deployed for Desert Storm while still undergoing development in 1991. Production aircraft were delivered from 1996 to 2005, and earlier airframes were retrofitted to Block 20 final production standard, featuring more powerful computers, an Internet protocol local area network, and BLOS connectivity. JSTARS is equipped with a canoe-shaped radome under the forward fuselage housing a 24-ft-long side-looking phased array antenna. It is capable of locating, classifying, and tracking vehicles on the ground at distances in excess of 124 miles, and recent refinements also allow tracking of dismounted human targets. Data gathered by the aircraft is transmitted via data link to ground stations or other aircraft. USAF retired a damaged airframe and plans to retire the JSTARS integration and test aircraft in 2015. FY15 funding supports Air Force efforts to seek JSTARS replacement with a more affordable commercially available business-class airframe by 2022, reaching full operational capability by 2025.

Extant Variant(s)

- E-8C. Block 20 upgraded JSTARS platform based on the Boeing 707-300.
- TE-8A. Crew training aircraft based on the E-8.

Function: Ground surveillance/battle management/C2.

Operator: ACC (active associate) and ANG.

First Flight: December 1988.

Delivered: May 1996-2005.

IOC: Dec. 18, 1997.

Production: 18.

Inventory: 16 E-8C; one TE-8.

Aircraft Location: Robins AFB, Ga.

Contractor: Northrop Grumman, Motorola, Cubic, Raytheon.

Power Plant: four Pratt & Whitney TF33-102C turbojets, each 19,200 lb thrust.

Accommodation: flight crew: four; mission crew: 15 Air Force and three Army operators (can be augmented according to mission).

Dimensions: span 145.8 ft, length 152.9 ft, height 42.5 ft.

Weight: max T-O 336,000 lb.



E-9A Widget (MSgt. Michael Ammons)

Ceiling: 42,000 ft.

Performance: speed 584 mph (optimal orbit), range 9 hr normal endurance, longer with air refueling.

E-9A Widget

Brief: Modified commuter airliner employed to track test weapons and aerial targets and clear overwater test ranges.

COMMENTARY

The E-9A provides air-to-air telemetry support to weapons testing and target drone operations conducted over the Gulf of Mexico sea ranges. It replaced the UV-18 as a cheaper and more advanced alternative to existing surveillance platforms. Upgrades include AN/APS-143(V) airborne sea surveillance radar, UHF telemetry, and signal relay systems. The E-9 is able to track flying targets and relay telemetry data in support of weapons testing, in addition to surface targets. It can detect small watercraft at ranges up to 25 miles and alert range safety personnel to clear ranges before live-fire testing. The aircraft is also capable of remotely initiating destruction of damaged or malfunctioning aerial target drones.

Extant Variant(s)

- E-9A. Military surveillance version of the DHC-8 commuter airliner.

Function: Range control.

Operator: ACC

First Flight: June 1983 (De Havilland-Canada Dash 8).

Delivered: 1988.

IOC: June 1988.

Production: two.

Inventory: two.

Aircraft Location: Tyndall AFB, Fla.

Contractor: De Havilland Canada, now Bombardier (airframe); Sierra Research (conversion).

Power Plant: two Pratt & Whitney PW-120A turboprop engines, each 1,800 shp.

Accommodation: crew: two pilots; two mission operators. Load: 697 lb equipment.

Dimensions: span 39.5 ft, length 48.6 ft, height 12.2 ft.

Weight: max T-O 34,500 lb.

Ceiling: 30,000 ft.

Performance: speed 280 mph, range 1,000 miles.

E-11A Battlefield Airborne Communications Node

Brief: Modified business jet equipped as a tactical communications and data-relay platform to aid ground forces in rugged terrain.

COMMENTARY

The E-11A is a modified Bombardier Global Express 6000/BD-700-1A10 business jet equipped with specialized communications relay equipment to translate between tactical data links, provide joint range extension, BLOS C2, and IP-based data transfer between dissimilar systems. It was fielded to meet an urgent operational need for BLOS communications relay capability to ground troops and other airborne platforms in Afghanistan in 2008. The Battlefield Airborne Communications Node (BACN) payload is integrated on a mixed fleet of manned E-11As and unmanned EQ-4B Global Hawks. The aircraft are maintained by contractor logistics support and operated by the 430th Expeditionary Electronic Combat Squadron at Kandahar Airfield, Afghanistan. The combined BACN fleet has provided near-constant coverage in theater since deployment in 2008.

Extant Variant(s)

- E-11A. Modified Bombardier BD-700 equipped with the BACN payload.

Function: Communications relay.

Operator: ACC.

First Flight: Oct. 6, 2003 (BD-700).

Delivered: December 2008.

IOC: n/a.

Production: four.

Inventory: four.

Aircraft Location: Kandahar Airfield, Afghanistan.

Contractor: Northrop Grumman, Bombardier.

Power Plant: two Rolls Royce BR710A2-20 turbofans, each 14,750 lb thrust.

Accommodation: flight crew: two; mission crew: n/a.

Dimensions: span 94 ft, length 99 ft 5 in, height 25 ft 6 in.

Weight: max T-O 99,500 lb.

Ceiling: 51,000 ft.

Performance: speed Mach 0.88, range 6,900 miles.

EC-130H Compass Call

Brief: Heavily modified C-130H used for electronic warfare missions.

COMMENTARY

The EC-130H is a modified C-130H designed to disrupt enemy C3 and limit adversary coordination essential for enemy force management. All aircraft have been retrofitted to Block 35 standards. EC-130s are aurally refuelable. The aircraft was designed to be easily updated and modified, and mission equipment upgrades, such as new IR countermeasures and modernized comms, occur about every three years to ensure continued protection against evolving threats. USAF is replacing the center wing box to meet wing service life expiration. Ongoing development includes counter-radar and counter-satellite navigation, and digital glass cockpit efforts. The Air Force plans to retire seven airframes in FY16 and is evaluating follow-on capability options.

Extant Variant(s)

- EC-130H. Electronic attack variant of the C-130H.



EC-130J Commando Solo (SSgt. Tia Schroeder)

• TC-130H. Aircrew trainer stripped of mission equipment.
Function: EW.
Operator: ACC.
First Flight: 1981.
Delivered: 1982.
IOC: 1983; Block 30 from February 1999.
Production: (converted).
Inventory: 14.
Aircraft Location: Davis-Monthan AFB, Ariz.
Contractor: Lockheed Martin.
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: two pilots, navigator, two EWOs; flight engineer, mission crew supervisor (cryptologic experienced), four cryptologic linguists, acquisition operator, and airborne maintenance technician.
Dimensions: span 132.6 ft, length 99 ft, height 38 ft.
Weight: max T-O 155,000 lb.
Ceiling: 25,000 ft.
Performance: speed 300 mph at 20,000 ft.

EC-130J Commando Solo/Super J

Brief: Modified C-130 designed for psychological warfare, radio and television broadcast, or SOF mobility, depending on variant.

COMMENTARY

The EC-130 is the Air Force's primary psychological warfare platform, providing military information support operation (MISO) and civil affairs broadcasts. Legacy Commando Solo aircraft conducted psychological operations in almost every US war or contingency operation since 1980. The EC-130J Commando Solo is equipped with radio and color television broadcasting equipment for psychological warfare operations, enhanced navigation, self-protection, and an aerial refueling receptacle. With the transition to the EC-130J, USAF added a new, secondary mission resulting in a second variant. Three heavily modified EC-130J Commando Solo aircraft are equipped as a standard broadcasting station for psychological warfare operations. An additional four EC-130Js, dubbed Super J, are planned to perform secondary, low-cost EA role on top of their special operations mobility (SOFFLEX) mission. SOFFLEX missions including personnel and cargo airdrop, combat offload, and infiltration/exfiltration. Super J employs a future roll on/roll off (RORO) broadcast package—possibly the Army's Fly-Away Broadcast System—to supplement Commando Solo. All variants are operated by the ANG's 193rd SOW. First Commando Solo entered service in 2004, with deployed contingency operations beginning in 2005.

Extant Variant(s)

- EC-130J Commando Solo. Modified C-130J used for broadcast and psyops.
- EC-130J Super J. Modified C-130J used for SOF mobility and psyops.

Function: Psychological warfare/special operations airlift.



OC-135B Open Skies (Josh Plueger)

Operator: ANG.

First Flight: April 5, 1996 (C-130J).

Delivered: March 1980 (J model from 2003).

IOC: December 1980 (EC-130E).

Production: seven.

Inventory: seven (three Commando Solo, four Super J).

Aircraft Location: Harrisburg Arpt., Pa.

Contractor: Lockheed Martin, Raytheon.

Power Plant: four Rolls Royce-Allison AE2100D3 turboprops, each 4,637 shp.

Accommodation: two pilots, flight systems officer, mission systems officer; two loadmasters, five electronic communications systems (CS) operators.

Dimensions: span 132.6 ft, length 97.8 ft, height 38.8 ft.

Weight: max T-O 164,000 lb.

Ceiling: 28,000 ft.

Performance: speed 335 mph cruise, range 2,645 miles.

MC-12W Liberty

Brief: Militarized commercial twin-engine turboprop modified for medium- to low-altitude, manned ISR.

COMMENTARY

MC-12s are a mix of Beechcraft King Air 350s and 350ER modified with ISR, Sigint, and targeting equipment including FMV, laser designation, various sensors, BLOS connectivity, and Satcom. The sensor-equipped C-12s were acquired to augment RPA systems operating in Southwest Asia and began operations in Iraq in June 2009 and in Afghanistan in December 2009. The MC-12W is capable of complete ISR collection, processing, analysis, and dissemination. The aircraft provides ground forces with targeting data and other tactical ISR. An initial seven used King Air 350s were modified with FMV, a ROVER compatible LOS satcom data link, limited Sigint, and basic BLOS connectivity. An additional 30 extended-range King Air 350s were modified to include enhanced FMV with laser designator, more robust Sigint, and increased bandwidth BLOS. Five aircraft began Phase 3 modifications to incorporate high-definition EO/IR, enhanced communications, digital intercom control, and TACAN. ACC planned to transfer 33 MC-12s to USSOCOM and a further eight to the Army in FY15. Plans called for AFSOC and ANG to operate a combined 43 MC-12s on behalf of SOCOM, replacing the current U-28A fleet. Congress, however, blocked transfers to USSOCOM pending analysis and justification of the plan. The hold does not apply to the transfer of 13 aircraft to the ANG.

Extant Variant(s)

- MC-12W. Modified Beechcraft King Air equipped for battlefield ISR and targeting.

Function: Tactical reconnaissance.

Operator: ACC, ANG.

First Flight: April 2009.

Delivered: from April 2009.

IOC: June 2009.

Production: 42 (planned).

Inventory: 41.

Aircraft Location: Beale AFB, Calif.; Key Field, Miss. (initial weapon systems training).

Contractor: Beechcraft, L3 Communications.

Power Plant: two Pratt & Whitney Canada PT6A-60A turboprops, each 1,050 shp.

Accommodation: two pilots and two sensor operators.

Dimensions: span 57.9 ft, length 46.7 ft, height 14.3 ft.

Weight: max T-O 15,000 lb (350) and 16,500 lb (350ER).

Ceiling: 35,000 ft.

Performance: speed 359 mph, range 1,725 miles (350) and 2,760 miles (350ER).

OC-135 Open Skies

Brief: C-135 variant used for unarmed observation and arms control treaty verification flights.

COMMENTARY

The OC-135 is a modified WC-135B used for specialized arms control treaty observation and imagery collection missions over nations that are parties to the 1992 Open Skies Treaty. Specialized mission equipment includes framing and panoramic optical cameras installed in the rear of the aircraft. Two oblique KS-87E framing cameras permit photography from approximately 3,000 ft altitude, and one KA-91C panoramic allows for wide sweep photography from approximately 35,000 ft. The data annotation and recording system notes position, altitude, time, roll angle, and other data for each photo.

Extant Variant(s)

- OC-135B. Modified C-135 equipped for photo reconnaissance/treaty verification.

Function: Observation.

Operator: ACC.

First Flight: 1993.

Delivered: 1993-96.

IOC: October 1993.

Production: three.

Inventory: two.

Aircraft Location: Offutt AFB, Neb.

Contractor: Boeing.

Power Plant: four Pratt & Whitney TF33-P-5 turbofans, each 16,050 lb thrust.

Accommodation: flight crew: two pilots, two navigators, and two sensor maintenance technicians; Defense Threat Reduction Agency mission crew: mission commander, deputy, two sensor operators, and one flight follower; total seating: 35, incl space for foreign country representatives.

Dimensions: span 131 ft, length 135 ft, height 42 ft.



RC-26B Condor (SSgt. Shelley Gill)

Weight: max T-O 297,000 lb.
Ceiling: 50,000 ft (basic C-135).
Performance: speed 500+ mph, range 3,900 miles.

RC-26 Condor

Brief: Modified commuter airliner optimized for counternarcotics with specialized surveillance and communications equipment.

COMMENTARY

The RC-26 is a Modified Fairchild Metro 23 with specialized digital cameras, IR video, and communications equipment, primarily used for domestic and international anti-trafficking operations. The aircraft has a secondary role providing real-time video streaming to disaster relief personnel following hurricanes, wildfires, and other disasters. An extensive communications suite allows communications from 29 to 960 MHz, including provisions for plugging in 800 MHz handheld radios, and air phone capabilities. ANG is seeking funding to reconfigure Block 25 aircraft, which no longer meet either combatant commander or domestic requirements because of outdated and problematic mission management system, EO/IR sensor, and communications suite. The Air Force originally planned to divest the fleet in FY15, but is funding continued operations through 2015.

Extant Variant(s)

• RC-26B. Surveillance version of Fairchild C-26.

Function: Counternarcotics/surveillance/C2.

Operator: ANG.

First Flight: 1990.

Delivered: C-26 first delivered 1989.

IOC: n/a.

Production: 11.

Inventory: 11.

Aircraft Location: Ellington Field, Texas; Fairchild AFB, Wash.; Fresno Yosemite Arpt., Calif.; Hancock Field, N.Y.; Jacksonville Arpt., Fla.; Key Field, Miss.; Kirtland AFB, N.M.; Montgomery Regional Arpt., Ala.; Trux Field, Wis.; Tucson Arpt., Ariz.; Yeager Arpt., W.Va.

Contractor: Fairchild (airframe).

Power Plant: two Garrett TPE331-12UAR-701 turboprops, each 1,100 shp.

Accommodation: two pilots, one navigator-mission systems operator.

Dimensions: span 57 ft, length 59.5 ft, height 16.6 ft.

Weight: max T-O 16,500 lb.

Ceiling: 25,000 ft.

Performance: speed 334 mph, range 2,070 miles.

RC-135S Cobra Ball

Brief: Specially equipped C-135 used to gather measurement and signature intelligence (Masint) on ballistic missile flights.

COMMENTARY

The RC-135S monitors missile-associated signatures and tracks missiles during boost and re-entry phases to provide reconnaissance for treaty verification and theater ballistic missile nonproliferation. Its specialized equipment includes wide-area IR sensors, long-range optical cameras, and an advanced communications suite. Cobra Ball provides the capability to collect optical and electronic data on ballistic missile-associated activity. It can deploy anywhere in the world in 24 hours and provide on-scene EO reconnaissance.

Extant Variant(s)

• RC-135S Cobra Ball. Modified C-135 equipped for Masint/treaty verification.

Function: Electronic reconnaissance.

Operator: ACC.

First Flight: n/a.

Delivered: circa 1969-99.

IOC: circa 1972.

Production: converted.

Inventory: three.

Aircraft Location: Offutt AFB, Neb.

Contractor: Boeing (original airframe), L3 Communications.

Power Plant: four CFM International F108-CF-201 turbofans, each 21,600 lb thrust.

Accommodation: flight crew: two pilots, navigator. Mission crew: three EWOs; two airborne systems engineers, two airborne mission specialists.

Dimensions: span 131 ft, length 135 ft, height 42 ft.

Weight: max T-O 297,000 lb.

Ceiling: 45,000 ft.

Performance: speed 500+ mph, range 3,900 miles.

RC-135U Combat Sent

Brief: Specially equipped C-135 used to gather technical intelligence (Techint) on adversary radar emitter systems.

COMMENTARY

The RC-135U collects and examines data on airborne, land, and naval radar systems, providing strategic analysis for National Command Authorities and combatant forces. Its distinctive antennae arrays on the chin and wing tips, large cheek fairings, and extended tail contain specialized Sigint suites to collect scientific and technical Elint data against air-, land-, and sea-based emitter systems. Each airframe has slightly unique reconnaissance equipment. Combat Sent is critical to effective design, programming, and reprogramming of RWRs as well as jammers, decoys, and anti-radiation missiles and to the development of effective threat simulators.

Extant Variant(s)

• RC-135U Combat Sent. Modified C-135 equipped for radar emissions analysis.

Function: Electronic reconnaissance.

Operator: ACC.

First Flight: n/a.

Delivered: circa 1970-78.

IOC: circa 1970s.

Production: converted.

Inventory: two.

Aircraft Location: Offutt AFB, Neb.

Contractor: Boeing (original airframe), L3 Communications, Textron.

Power Plant: four CFM International F108-CF-201 turbofans, each 21,600 lb thrust.

Accommodation: flight crew: two pilots, two navigators, two airborne systems engineers; mission crew: 10 EW officers, six or more electronic, technical, mission area specialists.

Dimensions: span 135 ft, length 140 ft, height 42 ft.

Weight: max T-O 299,000 lb.

Ceiling: 35,000 ft.

Performance: speed 500+ mph, range unlimited with air refueling.

RC-135V/W Rivet Joint

Brief: Specially equipped C-135 used to gather real-time electronic and signals intelligence for theater and tactical-level commanders.

COMMENTARY

The RC-135V/W is an extensively modified C-135, performing worldwide reconnaissance missions to detect, identify, and geolocate signals throughout the electromagnetic spectrum. Rivet Joint is mostly used to exploit electronic battlefield intelligence and deliver near-real-time ISR information to tactical forces, combatant commanders, and National Command Authorities. Onboard capabilities encompass rapid search, detection, measurement, identification, demodulation, geolocation, and fusion of data from potentially thousands of electronic emitters. Current development efforts include new Sigint signal sets and capability upgrades. Planned mods include sensor and mission planning system upgrades. L-3 Communications is converting three aircraft to RC-135W standards for the Royal Air Force. The first airframe was delivered in 2013.

Extant Variant(s)

• RC-135V/W Rivet Joint. Self-contained standoff airborne Sigint variant of the C-135.

• TC-135W. Training version of the operational aircraft.

• NC-135W. Rivet Joint systems integration testbed operated by AFMC.

Function: Electronic reconnaissance.

Operator: ACC, AFMC.

First Flight: n/a.

Delivered: circa 1973-99. Continuous equipment updates.

IOC: circa 1973.

Production: converted.

Inventory: eight RC-135V; nine RC-135W; three TC-135W; one NC-135W.

Aircraft Location: Offutt AFB, Neb.; Kadena AB, Japan; RAF Mildenhall, UK.

Contractor: Boeing (original airframe), L3 Communications.

Power Plant: four CFM International F108-CF-201 turbofans, each 21,600 lb thrust.

Accommodation: flight crew: three pilots, two navigators; mission crew: three EW officers, 14 intelligence operators, four airborne maintenance technicians, and up to six more, depending on mission.

Dimensions: span 131 ft, length 135 ft, height 42 ft.

Weight: max T-O 297,000 lb.

Ceiling: 50,000 ft.

Performance: speed 500+ mph, range 3,900 miles.

U-2 Dragon Lady

Brief: Single-seat, single-engine, high-altitude enduring reconnaissance aircraft carrying a wide variety of sensors and cameras.

COMMENTARY

The U-2 is the Air Force's premier high-altitude reconnaissance platform, capable of carrying multiple intelligence sensors simultaneously. It can carry a wide variety of advanced optical, multispectral EO/IR, SAR, Sigint, and other payloads. 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 of the aircraft. Conversion to S model configuration began in October 1994. Each current operational U-2 is in Block 20 configuration, featuring a new glass cockpit using MFDs, a digital autopilot, a new EW system, and new data links. Sensor upgrades include the ASARS-2A SAR sensor; SYERS-2A multispectral EO/IR imagery system; and enhanced radio frequency-intelligence capability. Optical bar camera is also still in use, providing broad-area synoptic imagery coverage. USAF plans to modify several RQ-4 Global Hawk Airborne Sigint Payload (ASIP) for employment on the U-2. USAF planned to retire the U-2 fleet beginning in FY16, but was barred from spending FY15 funds to do so.

Extant Variant(s)

- U-2S. Current variant of the U-2/TR-1.
- TU-2ST. A two-seat trainer aircraft.

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: 27 U-2; five TU-2 trainers.

Aircraft Location: Beale AFB, Calif.; operational detachments worldwide.

Contractor: Lockheed Martin.

Power Plant: General Electric F118-GE-101 turbojet.

Accommodation: one (two for trainer).

Dimensions: span 105 ft, length 63 ft, height 16 ft.

Weight: max T-O 40,000 lb.

Ceiling: above 70,000 ft.

Performance: speed 410 mph, range 7,000+ miles.

WC-135 Constant Phoenix

Brief: Modified C-135 that samples particulate and gaseous atmospheric debris to verify international nuclear test ban treaty compliance.

COMMENTARY

The WC-135 is either a modified C-135B or EC-135C (former Looking Glass aircraft) equipped with air sampling and collection equipment. The original air sampling program was commissioned by Gen. Dwight D. Eisenhower on Sept. 16, 1947, using modified B-29 aircraft. In September 1949, a WB-29 flying between Alaska and Japan detected nuclear debris from the Soviet Union's first atomic test, much earlier than anticipated. Today, the air-sampling mission supports the Limited Nuclear Test Ban Treaty of 1963. WC-135's collection suite allows mission crew to detect radioactive "clouds" in real time. The aircraft has external flow-through devices to collect particulates on filter paper and a compressor system for sample holding. Cockpit crews are assigned from 45th RS, and special equipment operators from Det. 1, Air Force Technical Applications Center, both at Offutt AFB, Neb.

Extant Variant(s)

- WC-135C/W. Modified C-135 equipped for radiological monitoring and air sampling.

Function: Air sampling and collection.

Operator: ACC.

First Flight: 1965

Delivered: 1965-96.

IOC: December 1965.

Production: converted.

Inventory: two.

Aircraft Location: Offutt AFB, Neb.

Contractor: Boeing.

Power Plant: four Pratt & Whitney TF33-P-5 turbofans, each 16,050 lb thrust.

Accommodation: seating for 33, incl cockpit crew.

Dimensions: span 131 ft, length 140 ft, height 42 ft.

Weight: max T-O 300,500 lb.

Ceiling: 40,000 ft.

Performance: speed 403 mph, range 4,600 miles.

TANKER AIRCRAFT

HC-130N/P King

Brief: Extended-range C-130H tanker variant converted for personnel recovery in hostile environments, deploying pararescue (PJ), and rescue helicopter in-flight refueling.

COMMENTARY

The HC-130N/P conducts operations to austere airfields and denied territory for expeditionary, all-weather personnel recovery operations, including air-drop, air-land, helicopter air-to-air refueling and forward area refueling point missions. Secondary roles include humanitarian assistance, disaster response, security cooperation/aviation advisory, emergency medical evacuation, non-combatant evacuation, and spaceflight support for NASA. Features include integrated GPS/INS navigation package, NVG lighting, FLIR, radar/missile warning receivers, chaff/flare dispensers, and data-burst communications. Both models are being replaced by HC-130J.

Extant Variant(s)

- HC-130N. C-130H model modified with C-130E radome, new center wing, and aerial refueling capability.
- HC-130P. C-130H modified for CSAR and aerial refueling.

Function: Aerial refueling/airlift.

Operator: ACC, AETC, ANG, AFRC.



HC-130P King refuels an HH-60G Pave Hawk. (TSgt. Rob Jensen)

First Flight: Dec. 8, 1964 (as HC-130H).

Delivered: from 1965.

IOC: 1986.

Production: 33 converted N/P models.

Inventory: nine HC-130N; 18 HC-130P.

Aircraft Location: Davis-Monthan AFB, Ariz.; Francis S. Gabreski Arpt., N.Y.; Kirtland AFB, N.M.; JB Elmendorf-Richardson, Alaska; Moody AFB, Ga.; Patrick AFB, Fla.

Contractor: Lockheed Martin.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: two pilots, navigator; flight engineer, airborne comm specialist, two loadmasters, three PJs.

Dimensions: span 132.6 ft, length 98.8 ft, height 38.5 ft.

Weight: max T-O 155,000 lb.

Ceiling: 33,000 ft.

Performance: speed 289 mph at S-L, range 4,000+ miles.

HC-130J Combat King II

Brief: Extended-range C-130J tanker variant designed for personnel recovery in hostile environments, C2, and rescue helicopter in-flight refueling.

COMMENTARY

The HC-130J aircraft replaces legacy HC-130N/Ps, and is based on the USMC KC-130J tanker with enhanced service life wing and cargo handling system, refueling receptacle, EO/IR sensor, flight deck CSO console, and dual satcom. Features include INS/GPS, NVG-compatible lighting, FLIR, radar/missile warning receivers, and chaff/flare dispensers. The first ACC aircraft was delivered to 79th RQS at Davis-Monthan AFB, Ariz., and the first training aircraft delivered to 58th SOW at Kirtland AFB, N.M., in 2011. Plans would add the Lightweight Airborne Radio System V12 to speed locating personnel and add the ALQ 213 EW management system to automate/integrate defensive systems. USAF expects to complete recapitalization and conversion efforts in 2023, and FY15 funding supported procurement of four HC-130Js.

Extant Variant(s)

- HC-130J. C-130J modified for CSAR and aerial refueling.

Function: Aerial refueling/airlift.

Operator: ACC, AETC, ANG, AFRC.

First Flight: July 29, 2010.

Delivered: from 2010.

IOC: 2013.

Production: 37 planned.

Inventory: 11.

Aircraft Location: Davis-Monthan AFB, Ariz.; Kirtland AFB, N.M. Planned: Francis S. Gabreski Arpt., N.Y.; JB Elmendorf-Richardson, Alaska; Moody AFB, Ga.; Patrick AFB, Fla.

Contractor: Lockheed Martin.

Power Plant: four Rolls Royce AE2100D3 turboprops, each 4,591 shp.

Accommodation: flight crew: two pilots, CSO, two loadmasters.

Dimensions: span 132.6 ft, length 97.8 ft, height 38.8 ft.

Weight: max T-O 164,000 lb.

Ceiling: 33,000 ft.

Performance: speed 363.4 mph at S-L, range 4,000+ miles.

KC-10 Extender

Brief: Modified McDonnell Douglas DC-10 that combines fixed wing aerial refueling and simultaneous passenger, cargo, or aeromedical transport.

COMMENTARY

The KC-10 is a modified McDonnell Douglas DC-10-30CF and USAF's largest air refueling aircraft. It is simultaneously capable of both tanker and cargo roles, enabling it to support worldwide fighter deployments. The aircraft employs an advanced aerial refueling boom and hose and drogue system, allowing it to refuel a wide variety of US and allied aircraft within the same mission. It is itself refuelable by boom-equipped tankers. The aircraft has three large fuel tanks under the cargo floor, an air refueling operator's station, aerial refueling boom and integral hose reel/drogue unit, a receiver refueling receptacle, and military avionics. Ongoing mods include modernized navigation, surveillance,

and air traffic management. Advanced IFF development begins in FY15. Service life expected through 2045.

Extant Variant(s)

• KC-10A. Modified McDonnell Douglas DC-10 designed as a multirole cargo-tanker.

Function: Aerial refueling/airlift.

Operator: AMC, AFRC (classic associate).

First Flight: April 1980.

Delivered: March 1981-April 1990.

IOC: August 1982.

Production: 60.

Inventory: 59.

Aircraft Location: JB McGuire-Dix-Lakehurst, 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: two pilots, flight engineer, boom operator; AE crew: two flight nurses, three medical technicians; other crew depending on mission. **Load:** up to 75 people and 17 pallets or 27 pallets—a total of nearly 170,000 lb.

Dimensions: span 165.4 ft, length 181.6 ft, height 58 ft.

Weight: max T-O 590,000 lb.

Ceiling: 42,000 ft.

Performance: speed 619 mph, range 11,500 miles, or 4,400 miles with max cargo.

KC-46 Pegasus

Brief: Next generation cargo-tanker that will provide fixed wing aerial refueling and simultaneous passenger, cargo, or aeromedical transport.

COMMENTARY

The KC-46A is a modified Boeing 767-200ER multirole cargo-tanker equipped with flying boom and probe-and-drogue refueling capability to replace some of the legacy KC-135 fleet. Boeing awarded contract for 179 KC-46A tankers, the first increment (KC-X) toward replacing USAF's KC-135R fleet, in 2011. Compared to the 50-year-old KC-135, the KC-46A will have enhanced refueling capabilities, including more fuel capacity, improved efficiency, and enhanced cargo and AE capability. Like the KC-10, it will employ both an advanced refueling boom and independently operating hose and drogue system. The program's provisioned 767-2C prototype (without refueling boom) flew in late 2014, and the first flight of a full-up KC-46A is planned for mid-2015. Operational testing scheduled to begin in late FY16 will likely be delayed by a year due to ongoing development issues. LRIP of seven aircraft, slated to begin in FY15, was trimmed to six aircraft to free funding for other priorities.

Extant Variant(s)

• KC-46A. Modified Boeing 767 designed as a multirole cargo-tanker.

Function: Aerial refueling/airlift.

Operator: AMC.

First Flight: Dec. 28, 2014 (provisioned 767-2C prototype).

Delivered: from 2017 (planned).

IOC: TBD.

Production: 179 (planned).

Inventory: zero.

Aircraft Location: Planned: Altus AFB, Okla.; McConnell AFB, Kan.; Pease ANGB, N.H.; others TBD.

Contractor: Boeing.

Power Plant: two Pratt & Whitney 4062, each 62,000 lb thrust.

Accommodation: 15 crew seats, incl AE crew. Passenger load: 58 or up to 114 for contingency operations. AE load: 58 patients (24 litters and 34 ambulatory). Cargo load: 18 pallet positions, max 65,000 lb.

Dimensions: span 157.7 ft, length 165.5 ft, height 52.8 ft.

Weight: max T-O 415,000 lb.

Ceiling: 43,000 ft (767).

Performance: (767) cruise speed 530 mph, range 6,500 miles.

KC-135 Stratotanker

Brief: Medium-range tanker aircraft capable of refueling US and allied fixed wing aircraft and providing AE support.



KC-46A Pegasus (Boeing illustration)

COMMENTARY

The KC-135 has been the mainstay of the USAF tanker fleet for some 50 years. It is similar in size and appearance to commercial 707 aircraft but designed to military specifications. The current KC-135R variant first flew in October 1982 and deliveries began in July 1984. Twenty were modified with the Multipoint Refueling System (MPRS), allowing the use of hose-and-drogue pods on each wing to simultaneously refuel two NATO or US Navy aircraft. Non-MPRS modified KC-135s use a single drogue adapter attached to the boom. Upgrades modernized digital flight deck. Safety mods were finished in 2002, and new global air traffic management was completed in 2011. Link 16 capability was also added to a limited number. KC-135Ts are upgraded and sustained alongside the KC-135R fleet under common programs. Fleet service life is projected out to 2045.

Extant Variant(s)

• KC-135R. Re-engined KC-135As fitted with CFM turbofan engines.

• KC-135T. Formerly KC-135Qs, capable of carrying different fuels in the wing and fuselage tanks.

Function: Aerial refueling/airlift.

Operator: AETC, AFMC, AMC, PACAF, USAFE-AFACR, ANG, AFRC.

First Flight: August 1956.

Delivered: January 1957-65.

IOC: June 1957, Castle AFB, Calif.

Production: 732.

Inventory: 346 KC-135R; 54 KC-135T.

Aircraft Location: Altus AFB, Okla.; Fairchild AFB, Wash.; Grissom ARB, Ind.; JB Andrews, Md.; Kadena AB, Japan; MacDill AFB, Fla.; March ARB, Calif.; McConnell AFB, Kan.; RAF Mildenhall, UK; Seymour Johnson AFB, N.C.; Tinker AFB, Okla.; and ANG in Alabama, Arizona, Illinois, Iowa, Kansas, Maine, Michigan, Mississippi, Nebraska, New Hampshire, New Jersey, Ohio, Oklahoma, Pennsylvania, Tennessee, Utah, Washington, Wisconsin.

Contractor: Boeing.

Power Plant: four CFM International CFM56-2 (USAF designation F108) turbofans, each 21,634 lb thrust.

Accommodation: flight crew: two pilots, boom operator, plus navigator, depending on mission; AE crew: two flight nurses, three medical technicians (adjusted for patient needs). **Load:** 37 passengers, six cargo pallets, max 83,000 lb.

Dimensions: span 130.8 ft, length 136.3 ft, height 41.7 ft.

Weight: max T-O 322,500 lb.

Ceiling: 50,000 ft.

Performance: speed 530 mph, range 1,500 miles with 150,000 lb transfer fuel, up to 11,015 miles for ferry mission.

AIRLIFT AIRCRAFT

C-5 Galaxy

Brief: Air refuelable long-range strategic cargo transport for massive and oversize cargo.

COMMENTARY

The C-5 is USAF's largest airlifter and one of world's largest aircraft. It can carry unusually heavy cargo over intercontinental ranges. It can take off and land in relatively short distances and taxi on substandard surfaces in emergencies. The Galaxy's front and rear cargo doors permit simultaneous drive-through loading and unloading. A total of 81 C-5As were delivered and underwent major wing modifications to extend their service lives, but are now being retired. The C-5B first flew in 1985 and embodies all C-5A improvements, including improved turbofans, color weather radar, and triple INS. The first C-5B was delivered in January 1986, and some are equipped with a defensive system. Two C-5As were modified to carry outsize space cargo and redesignated C-5Cs. USAF is upgrading the C-5 fleet through a combination of the Avionics Modernization Program (AMP) and Reliability Enhancement and Re-engining Program (RERP). Upgraded aircraft are designated C-5M Super Galaxy and incorporate new GE CF6-80C2 (F138-GE-100) turbofans, with 200 percent increased thrust, along with the avionics and structural reliability fixes. USAF plans to modernize 52 C-5s to C-5M standards, including 49 B models and two C models. A single C-5A was converted. AMP was completed in 2011, and RERP is ongoing. New mods supported in FY15 include Core Mission Computer (CMC) and weather radar replacement.

Extant Variant(s)

• C-5A. Basic model delivered between 1969 and 1973.

• C-5B. Improved aircraft with strengthened wings and improved engines and avionics.

• C-5C. Modified C-5As capable of carry outsize NASA space cargo.

• C-5M. Super Galaxy, including AMP and RERP modified legacy C-5s.

Function: Strategic airlift.

Operator: AMC, ANG, AFRC.

First Flight: June 30, 1968 (C-5A); June 6, 2006 (C-5M).

Delivered: October 1969-April 1989.

IOC: September 1970.

Production: 131.

Inventory: 22 C-5A; 24 C-5B; one C-5C; 18 C-5M.

Aircraft Location: Dover AFB, Del.; Eastern West Virginia Arpt., W.Va.; JBSA-Lackland, Texas; Memphis Arpt., Tenn.; Stewart ANGB, N.Y.; Travis AFB, Calif.; Westover ARB, Mass.

Contractor: Lockheed Martin.

Power Plant: four General Electric TF39-GE-1C turbofans, each 43,000 lb thrust; (C-5M) four General Electric F138-GE-100 turbofans.

Accommodation: crew: two pilots, two flight engineers, three loadmasters.

Load: 81 troops and 36 standard pallets, max 270,000 lb. There is no piece of Army combat equipment the C-5 can't carry.

Dimensions: span 222.9 ft, length 247.1 ft, height 65.1 ft.

Weight: max T-O 840,000 lb.

Ceiling: 45,000 ft.

Performance: speed 518 mph, range 2,473 miles with max payload (plus additional 575 miles after offload).

C-12 Huron

Brief: Military version of civil twin-engine turboprops used for diplomatic and special duty support, light passenger/cargo airlift, and test support.

COMMENTARY

The C-12 is a series of military versions of the Beechcraft King Air A200 and 1900C aircraft. Flight decks and cabins are pressurized for high-altitude flight. The most common variant incorporates a cargo door with an integral airstair. Both C-12C and C-12D aircraft are deployed to US embassies worldwide. The C-12J is a completely different aircraft, based on the Beechcraft 1900C commuter airliner. C-12Js are operated by PACAF and can transport two litters or 10 ambulatory patients in the AE role. C-12Js incorporate extensive avionics upgrade, including three MFDs, integrated GPS, flight management systems, autopilot, VHF/UHF radios, and weather radar.

Extant Variant(s)

- C-12C. C-12As retrofit with PT6A-41 engines.
- C-12D. C-12 with enlarged cargo doors and strengthened wings.
- C-12F. C-12 with uprated PT6A-42 engines, eight passenger capacity, and AE litter accommodation.
- C-12J. Military version of the Beechcraft Model 1900C commuter airliner.

Function: Light airlift.

Operator: AFMC, PACAF.

First Flight: Oct. 27, 1972 (Super King Air 200).

Delivered: 1974-late 1980s.

IOC: circa 1974.

Production: 88.

Inventory: 16 C-12C; six C-12D; two C-12F; four C-12J.

Aircraft Location: Edwards AFB, Calif.; Holloman AFB, N.M.; JB Elmendorf-Richardson, Alaska; Yokota AB, Japan; various US embassies.

Contractor: Beech.

Power Plant: (C-12J) two Pratt & Whitney Canada PT6A-65B turboprops, each 1,173 shp.

Accommodation: crew: two pilots; load: (C-12J) up to 19 passengers or 3,500 lb cargo.

Dimensions: (C-12J) span 54.5 ft, length 57 ft, height 15 ft.

Weight: (C-12J) max T-O 16,710 lb.

Ceiling: (C-12J) 25,000 ft.

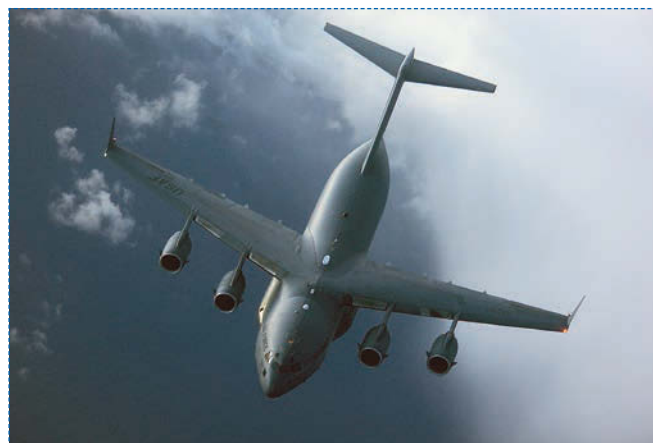
Performance: (C-12J) speed 284 mph, range 1,669 miles.

C-17 Globemaster III

Brief: Heavy-lift, air refuelable cargo aircraft capable of both strategic airlift and direct tactical delivery of all classes of military cargo.

COMMENTARY

The C-17 is the core airlifter of the US military. It is able to operate on small, austere airfields (3,500 ft by 90 ft) previously limited to C-130s. The Globemaster III is the only aircraft able to directly air-land or air-drop outsize cargo into a tactical environment. It is the first military transport to feature full digital fly-by-wire control. Ongoing modernization of original aircraft through Block 17 includes open-system communications architecture, new weather radar, all-weather formation flying system, NVG lighting, and high frequency data link. Fleetwide Block 17 retrofit is scheduled for completion by FY15. Additional planned mods include an advanced IFF system and other software upgrades to meet new operational requirements. Boeing delivered the 223rd aircraft to USAF on Sept. 12, 2013, and expects to end production in September 2015, after completing its final international order. The Air Force will stand down two C-17 squadrons and place 16 aircraft into backup status as a cost-cutting measure over FY15 and FY16.



C-17A Globemaster III (MSgt. Jeremy Lock)

Extant Variant(s)

- C-17A. Medium- to long-range swing role airlifter.

Function: Tactical/strategic airlift.

Operator: AETC, AMC, PACAF, ANG, AFRC.

First Flight: Sept. 15, 1991.

Delivered: June 1993-September 2013.

IOC: Jan. 17, 1995.

Production: 223.

Inventory: 222.

Aircraft Location: Allen C. Thompson Field, Miss.; Altus AFB, Okla.; Dover AFB, Del.; Eastern West Virginia Arpt., W.Va.; JB Charleston, S.C.; JB Elmendorf-Richardson, Alaska; JB Lewis-McChord, Wash.; JB McGuire-Dix-Lakehurst, N.J.; JB Pearl Harbor-Hickam, Hawaii; March ARB, Calif.; Travis AFB, Calif.; Wright-Patterson AFB, Ohio.

Contractor: Boeing.

Power Plant: four Pratt & Whitney F117-PW-100 turbofans, each 40,440 lb thrust.

Accommodation: flight crew: two pilots, loadmaster; AE crew: two flight nurses, three medical technicians (altered as required). Load: 102 troops/paratroops; 36 litter and 54 ambulatory patients; 18 pallet positions; max payload 170,900 lb.

Dimensions: span 169.8 ft, length 174 ft, height 55.1 ft.

Weight: max T-O 585,000 lb.

Ceiling: 45,000 ft.

Performance: speed 518 mph at 25,000 ft, range 2,760 miles with 169,000 lb payload.

C-20 Gulfstream

Brief: Twin-engine executive airlift asset for transporting high-ranking government officials.

COMMENTARY

C-20A/B models were initially acquired to replace C-140B Jetstar aircraft, transporting DOD and other government officials worldwide. The C-20B, delivered in 1988, is fit with specialized mission communications equipment and a revised interior. The C-20H, equipped with advanced technology flight management systems and upgraded Rolls Royce engines, was acquired in 1992. Specialized features include GPS, vertical separation equipment, GATM, and traffic collision avoidance system (TCAS). The Air Force planned to divest its seven C-20B and C-20H aircraft in FY15 due to the limited average service life remaining on the airframes.

Extant Variant(s)

- C-20B. Modified and upgraded Gulfstream III aircraft.
- C-20H. Modified Gulfstream IV SP aircraft.
- C-20K. Modified Gulfstream III comm integration testbed.

Function: VIP transport.

Operator: AMC, USAF-AF-AFRICA.

First Flight: December 1979.

Delivered: September 1983-89.

IOC: circa 1983.

Production: n/a.

Inventory: five C-20B; two C-20H; one C-20K.

Aircraft Location: JB Andrews, Md.; Ramstein AB, Germany.

Contractor: Gulfstream.

Power Plant: two Rolls Royce Spey MK511-8 turbofans (C-20B), each 11,400 lb thrust; two Rolls Royce Tay MK611-8 turbofans (C-20H), each 13,850 lb thrust.

Accommodation: crew: two pilots, flight engineer, communications system operator, flight attendant. Load: 12 passengers.

Dimensions: span 77.8 ft, length 83.1 ft (B), 88.3 ft (H), height 24.5 ft.

Weight: max T-O 69,700 lb (B), 74,600 lb (H).

Ceiling: 45,000 ft.

Performance: speed 576 mph, range 4,250 miles (B), 4,850 miles (H).

C-21 Learjet

Brief: Light airlift asset capable of cargo, passenger, and aeromedical transport.

COMMENTARY

The C-21 is a militarized Learjet 35 equipped with color weather radar, TACAN, and HF/VHF/UHF radios. It provides operational support for time-sensitive movement of people and cargo throughout the US and European Theater, including AE missions if required.

Extant Variant(s)

- C-21A. Military version of the Learjet 35A.

Function: Light airlift.

Operator: AMC, USAF-AF-AFRICA, ANG.

First Flight: January 1973.

Delivered: April 1984-October 1985.

IOC: April 1984.

Production: 84.

Inventory: 36.

Aircraft Location: JB Andrews, Md.; Peterson AFB, Colo.; Ramstein AB, Germany; Scott AFB, Ill.

Contractor: Gates Learjet.

Power Plant: two AlliedSignal TFE731-2 turbofans, each 3,500 lb thrust.

Accommodation: crew: two pilots; AE crew: flight nurse, two medical technicians (adjusted as required). Load: eight passengers and 3,153 lb cargo; one litter or five ambulatory patients.

Dimensions: span 39.5 ft, length 48.6 ft, height 12.2 ft.

Weight: max T-O 18,300 lb.



C-32A Air Force Two (Sam Meyer)

Ceiling: 45,000 ft.
Performance: speed 530 mph at 41,000 ft, range 2,306 miles.

C-32 Air Force Two

Brief: Commercial aircraft used for dedicated vice presidential, cabinet, and high-ranking US and foreign official airlift.

COMMENTARY

The C-32A was acquired as a commercial Boeing 757 and delivered in less than two years from the contract date. The C-32A's cabin is divided into four sections: forward, with communications center, galley, lavatory, 10 business-class seats; second, fully enclosed stateroom with private lavatory, two first-class swivel seats, convertible divan; third, conference and staff area with eight business-class seats; and rear, 32 business-class seats, galley, two lavatories. Its communications system provides worldwide clear and secure voice and data communications. The aircraft's modern flight deck avionics are upgradeable, and new development includes nitrogen fuel-tank inerting, and commercial wideband satcom mods.

Extant Variant(s)

- C-32A. Presidential support-configured commercial Boeing 757-200 airliner.
- C-32B. Discrete airlift-configured commercial Boeing 757-200 airliner.

Function: VIP transport.

Operator: AMC, ANG.

First Flight: Feb. 19, 1982 (USAF Feb. 11, 1998).

Delivered: June-December 1998.

IOC: 1998.

Production: six.

Inventory: four C-32A; two C-32B.

Aircraft Location: JB Andrews, Md.; JB McGuire-Dix-Lakehurst, N.J.

Contractor: Boeing.

Power Plant: two Pratt & Whitney PW2040 turbofans, each 41,700 lb thrust.

Accommodation: crew: 16 (varies with mission). Load: up to 45 passengers.

Dimensions: span 124.6 ft, length 155.2 ft, height 44.5 ft.

Weight: max T-O 255,000 lb.

Ceiling: 42,000 ft.

Performance: speed 530 mph, range 6,325 miles.

C-37 Gulfstream V

Brief: Modified business jet used for worldwide special air missions for high-ranking government and DOD officials.

COMMENTARY

The C-37 family are military versions of ultra-long-range Gulfstream business aircraft. The C-37A is based on the Gulfstream V and equipped with separate VIP and passenger areas, secure global voice and data communications suites, enhanced weather radar, autopilot, and advanced HUD. The C-37B is a version of the Gulfstream 550 modified for VIP duties with directional IR countermeasures system. It also incorporates the Honeywell Plane-View flight deck. New FY15 mods to the fleet include commercial wideband Satcom to ensure senior leaders access to secure data and voice networks, replacing legacy equipment.

Extant Variant(s)

- C-37A. Military version of the Gulfstream V.
- C-37B. Military version of the Gulfstream G550.

Function: VIP transport.

Operator: AMC, PACAF, USAF-AFAFRICA.

First Flight: USAF October 1998.

Delivered: from October 1998.

IOC: Dec. 9, 1998.

Production: 10 C-37A; three C-37B.

Inventory: nine C-37A; three C-37B.

Aircraft Location: Chievres, Belgium; JB Andrews, Md.; JB Pearl Harbor-Hickam, Hawaii; MacDill AFB, Fla.

Contractor: Gulfstream.

Power Plant: two BMW/Rolls Royce BR710A1-10 turbofans, each 14,750 lb thrust.

Accommodation: crew: five. Load: up to 12 passengers.

Dimensions: span 93.5 ft, length 96.4 ft, height 25.8 ft.

Weight: max T-O 90,500 lb.

Ceiling: 51,000 ft.

Performance: speed 600 mph, range 6,300 miles.

C-38 Astra/Courier

Brief: A twin-engine transcontinental aircraft used for VIP transportation.

COMMENTARY

The C-38A is the military version of Astra SPX produced by Israel Aircraft Industries Ltd. and supported worldwide by Galaxy Aerospace. It was acquired in 1998 and is equipped with modern avionics, navigation, communication, military auxiliary power unit, vertical separation, and safety equipment. The aircraft is solely operated by the District of Columbia ANG's 201st Airlift Squadron. The Guard plans to retire the aircraft in FY15 and replace it with a more standardized and capable platform.

Extant Variant(s)

- C-38A. Modified version of the IAI Astra SPX.

Function: VIP transport.

Operator: ANG.

First Flight: 1998.

Delivered: April-May 1998.

IOC: 1998.

Production: two.

Inventory: two.

Aircraft Location: JB Andrews, Md.

Contractor: Tracor (Israel Aircraft Industries Ltd).

Power Plant: two AlliedSignal TFE731-40R-200G, each 4,250 lb thrust.

Accommodation: crew: two pilots. Load: up to eight passengers or, for AE role, two 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: max T-O 24,800 lb.

Ceiling: 33,000 ft.

Performance: speed 662 mph, range 3,000 miles.

C-40 Clipper

Brief: Commercial-based aircraft used primarily for medium-range airlift of senior military commanders, Cabinet officials, and members of Congress.

COMMENTARY

The C-40, which added winglets to the commercial Boeing 737-700, transports VIPs and performs other operational support missions. C-40Bs are equipped with an office-in-the-sky arrangement, including clear and secure voice/data communication and broadband data/video. C-40Cs lack the advanced communications suite and are VIP configured with sleep accommodations and reconfigurable to carry 42 to 111 passengers. Both versions have modern avionics, integrated GPS and flight management system/electronic flight instrument system, and HUD. Each one has auxiliary fuel tanks and managed passenger communications. FY15 new-start mods include nitrogen fuel tank inerting, and commercial wideband Satcom for the combined fleet.

Extant Variant(s)

- C-40B. Military version of the Boeing 737-700.
- C-40C. VIP configured Boeing 737-700 without advanced comms.

Function: VIP transport.

Operator: AMC, PACAF, USAF-AFAFRICA, ANG, AFRC.

First Flight: USN C-40A: April 14, 1999.

Delivered: 2002.

IOC: n/a.

Production: 11.

Inventory: four C-40B; seven C-40C.

Aircraft Location: JB Andrews, Md.; JB Pearl Harbor-Hickam, Hawaii; Ramstein AB, Germany; Scott AFB, Ill.

Contractor: Boeing.

Power Plant: two General Electric CFM56-7 turbofans, each 27,000 lb thrust.

Accommodation: crew: 10 (varies with model and mission). Load: up to 89 passengers (C-40B); up to 111 (C-40C).

Dimensions: span 117.4 ft, length 110.3 ft, height 41.2 ft.

Weight: max T-O 171,000 lb.

Ceiling: 41,000 ft.

Performance: speed 530 mph, range 5,750 miles.

C-130 Hercules

Brief: Medium-range tactical airlifter capable of operating from unimproved airstrips as well as providing intertheater support.

COMMENTARY

The C-130 is an all-purpose theater transport that performs diverse roles. Missions include tactical and intertheater airlift and airdrop support, Arctic resupply, AE, aerial spraying, aerial firefighting, and humanitarian missions. The limited number of C-130Es still in service are extended-range version of the original design and first delivered in 1962. Delivery of the C-130H model began in 1974. Improvement included uprated engines, redesigned outer wing, improved pneumatic systems, new avionics, improved radar, and NVG lighting. The small New York ANG fleet of LC-130H Antarctic support aircraft have been upgraded with digital displays, flight management systems, multifunction radar, new communications systems, and a single air data computer, as well as new eight-bladed propellers. The C-130J Super Hercules is the newest and current-production variant. It features three-crew flight operations system, more powerful engines, composite six-blade propeller system, digital avionics, and mission computers. J models fly faster, higher, and farther than earlier C-130s. ANG and AFRC units began receiving J models in 1999, Active units in 2004. ANG began receiving stretched J-30 models in 2001, followed by Active Duty and AFRC



C-130J-30 Hercules (Jim Dunn)

units in 2004. WC-130Js are operated by AFRC's "Hurricane Hunters" at Keesler AFB, Miss., and WC-130Hs are operated by the Puerto Rico ANG. The fleets are equipped with palletized mission equipment for tropical and winter storm data collection. FY15 budget requires the Air Force to reverse its FY13 cancellation of the C-130H Avionics Modernization Program, but permits additional safety of flight modifications such as communication, surveillance, and air traffic management upgrades.

Extant Variant(s)

- C-130E Hercules. Early extended-range version.
- C-130H Hercules. Updated legacy C-130 version.
- LC-130H Skibird. Arctic support variant with wheel-ski gear.
- WC-130H. Weather reconnaissance version of C-130H.
- C-130J Super Hercules. Current production version.
- C-130J-30 Super Hercules. Stretched version capable of larger payloads.
- WC-130J. Weather reconnaissance version of C-130J.

Function: Tactical airlift.

Operator: AETC, AMC, PACAF, USAFE-AFAFRICA, ANG, AFRC.

First Flight: August 1954 (C-130A).

Delivered: December 1956-present (C-130J).

IOC: circa 1958.

Production: more than 2,200.

Inventory: two C-130E; 259 C-130H; 10 LC-130H; eight WC-130H; 100 C-130J; 10 WC-130J.

Aircraft Location: Dobbins ARB, Ga.; Dyess AFB, Texas; Keesler AFB, Miss.; Little Rock AFB, Ark.; Maxwell AFB, Ala.; Minneapolis-St. Paul Arpt./ARS, Minn.; Niagara Falls Arpt., N.Y.; Peterson AFB, Colo.; Pittsburgh Arpt., Pa.; Pope Field, N.C.; Ramstein AB, Germany; Yokota AB, Japan; Youngstown ARS, Ohio; and ANG in Alaska, Arkansas, California, Connecticut, Delaware, Georgia, Hawaii, Illinois, Kentucky, Minnesota, Missouri, Montana, Nevada, New York, North Carolina, Ohio, Puerto Rico, Rhode Island, Tennessee, Texas, West Virginia, Wyoming. Planned: Martin State Arpt., Md. (C-130J).

Contractor: Lockheed Martin.

Power Plant: four Allison T56-A-7 turboprops (C-130E), 4,200 shp; four Allison T56-A-15 turboprops (C-130H), each 4,591 shp; four Rolls Royce AE2100D3 turboprops (C-130J), each 4,700 shp.

Accommodation: E/H crew: two pilots, navigator, flight engineer, loadmaster. J/J-30 crew: two pilots, loadmaster. E/H/J load: up to 92 combat troops or 64 paratroopers or 74 litters or six cargo pallets or 16 Container Delivery System (CDS) bundles or any combination of these up to max weight for each version. J-30 load: 128 combat troops or 92 paratroopers or 97 litters or eight pallets or 24 CDS bundles or any combination of these up to max weight.

Dimensions: span 132.6 ft, length 97.8 ft, height 38.8 ft.; J-30 length 112.8 ft.

Weight: max T-O 155,000 lb (E/H/J), 164,000 lb (J-30); max payload 42,000 lb (E/H/J), 44,000 lb (J-30).

Ceiling: with max payload, 19,000 ft (E), 23,000 ft (H), 26,000 ft (J), 28,000 (J-30).

Performance: speed 345 mph (E), 366 mph (H), 417 mph (J), 410 mph (J-30); range with 35,000 lb payload 1,438 miles (E), 1,496 miles (H), 1,841 miles (J), 2,417 miles (J-30).

VC-25 Air Force One

Brief: Modified Boeing 747 used for presidential air transport.

COMMENTARY

The VC-25 is a specially configured Boeing 747-200B equipped to carry the President and his entourage. When the President is aboard, the VC-25's radio reporting call sign is Air Force One. 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, data links, and a full self-defensive suite. The fleet is operated by the Presidential Airlift Group at the 89th Airlift Wing. FY15 budget request supported ongoing modifications to extend service life beyond the approximately five years remaining. New development includes nitrogen fuel tank inerting and commercial wideband satcom mods. The Air Force announced plans in 2014 to replace current VC-25s with a modified version of Boeing's latest 747-8 Intercontinental.

Extant Variant(s)

- VC-25A. Specially configured presidential support version of the Boeing 747-200B.

Function: Presidential airlift.

Operator: AMC.

First Flight: first flown as Air Force One Sept. 6, 1990.

Delivered: August-December 1990.

IOC: circa 1990.

Production: two.

Inventory: two.

Aircraft Location: JB Andrews, Md.

Contractor: Boeing.

Power Plant: four General Electric CF6-80C2B1 turbofans, each 56,700 lb thrust.

Accommodation: crew: 26; load: up to 76 passengers.

Dimensions: span 195.7 ft, length 231.8 ft, height 63.4 ft.

Weight: max T-O 833,000 lb.

Ceiling: 45,100 ft.

Performance: speed 630 mph, range 7,800 miles.

HELICOPTERS

HH-60 Pave Hawk

Brief: Armed CSAR variant of the UH-60 Black Hawk capable of medevac, disaster and humanitarian response, and other support missions.

COMMENTARY

The HH-60G is a highly modified Black Hawk helicopter. USAF acquired the HH-60G in the early 1980s. It has been in continuous use by Active Duty, ANG, and AFRC air rescue units since. Pave Hawk is equipped with an advanced INS/GPS/Doppler navigation systems, satcom, and secure/anti-jam communications. It is fitted with a precision landing system (PLS) that aids location of survivor's radio. It includes automatic flight control, NVG lighting, FLIR, color weather radar, engine/rotor blade anti-ice system, in-flight refueling probe, additional fuel tanks, and an integral rescue hoist. Combat enhancements include a full self-defensive suite and two miniguns or .50-caliber guns. The Air Force announced plans to replace the fleet with the new HH-60W. The more powerful helicopter will incorporate improved hot/high-altitude performance, an enlarged cabin, and longer range. Delivery of up to 112 new-build helicopters is planned starting in FY19. Only 98 of the original 112 HH-60Gs remain in service, and USAF is in the process of converting 21 Army surplus UH-60Ls as loss replacements.

Extant Variant(s)

- HH-60G. Modified UH-60 helicopter equipped for CSAR.

- HH-60U. Converted surplus UH-60L.

Function: Personnel recovery/medium lift.

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

First Flight: October 1974.

Delivered: from 1982.

IOC: circa 1982.

Production: 112.

Inventory: 98 HH-60G; three HH-60U.

Aircraft Location: Davis-Monthan AFB, Ariz.; Eglin AFB, Fla.; Francis S. Gabreski Arpt., N.Y.; JB Elmendorf-Richardson, Alaska; Kadena AB, Japan; Kirtland AFB, N.M.; Moffett Field, Calif.; Moody AFB, Ga.; Nellis AFB, Nev.; Patrick AFB, Fla.; RAF Lakenheath, UK.

Contractor: United Technologies/Sikorsky.

Power Plant: two General Electric T700-GE-700/701C turboshafts, each 1,560-1,940 shp.

Accommodation: crew: two pilots, flight engineer, gunner. Load: mission dependent.

Dimensions: rotor diameter 53.6 ft, overall length 64.7 ft, height 16.7 ft.

Weight: max T-O 22,000 lb.

Ceiling: 14,000 ft.

Performance: speed 184 mph; range 580 miles.

Armament: two 7.62 mm miniguns or two .50-caliber machine guns.



HH-60G Pave Hawk (TSgt. Matt Hecht)

UH-1 Iroquois

Brief: Utility helicopter used for ICBM missile field security and support, pilot training, and executive airlift.

COMMENTARY

The UH-1N aircraft initially provided search and rescue capabilities before replacing UH-1Hs in the ICBM field security and support roles. UH-1Ns currently provide administrative lift to the US National Capital Region and PACAF officials at Yokota AB, Japan, as well as supporting aircrew survival training at Fairchild AFB, Wash. The TH-1H fleet provides Air Force helicopter pilot training at Fort Rucker, Ala. With termination of the Common Vertical Lift Support Program (CVLSP), USAF may fly the 40-year-old UH-1N for at least another 10 years. USAF converted all single-engine UH-1H models to twin-engine TH-1H variants, extending their service lives at least 20 years. In light of CVLSP cancellation, AFGSC is modifying its UH-1N with NVG-capable cockpit, upgraded sensors, and safety and sustainment improvements.

Extant Variant(s)

- TH-1H. Modified twin-engine version of UH-1H used for flight training.
- UH-1N. Military version of the Bell 212 used for utility support and light lift.

Function: Light-lift/training.

Operator: AETC, AFDW, AFGSC, AFMC, PACAF.

First Flight: 1956.

Delivered: from September 1970 (UH-1N).

IOC: circa 1970.

Production: 28 TH-1H; 79 UH-1N.

Inventory: 28 TH-1H; 62 UH-1N.

Aircraft Location: Eglin AFB, Fla.; Fairchild AFB, Wash.; F. E. Warren AFB, Wyo.; Fort Rucker, Ala.; JB Andrews, Md.; Kirtland AFB, N.M.; Malmstrom AFB, Mont.; Minot AFB, N.D.; Yokota AB, Japan.

Contractor: Bell, Lockheed Martin (TH-1H prime).

Power Plant: TH-1H: one Honeywell T53-L-703 turboshaft, 1,800 shp. UH-1H: one Lycoming T53-L-13B turboshaft, 1,400 shp. UH-1N: two Pratt & Whitney Canada T400-CP-400 turboshafts, 1,290 shp.

Accommodation: UH-1N crew: two pilots, flight engineer; load: up to 13 passengers (depending on fuel and atmospheric conditions) or up to six litters or, without seats, bulky, oversize cargo.

Dimensions: TH-1H: rotor diameter 48 ft, length 57 ft, height 13 ft. UH-1N: rotor diameter 48 ft, length 57.1 ft, height 12.8 ft.

Weight: max gross 10,500 lb.

Ceiling: 15,000 ft (10,000 ft with 10,000+ lb).

Performance: (UH-1N) speed 149 mph, range 300+ miles.

Armament: (optional) two General Electric 7.62 mm miniguns or two 40 mm grenade launchers; two seven-tube 2.75-in rocket launchers.

TRAINER AIRCRAFT

T-1 Jayhawk

Brief: Medium-range, twin-engine jet trainer used for pilot and CSO training.

COMMENTARY

The T-1A is a military version of Beech 400A used in the advanced phase of JSUPT for students selected to fly tanker or transport aircraft and also used to train student CSOs. Cockpit seats an instructor and two students. Mods include UHF/VHF radios, INS, TACAN, airborne detection finder, increased bird-strike resistance, and an additional fuselage fuel tank. CSO training aircraft also have GPS-driven SAR and simulated RWR and have a second student and second instructor station. Planned upgrades are MFD and terrain collision avoidance modernization, with the possibility of complete avionics suite replacement starting in FY16.

Extant Variant(s)

- T-1A. Military trainer version of Beechcraft 400A.

Function: Advanced trainer.

Operator: AETC.

First Flight: Sept. 22, 1989 (Beechcraft 400A).

Delivered: Jan. 17, 1992-July 1997.

IOC: January 1993.

Production: 180.

Inventory: 178.

Aircraft Location: Columbus AFB, Miss.; Laughlin AFB and JBSA-Randolph, Texas; Vance AFB, Okla.; NAS Pensacola, Fla.

Contractor: Beechcraft.

Power Plant: two Pratt & Whitney Canada JT15D-5B turbofans, each 2,900 lb thrust.

Accommodation: three pilots, two side by side, one to the rear.

Dimensions: span 43.5 ft, length 48.4 ft, height 13.9 ft.

Weight: max T-O 16,100 lb.

Ceiling: 41,000 ft.

Performance: speed 538 mph, range 2,555 miles.

T-6 Texan II

Brief: Single-engine turboprop used for Air Force and Navy primary pilot training.

COMMENTARY

The T-6 is an Air Force and Navy trainer developed under the Joint Primary Aircraft Training System program and based on Swiss Pilatus PC-9. Mods include a strengthened fuselage, zero/zero ejection seats, upgraded engine, increased fuel capacity, pressurized cockpit, bird-resistant canopy, and digital avionics with sunlight readable LCDs. USAF aircraft replaced the T-37. The tandem student and instructor positions are interchangeable, including

single-pilot operation from either seat. Aircraft is fully aerobatic and features an anti-G system. USAF production completed in 2010, with an expected service life of 21 years. FY15 funds support modifications to prevent avionics obsolescence, structural improvements, canopy fracturing system, and Onboard Oxygen Generation Systems (OBOGS) concentrator.

Extant Variant(s)

- T-6A. Joint service primary training aircraft, based on the Pilatus PC-9.

- T-6B. Navy-only variant.

Function: Primary trainer.

Operator: AETC, USN.

First Flight: July 15, 1998.

Delivered: from May 2000 (operational aircraft).

IOC: November 2001.

Production: Planned: 452 (USAF); 315 (USN).

Inventory: 445 (USAF).

Aircraft Location: USAF: Columbus AFB, Miss.; Laughlin AFB, JBSA-Randolph, and Sheppard AFB, Texas; Vance AFB, Okla. USN: NAS Corpus Christi, Texas; NAS Whiting, Fla.; NAS Pensacola, Fla.

Contractor: Beechcraft (formerly Raytheon).

Power Plant: one Pratt & Whitney Canada PT6A-68 turboprop, 1,100 shp.

Accommodation: two pilots, in tandem, on zero/zero ejection seats.

Dimensions: span 33.5 ft, length 33.4 ft, height 10.7 ft.

Weight: basic 6,500 lb.

Ceiling: 31,000 ft.

Performance: speed 320 mph, range 1,035 miles.



T-38A Talon (foreground) and B-2 Spirit. (SSgt. Jonathan Snyder)

T-38 Talon

Brief: A twin-engine, high-altitude, supersonic jet trainer used primarily for pilot and instructor training and training support for advanced-aircraft fleets.

COMMENTARY

The T-38 was the first supersonic trainer aircraft and is primarily used by AETC for advanced bomber-fighter training track in JSUPT and Introduction to Fighter Fundamentals training. The aircraft is used to teach supersonic techniques, aerobatics, formation, night and instrument flying, and cross-country and low-level navigation. The T-38 is also used by the USAF Test Pilot School to train test pilots and flight-test engineers and by ACC and AFGSC as a companion trainer to maintain pilot proficiency. ACC uses regenerated T-38s as dedicated aggressor aircraft for F-22 training. T-38As underwent structural renewal during Pacer Classic I and II mods begun in 1984, to extend service life. T-38Bs are equipped with a gunsight and centerline hard point for mounting external stores such as an ECM pod or practice bomb dispenser. Aircraft were redesignated T-38Cs after undergoing avionics modernization to add glass cockpits with HUD, color MFDs, mission computer, and INS/GPS. T-38Cs were delivered from 2002 to 2007. Sustainment measures include replacement of major engine components to improve reliability and maintainability. Ongoing upgrades include Pacer Classic III, the latest structural renewal effort. It will replace major longerons, bulkheads/formers, intakes, internal skins, and structural floors. Service life is expected to 2029.

Extant Variant(s)

- T-38A. Upgraded version with Pacer Classic I and II mods.
- AT-38B. Armed weapons training version.
- T-38C. Modernized airframes incorporating glass cockpits and upgraded engines.

Function: Advanced trainer.

Operator: ACC, AETC, AFGSC, AFMC, AFRC.

First Flight: April 1959.

Delivered: 1961-72.

IOC: March 1961.

Production: more than 1,100.

Inventory: 54 T-38A; six AT-38B; 447 T-38C.

Aircraft Location: Beale AFB and Edwards AFB, Calif.; Columbus AFB, Miss.; Holloman AFB, N.M.; JB Langley-Eustis, Va.; JBSA-Randolph and Sheppard AFB, Texas; Tyndall AFB, Fla.; Vance AFB, Okla.; Whiteman AFB, Mo.

Contractor: Northrop Grumman.

Power Plant: two General Electric J85-GE-5 turbojets, each 2,900 lb thrust with afterburning.

Accommodation: two pilots in tandem ejection seats.

Dimensions: span 25.3 ft, length 46.3 ft, height 12.8 ft.

Weight: max T-O 12,093 lb.

Ceiling: above 55,000 ft.

Performance: speed 812 mph, range 1,093 miles.

T-53

Brief: Military designated sport aircraft.

COMMENTARY

The T-53 is the military designated civilian Cirrus SR20, primarily used by USAFA's Powered Flight Program. It is an all-composite monoplane with advanced avionics and safety features that include GPS, Cirrus Airframe Parachute System, integrated fuselage roll cage, cuffed wing design, and other active and passive safety systems and features that are standard on Cirrus aircraft.

Extant Variant(s)

- T-53A. Military designated Cirrus SR20.

Function: Trainer.

Operator: AETC.

Delivered: 2012.

Inventory: 25.

Aircraft Location: USAFA, Colo.

Contractor: Cirrus.

Power Plant: one Continental IO-360-ES six-cylinder, fuel-injected, air-cooled engine, 200 hp.

Accommodation: two, side by side, plus three passengers.

Dimensions: span 38.3 ft, length 26 ft, height 8.9 ft.

Weight: max T-O 3,050 lb.

Ceiling: 17,500 ft.

Performance: speed 178 mph, range 690 miles.

UV-18 Twin Otter

Brief: Modified utility transport used for parachute jump training.

COMMENTARY

The UV-18 is a military variant of the civilian De Havilland DHC-6 Twin Otter. It is used at USAFA to support various parachuting activities and perform general utility missions. Special use includes supporting the Air Force Parachute Team, The Wings of Blue.

Extant Variant(s)

- UV-18B. Military variant of the DHC-6 Twin Otter.

Function: Utility.

Operator: AETC.

First Flight: May 1965 (commercial version).

Delivered: 1977 (two); 1982 (one).

IOC: 1977.

Production: three.

Inventory: three.

Aircraft Location: USAFA, Colo.

Contractor: De Havilland Canada.

Power Plant: two Pratt & Whitney Canada PT6A-27 turboprops, each 620 ehp.

Accommodation: crew: two pilots; load: up to 20 passengers.

Dimensions: span 65 ft, length 51.9 ft, height 18.7 ft.

Weight: max T-O 12,500 lb.

Ceiling: 25,000 ft.

Performance: speed 210 mph, range 806 miles.

REMOTELY PILOTED AIRCRAFT

MQ-1 Predator

Brief: Medium-altitude, long-endurance RPA, with ISR and strike capability.

COMMENTARY

The MQ-1 is a multimission weaponized RPA with near real-time FMV, packaged multispectral targeting system including laser designator/illuminator and EO/IR sensors. The fully operational system comprises four air vehicles, GCS, satellite link, and about 55 personnel for 24-hour operations. Became a fully USAF system in 1996. Systems armed with two Hellfire missiles since 2002, at which time designation changed from RQ-1 to MQ-1 to denote multimission capability. USAF forward deploys launch and recovery element (LRE) systems and support personnel for takeoff and landing operations, while the CONUS-based GCS conducts the mission via extended BLOS satcom data link. USAF received its last MQ-1B in March 2011, but continues to fund GCS and airframe mods. Congress barred USAF from retiring any nondamaged airframes in FY15.

Extant Variant(s)

- MQ-1B. Armed version of the General Atomics Predator.

Function: Armed reconnaissance/target acquisition.

Operator: ACC, AFMC, AFSOC, ANG.

First Flight: July 1994.

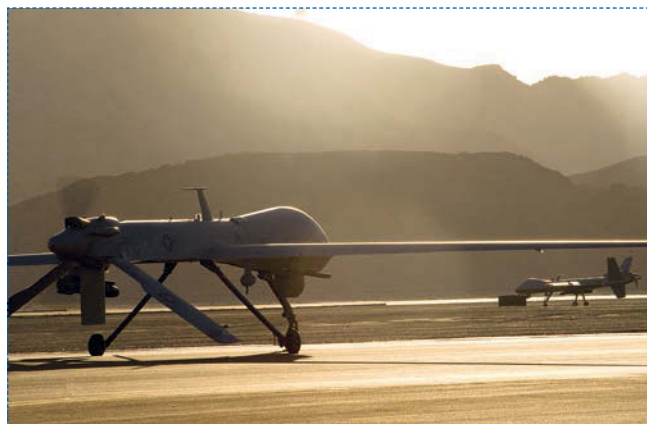
Delivered: July 1994 (USAF from 1996)-2011.

IOC: 2005.

Production: 268 air vehicles.

Inventory: 152.

GCS Location: Cannon AFB, N.M.; Creech AFB, Nev.; Davis-Monthan AFB, Ariz.; Ellington Field, Texas; Hector Arpt., N.D.; Holloman AFB, N.M.; March ARB,



MQ-1B Predator and MQ-9 Reaper (in back) (A1C Christian Clausen)

Calif.; Nellis AFB, Nev.; Springfield-Beckley Arpt., Ohio.; Whiteman AFB, Mo.

Aircraft Location: Cannon AFB, N.M.; Creech AFB, Nev.; Fort Polk Airfield, La.; Fort Huachuca, Ariz.; Grand Forks AFB, N.D.; Holloman AFB, N.M.; March ARB, Calif.; Whiteman AFB, Mo.

Contractor: General Atomics Aeronautical Systems.

Power Plant: one Rotax 914F turbo engine.

Accommodation: GCS: pilot, sensor operator.

Dimensions: span 55 ft, length 27 ft, height 6.9 ft.

Weight: max T-O 2,250 lb.

Ceiling: 25,000 ft.

Performance: speed 84-135 mph, range 770 miles, max endurance 40 hr.

Armament: Two AGM-114 Hellfire missiles.

MQ-9 Reaper

Brief: Medium-to-high altitude, long-endurance RPA with persistent hunter-killer role.

COMMENTARY

The MQ-9B variant has been operational in Afghanistan since 2007. The RPA is capable of various mission profiles by combining various weapons and sensors payloads. The MQ-9B Reaper system comprises several aircraft, GCS, a Predator Primary Satellite Link (PPSL), and spare equipment and operations and maintenance crews for deployed 24-hour operations. The RPA is equipped with Multispectral Targeting System-B (MTS-B), integrating an EO/IR sensor, color/monochrome daylight TV camera, image-intensified TV camera, and laser designator/illuminator. Its MTS-B provides FMV as separate video streams or fused together, and the MQ-9 employs SAR for GBU-38 JDAM targeting. Extended-range/payload upgrades are converting aircraft with new wings, winglets, and fuel tanks and heavyweight undercarriage to enable higher takeoff weights. Development is underway to incorporate automatic takeoff and landing capability, Counter-Improvised Explosive Device (C-IED), Dismount Detection Radar (DDR), missile defense, and other sensor and weapons upgrades. Gorgon Stare was deployed operationally for the first time to Afghanistan in 2014.

Extant Variant(s)

- MQ-9B Reaper. Air Force version of the General Atomics Predator B.

Function: Attack/armed reconnaissance.

Operator: ACC, AFSOC, AFMC, ANG.

First Flight: February 2001.

Delivered: November 2003.

IOC: October 2007.

Production: 346 (planned).

Inventory: 154.

GCS Location: Cannon AFB, N.M.; Creech AFB, Nev.; Ellsworth AFB, S.D.; Hancock Field, N.Y.; Holloman AFB, N.M.

Aircraft Location: Cannon AFB, N.M.; Creech AFB, Nev.; Eglin AFB, Fla.; Fort Drum, N.Y.; Hancock Field, N.Y.; Holloman AFB, N.M.; Nellis AFB, Nev.

Contractor: General Atomics Aeronautical Systems; L3 Communications; Raytheon.

Power Plant: one Honeywell TPE331-10GD turboprop, max 900 shp.

Accommodation: GCS: pilot, sensor operator.

Dimensions: span 66 ft, length 36 ft, height 12.5 ft.

Weight: max T-O 10,500 lb.

Ceiling: 50,000 ft.

Performance: cruise speed 230 mph, range 1,150 miles, endurance 14+ hr.

Armament: combination of AGM-114 Hellfires, GBU-12/49 Paveway IIs, and GBU-38 JDAMs.

RQ-4 Global Hawk

Brief: A high-altitude, long-range, long-endurance RPA sensor platform.

COMMENTARY

The Global Hawk system consists of an aircraft with an integrated sensor suite, launch and recovery element (LRE), mission control element (MCE), and communications and mission planning equipment. (ACTD system used in Afghanistan and Iraq.) Block 20 aircraft were initially delivered as an Imint platform incorporating the Enhanced Integrated Sensor Suite (EISS).

Three airframes were subsequently converted to EQ-4B communications relay platforms with the Battlefield Airborne Communications Node (BACN). The Block 30 variant is a multi-intelligence platform equipped with EO/IR, SAR, as well as Sigint sensors and has supported combat operations in Afghanistan, Iraq, and Libya. Eighteen Block 30s are supporting operations worldwide. The Block 40 ground surveillance platform is equipped with the Multiplatform Radar Technology Insertion Program (MP-RTIP) sensor suite that incorporates AESA and SAR to simultaneously gather stationary target imagery and intelligence and detect and track moving ground targets and cruise missiles.

Extant Variant(s)

- Block 20. Imint and communications relay platforms.
- Block 30. Multi-intelligence platform equipped with EO/IR and SAR sensors.
- Block 40. AESA and SAR equipped ground moving target indication (GMTI) and battlefield ISR platform.

Function: High-altitude reconnaissance.

Operator: ACC, AFMC.

First Flight: Feb. 28, 1998.

Delivered: from 1995 (ACTD versions).

IOC: Block 30 August 2011; Block 40 FY15 (planned).

Production: TBD.

Inventory: 30.

Aircraft Location: Beale AFB, Calif.; Grand Forks AFB, N.D.; Andersen AFB, Guam. Planned: two other forward operating bases.

Contractor: Northrop Grumman, Raytheon, L3 Communications.

Power Plant: one Rolls Royce-North American F137-RR-100 turbofan, 7,600 lb thrust.

Accommodation: one LRE pilot, one MCE pilot, one MCE sensor operator.

Dimensions: span 130.9 ft, length 47.6 ft, height 15.3 ft.

Weight: max T-O 32,500 lb.

Ceiling: 60,000 ft.

Performance: speed 356.5 mph, range 10,000 miles.

RQ-170 Sentinel

Brief: Low-observable RPA in development and testing that has already flown in combat.

COMMENTARY

Although the RQ-170 is still under development and test, USAF has employed it in Southwest Asia for Enduring Freedom. The RPA was developed in response to DOD's call for additional RPA support for combatant commanders. USAF publicly acknowledged the aircraft, after photos appeared in foreign news media of operations over Afghanistan in 2009. An RQ-170 strayed into Iranian airspace, crashed, and was captured during a mission in 2011.

Extant Variant(s)

- RQ-170. No data available.

Function: Unmanned surveillance and reconnaissance.

Operator: ACC.

Aircraft Location: Tonopah Test Range, Nev. GCS: Creech AFB, Nev.; Eglin AFB, Fla.; detachments worldwide.

Contractor: Lockheed Martin.

FULL-SCALE AERIAL TARGETS

QF-4 Phantom II

Brief: Regenerated F-4 Phantom IIs converted as optionally manned aerial targets primarily to support missile and weapon systems development.

COMMENTARY

The QF-4 aircraft supplanted the QF-106 as the Air Force's Full-scale Aerial Target (FSAT) system in 1997 and is primarily used to support missile and weapon systems development, testing, and evaluation. The majority of flights are conducted with a safety pilot in the cockpit to facilitate air combat training and evaluation. For live-shot weapons tests or training, QF-4s fly in the "not under live local operator" (NULLO) control configuration, equipped with explosive charges to terminate flight if damaged, and 16 to 20 kills are conducted annually. Retired F/RF-4 airframes were refurbished and converted to drone configuration by BAE Systems, with installation of drone specific equipment including remote control, missile telemetry and scoring, and safe flight-termination systems. QF-4s are assigned to the 82nd Aerial Targets Squadron operating from Tyndall AFB, Fla., utilizing the Gulf Range Drone Control System, and Holloman AFB, N.M., utilizing the White Sands Integrated Target System. The final QF-4 was converted from an RF-4C and delivered in November 2013. QF-16s will begin replacing QF-4s from FY15.

Extant Variant(s)

- QF-4E. Converted from F-4E stocks, delivered starting in 2000 to 2008.
- QF-4G. Converted from retired F-4G airframes, delivered 1997 to 2000.
- QRF-4C. Converted from RF-4C stocks, delivered 2008 to 2013.

Function: Full-scale aerial target.

Operator: ACC.

First Flight: June 30, 1967 (F-4E).

Delivered: 1997.

IOC: 1997.

Production: 314.

Inventory: 60.

Aircraft Location: Holloman AFB, N.M.; Tyndall AFB, Fla.

Contractor: Boeing (previously McDonnell Douglas), BAE Systems.

Power Plant: two General Electric J79-GE-17G afterburning turbojets, each 17,900 lb thrust.

Accommodation: flight crew: one pilot safety (optionally unmanned).

Dimensions: span 38 ft 15 in, length 63 ft 1 in, height 16 ft 6 in.

Weight: max T-O 62,000 lb.

Ceiling: 60,000 ft.

Performance: speed 1,600 mph, range 1,300 miles.

QF-16 Falcon

Brief: Regenerated F-16 Falcons converted as optionally manned aerial targets primarily to support missile and weapon systems development.

COMMENTARY

The QF-16 is replacing the dwindling and obsolescent QF-4 Full-scale Aerial Target (FSAT) system stock, starting in FY15. Aircraft will primarily support missile and weapon systems development, testing, and evaluation. QF-16s are capable of manned or "not under live local operator" (NULLO) control operations. Boeing completed six conversions to support testing. QF-16 completed developmental testing in October 2013 and initial operational testing in September 2014, culminating in an AIM-9X live operational test shot to validate the QF-16's missile scoring system. A full rate production decision is planned for early FY15. The first QF-16 was delivered to Tyndall AFB, Fla., in February 2015, and full operational capability is planned for 2017.

Extant Variant(s)

- QF-16A/B. Converted from retired stocks F-16A/B Block 15.
- QF-16C/D. Converted from retired F-16C/D Block 25 and Block 30.

Function: Full-scale aerial target.

Operator: ACC.

First Flight: May 4, 2012.

Delivered: February 2015.

IOC: 2016 (planned).

Production: 126 (planned).

Inventory: one.

Aircraft Location: Holloman AFB, N.M.; Tyndall AFB, Fla.

Contractor: Lockheed Martin (previously General Dynamics), Boeing.

Power Plant: Block 15: one Pratt & Whitney F100-PW-200 turbofan, 23,830 lb thrust. Block 25: one Pratt & Whitney F100-PW-220 turbofan, 23,830 lb thrust. Block 30: one General Electric F110-GE-100 turbofan, 28,984 lb thrust.

Accommodation: flight crew: one safety pilot (optionally unmanned).

Dimensions: span 32.8 ft, length 49.3 ft, height 16.7 ft.

Weight: F-16A: empty (F100-PW-200) 16,285 lb; F-16C: empty (F110-GE-100) 18,238 lb.

Ceiling: 50,000 ft.

Performance: speed Mach 2, ferry range 2,002+ miles.



QF-16C Falcon (MSgt. J. Scott Wilcox)

STRATEGIC MISSILES

AGM-86 Air Launched Cruise Missile

Brief: Small, air launched, subsonic winged air vehicle carrying either a nuclear or conventional warhead.

COMMENTARY

ALCM is programmed to conduct strategic attack—nuclear or conventional—on surface targets. Its small radar signature and low-level flight capability enhance the missile's effectiveness. The nuclear AGM-86B was the first production version. A total of 1,715 were delivered through 1986. USAF to cut inventory to 528 and consolidate at Minot AFB, N.D. The conventional AGM-86C, called CALCM, was first delivered in 1987, and few remain in the inventory. It was operationally employed for the first time in Desert Storm and widely used in subsequent operations. CALCM is capable of adverse weather, day/night, air-to-surface, accurate, standoff strike capability at ranges greater than 500 miles. Block 1A enhancements offer improved accuracy and increased immunity to electronic jamming. The AGM-86D is CALCM's Block II penetrator version with AUP-3(M) warhead. It provides standoff capability against hardened, deeply buried targets and was successfully used in

Afghanistan. ALCM is undergoing a SLEP to stretch its in-service life to 2030 to allow for planned replacement by the Long-Range Standoff (LRSO) missile. LRSO development has been delayed three years, but USAF plans to field a nuclear missile by 2020, possibly followed by a conventional derivative thereafter. FY15 funds support LRSO concept refinement and engineering studies.

Extant Variant(s)

- AGM-86B. Nuclear ALCM variant.
- AGM-86C. Conventional CALCM variant.
- AGM-86D. Penetrating CALCM Block II variant.

Function: Strategic air-to-surface cruise missile.

Operator: AFGSC.

First Flight: June 1979 (full-scale development).

Delivered: from 1981.

IOC: December 1982, Griffiss AFB, N.Y.

Production: 1,715.

Unit Location: Andersen AFB, Guam (conventional only); Barksdale AFB, La.; Minot AFB, N.D.

Contractor: Boeing.

Power Plant: Williams/Teledyne CAE F107-WR-10 turbofan, 600 lb thrust.

Guidance: inertial plus Terrain Contour Matching (B); inertial plus GPS (C/D).

Warhead: W80-1 nuclear (B), blast/fragmentation conventional (C), hard target penetrating warhead (D).

Dimensions: span 12 ft, length 20.8 ft, body diameter 2 ft.

Weight: 3,150 lb.

Performance: speed 550 mph (B), high subsonic (C/D); range 1,500+ miles (B), 690 miles (C/D).

LGM-30 Minuteman

Brief: Silo-launched, solid-fuel ICBM capable of delivering one to three thermonuclear warheads with high accuracy over great distances.

COMMENTARY

Minuteman is a three-stage, solid-propellant ICBM housed in underground silos. Minuteman III became operational in 1970, providing improved range, rapid retargeting, and the capability to place three re-entry vehicles on three targets with a high accuracy. It is the sole remaining US land-based ICBM. Major life extension program ensures viability to 2020. Ongoing mods, including updated warhead fuzes and start of guidance and propulsion mod programs, would extend that to 2030. USAF initially deployed 550, later reducing to 500 based at Malmstrom AFB, Mont., Minot AFB, N.D., and F. E. Warren AFB, Wyo. Deactivation of a further 50 was completed in July 2008. AFGSC completed reducing its deployed ICBMs to a single warhead in 2014, under limits imposed by the New START arms reduction agreement.

Extant Variant(s)

- LGM-30G. Current Minuteman III variant.

Function: Strategic surface-to-surface ballistic missile.

Operator: AFGSC.

First Flight: February 1961.

Delivered: 1962-December 1978.

IOC: December 1962, Malmstrom AFB, Mont.

Production: 1,800.

Inventory: 449 deployed; 57 nondeployed.

Unit Location: F. E. Warren AFB, Wyo.; Malmstrom AFB, Mont.; Minot AFB, N.D.

Contractor: Boeing.

Propulsion: stage 1: Thiokol M-55 solid-propellant motor, 202,600 lb thrust; stage 2: Aerojet General SR19-AJ-1 solid-propellant motor, 60,721 lb thrust; stage 3: Thiokol SR73-AJ-1 solid-propellant motor, 34,400 lb thrust.

Guidance: inertial guidance system.

Warhead: one Mk 21 RV or one-three Mk 12/12A MIRVs.

Dimensions: length 59.9 ft, diameter 5.5 ft.

Weight: 79,432 lb.

Performance: speed at burnout approx 15,000 mph, range 6,000+ miles.



AIM-9 Sidewinder (A1C Aubrey Robinson)

LONG-RANGE STANDOFF WEAPONS

ADM-160 Miniature Air Launched Decoy

Brief: Air launched programmable electronic warfare platform designed to thwart enemy integrated air defense systems (IADS).

COMMENTARY

MALD is a low-cost, state-of-the-art, modular, autonomous, and programmable flight vehicle that mimics US or allied aircraft to enemy IADS. MALD was initiated as an ACTD by DARPA in response to an ACC SEAD mission needs statement. MALD-J adds radar jamming capability to the basic decoy platform and can operate alone or in concert with other EW platforms. The jammer version is designed as an expendable, close-in jammer to degrade and deny an early warning or acquisition radar's ability to establish a track on strike aircraft. It also maintains the ability to fulfill the basic decoy mission. F-16 or B-52 are lead employment aircraft for MALD. USAF capped procurement in FY12, converting Lot 4 to the MALD-J variant. Plans call for 3,000, with 2,400 in the jammer version. USAF demonstrated a new data link in 2014 to potentially enable in-flight retargeting.

Extant Variant(s)

- ADM-160B. MALD base decoy variant.
- ADM-160C. MALD-J jammer/decoy variant.

Function: Aircraft decoy; close-in radar jammer.

First Flight: 1999 (MALD); 2009 (MALD-J).

Delivered: from September 2012 (MALD-J).

IOC: n/a.

Contractor: Raytheon.

Guidance: GPS/INS.

Dimensions: span 5.6 ft (extended), length 9.3 ft

Weight: less than 300 lb.

Performance: range up to 575 miles, endurance 90 minutes (50 minutes on-station loiter).

AGM-154 Joint Standoff Weapon

Brief: Low-cost glide weapons with a standoff capability.

COMMENTARY

JSOW is a joint USAF and Navy family of medium-range, GPS/INS guided, standoff air-to-ground weapons. They are used to attack a variety of soft and armored area targets during day and night and adverse weather conditions. The baseline BLU-97 CEM variant is used against soft and area targets. The BLU-108 variant provides anti-armor capability.

Extant Variant(s)

- AGM-154A. Baseline BLU-97 CEM variant for soft/area targets.
- AGM-154B. The BLU-108 variant for anti-armor.

Function: Air-to-surface guided missile.

First Flight: December 1994.

Delivered: 2000-05 (USAF).

IOC: 2000 (USAF).

Contractor: Raytheon.

Guidance: GPS/INS.

Warhead: (see variants above).

Dimensions: length 13.3 ft, diameter 13 in.

Performance: range 13.8 miles low altitude, 73 miles high altitude.

AGM-158 Joint Air-to-Surface Standoff Missile

Brief: Advanced weapon designed to precisely attack heavily defended targets at extended, standoff range.

COMMENTARY

JASSM is a joint USAF-Navy autonomous precision strike weapon. It can attack both fixed and relocatable targets, including moderately hardened buried targets. The base variant is a stealthy low-cost airframe equipped with GPS/INS guidance, IIR terminal seeker. The base variant currently integrated on the B-52H, F-16 Block 50, B-1B, B-2, and F-15E. Planned integration includes F-16 Block 40 and F-35A. The JASSM-Extended Range (JASSM-ER) version utilizes same baseline body, but new engine and fuel system that increases range to more than 500 miles. The ER variant is only integrated on the B-1B. Full rate production begins in FY15.

Extant Variant(s)

- AGM-158A JASSM. Base variant.
- AGM-158B JASSM-ER. Extended-range variant.

Function: Air-to-surface guided weapon.

First Flight: April 8, 1999.

Delivered: through FY19 (planned).

IOC: September 2003.

Contractor: Lockheed Martin, Raytheon, Honeywell.

Power Plant: Teledyne Continental Motors turbojet (baseline); Williams Intl. turbofan (ER).

Guidance: GPS/INS and IIR terminal seeker.

Warhead: 1,000-lb class penetrator.

Dimensions: length 14 ft.

Performance: 1,000-lb dual mode penetrator/blast-fragmentation warheads; range 200+ miles (baseline), 500+ miles (ER).

AIR-TO-AIR MISSILES

AIM-9 Sidewinder

Brief: Short-range, supersonic, IR guided air-to-air missile with HE warhead, carried by fighter aircraft.

COMMENTARY

Sidewinder was developed by the Navy for fleet air defense and adapted by USAF for fighter aircraft use. Early versions were used extensively in the Vietnam War. The AIM-9M is a joint Navy-USAF, all-altitude, all-aspect, launch-and-leave intercept missile. It has improved defense against IR countermeasures, background discrimination, and reduced-smoke rocket motor. It first flew in 1978. AIM-9M improved anti-countermeasure capabilities. AIM-9X is the newest jointly funded variant. It employs passive IR tracking, jet-vane steering for increased maneuverability, and Joint Helmet-Mounted Cueing System (JHMCS) compatibility. FY15 budget funding begins full rate AIM-9X production.

Extant Variant(s)

- AIM-9M. Early variant.
- AIM-9M-9. Expanded anti-countermeasure capability variant.
- AIM-9X. Newest, highly maneuverable, JHMCS compatible variant.

Function: Air-to-air missile.

First Flight: September 1953.

Delivered: 1957-present. AIM-9M deliveries began 1983; AIM-9X May 2002.

IOC: circa 1983 (9M); 2003 (9X).

Contractor: Raytheon, Loral.

Propulsion: Thiokol Hercules and Birmite Mk 36 Mod 11 solid-propellant rocket motor.

Guidance: solid-state IR homing guidance.

Warhead: annular blast fragmentation.

Dimensions: span 2.1 ft, length 9.4 ft, diameter 5 in.

Performance: speed Mach 2+, range 10+ miles.

AIM-120 AMRAAM

Brief: Supersonic, medium-range, active radar guided air-to-air missile with HE warhead.

COMMENTARY

AMRAAM is a joint USAF-Navy follow-on to the AIM-7 Sparrow with launch-and-maneuver capability. The AIM-120B is an upgraded, reprogrammable variant of the original missile. The AIM-120C incorporated smaller control surfaces for internal carriage on F-22 and F-35 and a high-angle off-boresight (HOBS) launch capability. AIM-120D is in operational testing, which resumed in 2013, following resolution of earlier software and hardware problems. It will add a future electronic protection suite, two-way data link, improved HOBS, GPS-aided navigation, and increased range.

Extant Variant(s)

- AIM-120B. Upgraded, reprogrammable variant of AIM-120A.
- AIM-120C. Production variant optimized for the F-22/F-35.
- AIM-120D. Developmental variant.

Function: Air-to-air guided missile.

First Flight: December 1984.

Delivered: from 1988.

IOC: September 1991.

Contractor: Raytheon.

Propulsion: Alliant boost-sustain solid-propellant rocket motor.

Guidance: active radar terminal/inertial midcourse.

Warhead: blast fragmentation.

Dimensions: span 1.7 ft, length 12 ft, diameter 7 in.

Performance: speed supersonic, range 20+ miles.

AIR-TO-GROUND WEAPONS

AGM-65 Maverick

Brief: A tactical, TV-, IIR-, or laser-guided standoff air-to-surface missile designed for CAS, interdiction, and defense suppression missions.

COMMENTARY

Maverick was first employed during the Vietnam War and was used extensively in Desert Storm and Iraqi Freedom. It is integrated on the A-10 and F-16 for use against tanks and columns of vehicles and in the SEAD role. AGM-65B is a launch-and-leave, EO TV guided missile, equipped with a "scene magnification" TV seeker allowing pilot to identify and lock on to smaller or distant targets. The AGM-65D employs an IIR seeker to overcome daylight-only, adverse weather limits of B variant and became operational in 1986 on the A-10. The AGM-65E is a laser guided version with a heavyweight penetrator warhead. The AGM-65G uses an IIR seeker with software mods to track larger targets. It employs a heavyweight penetrator warhead, digital autopilot, and a pneumatic actuation system. It was fielded in 1989. The AGM-65H is an upgraded B variant with increased capability that recently completed a tracker upgrade. The AGM-65K is a modified G variant, replacing IR guidance system with EO TV guided seeker. It is also undergoing a tracker upgrade. The AGM-65L is the newest laser Maverick, designed to strike high-speed moving targets, using an EO TV seeker with new semi-active laser (SAL) components.

Extant Variant(s)

- AGM-65B. A launch-and-leave EO TV seeker variant.
- AGM-65D. Adverse weather B variant.
- AGM-65E. Laser guided version heavyweight penetrator variant.
- AGM-65G. IIR seeker heavyweight penetrator variant.
- AGM-65H. Upgraded B variant.
- AGM-65K. Modified EO TV seeker G variant.
- AGM-65L. Laser guided EO TV seeker variant for fast moving targets.

Function: Air-to-surface guided missile.

First Flight: August 1969.

Delivered: from August 1972.



AGM-65 Maverick (Capt. Amber House)

IOC: February 1973.

Contractor: Raytheon.

Propulsion: Thiokol TX-481 solid-propellant rocket motor.

Guidance: EO TV guidance system (B/H/K); IIR seeker (D/G); laser seeker (E).

Warhead: 125-lb cone-shaped (B/D/H); 300-lb delayed-fuse penetrator (E/G/K).

Dimensions: span 2.3 ft, length 8.2 ft, diameter 12 in.

Performance: classified.

AGM-88 HARM

Brief: Tactical air-to-surface missile designed to home in on enemy radar emissions to destroy radar-equipped air defense sites.

COMMENTARY

HARM is a joint USAF-Navy weapon. It attains great velocity and is able to cover wide range of frequencies with use of programmable digital processors in carrier aircraft's avionics and missile. It is highly effective against enemy ground radar and is carried by USAF F-16CJ Block 50/52s dedicated to SEAD mission. AGM-88B is equipped with erasable and electronically programmable read-only memory, permitting in-field changes to missile memory. The AGM-88C is the current production model with a more lethal warhead. Raytheon began HARM Control Section Mod (HCSM) in 2013, to convert current models to more precise AGM-88Fs that limit collateral damage.

Extant Variant(s)

- AGM-88B. Early production variant.
- AGM-88C. Current production variant.
- AGM-88F. Upgraded variant with greater accuracy and precision.

Function: Air-to-surface anti-radiation missile.

First Flight: April 1979.

Delivered: 1982-98.

IOC: circa 1984.

Contractor: Raytheon.

Propulsion: Thiokol dual-thrust, solid-propellant rocket motor.

Guidance: proportional with fixed antenna and seeker head in missile nose.

Warhead: HE fragmentation.

Dimensions: span 3.7 ft, length 13.7 ft, diameter 10 in.

Performance: speed supersonic, range 30+ miles.

AGM-114 Hellfire

Brief: Laser guided air-to-ground missile capable of low-collateral anti-armor and anti-personnel attack.

COMMENTARY

Hellfire is a precision, low-collateral air-to-ground missile utilizing semi-active laser guidance. Missiles are used on the MQ-1 Predator and MQ-9 Reaper, and AFSOC has looked at integrating the weapons onto its AC-130W gunships. Hellfire is procured through the Army, and numerous variants are utilized based on overseas contingency demands. An MQ-1 Predator successfully fired an AGM-114 for the first time in February 2000. It was employed in combat for the first time in Afghanistan on Oct. 7, 2001.

Extant Variant(s)

- AGM-114. Numerous subvariants, depending on target and mission requirements.

Function: Air-to-surface guided missile.

First Flight: USAF Feb. 16, 2000.

Delivered: September 2001.

IOC: n/a.

Contractor: Boeing, Lockheed Martin.

Propulsion: solid-propellant rocket motor.

Guidance: EO TV guidance system (B/H/K); IIR seeker (D/G); laser seeker (E).

Warhead: shaped charge and blast fragmentation.

Dimensions: span 28 in, length 5.33 ft, diameter 17 in.

Performance: subsonic.

AGM-176 Griffin

Brief: GPS and inertial guided air-to-ground missile with semi-active laser seeker for highly accurate, low-collateral attack.

COMMENTARY

Griffin is a light, low cost, multiservice air-launched weapon with GPS-aided

inertial guidance and semi-active laser seeker. The AGM-176A forms part of the PSP employed on AFSOC's AC-130W Dragon Spear and planned for the AC-130J Ghost Rider. The AGM-176B is employable on RPAs.

Extant Variant(s)

- AGM-176A. Aft-ejecting missile employed as part of the PSP.
- AGM-176B. Forward-firing variant optimized for light aircraft/RPAs.

Function: Air-to-surface guided missile.

First Flight: USAF Feb. 16, 2000.

Delivered: September 2001.

IOC: n/a.



CBU-87/89/104 (SMSgt. John S. Chapman)

CBU-87/103 Combined Effects Munition

Brief: Area munition effective against light armor, materiel, and personnel, utilized for interdiction.

COMMENTARY

CEM is a cluster-bomb family of weapons that can be delivered as a low-accuracy free-fall weapon or with near precision, given installation of a simple tail kit. It is employed by both USAF and Navy fighters and bombers. CBU-87 is an unguided gravity weapon that dispenses BLU-97 shaped-charge anti-personnel/anti-materiel fragmentary/incendiary bomblets over the target in rectangular pattern. CBU-103 incorporates a Wind-Corrected Munitions Dispenser (WCMD) tail kit to increase accuracy when released from medium to high altitude.

Extant Variant(s)

- CBU-87. Anti-personnel/anti-materiel cluster bomb.
- CBU-103. Variant with WCMD tail kit.

Function: Area munition.

Contractor: Aerojet General, Honeywell, Alliant Tech.

Guidance: none (CBU-87).

Dimensions: length 7.7 ft, diameter 15 in.

Performance: dispenses 202 BLU-97 combined effects bomblets over an area roughly 800 ft x 400 ft.

CBU-89/104 Gator

Brief: Anti-armor/anti-personnel mine dispenser deployed for interdiction.

COMMENTARY

The Gator weapons system provides low-cost means to rapidly seed a battlefield with mines delivered from high speed by USAF and Navy fighters and bombers. It is able to destroy armor. The CBU-89 gravity weapon dispenses 72 anti-tank and 22 anti-personnel mines over target in a circular pattern. Anti-tank mines can be time-fuzed for three different delays. Magnetic fuzing is also incorporated. The CBU-104 adds a WCMD tail kit for increased accuracy when released from medium to high altitude.

Extant Variant(s)

- CBU-89. Anti-armor/anti-personnel mine dispensing weapon.
- CBU-104. Variant with WCMD tail kit.

Function: Scatterable mines.

Contractor: Honeywell, Aerojet General, Olan, Alliant Tech.

Guidance: none (CBU-89).

Dimensions: length 7.7 ft, diameter 15 in.

Performance: dispenses 72 BLU-91 anti-armor and 22 BLU-92 anti-personnel mines.

CBU-105 Sensor Fuzed Weapon

Brief: Anti-armor munition capable of destroying multiple moving and stationary land combat vehicles per pass.

COMMENTARY

Sensor Fuzed Weapon (SFW) is a tactical munitions dispenser with a payload of 10 BLU-108 submunitions, each containing four skeet projectiles, totaling 40 lethal, target-seeking 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 at preset time. Primary targets are massed tanks, armored personnel carriers, and self-propelled targets. CBU-105 is a basic gravity-type 1,000-lb SFW with a WCMD tail kit. It can be delivered from high altitude and in adverse weather. It debuted in combat in Iraq in 2003.

Extant Variant(s)

- CBU-105. CBU-97 with WCMD tail kit.

Function: Wide-area munition.

First Flight: circa 1990.

IOC: 1997.

Contractor: Textron Systems.

Guidance: IR sensors in each warhead search for targets, then detonate over them.

Dimensions: length 7.7 ft, diameter 15 in.

Performance: delivers 40 lethal projectiles over an area of about 500 ft x 1,200 ft.

CBU-107 Passive Attack Weapon

Brief: Area munition used to inflict minimal collateral and environmental damage attacking nonhardened surface targets.

COMMENTARY

Passive Attack Weapon glides toward its target after release. Before impact, its inner chamber begins to rotate, and the projectiles are ejected in rapid succession by centrifugal force, penetrating targets within a 200-ft radius. The weapon contains various-size, penetrating projectiles but no explosive. Full production was completed in six months. The weapon was used during Iraqi Freedom.

Extant Variant(s)

- CBU-107A. Centrifugally dispersed, armor-penetrating weapon.

Function: Wide-area munition.

First Flight: 2002.

IOC: December 2002.

Contractor: General Dynamics, kinetic energy penetrator payload and canister; Lockheed Martin, WCMD; Textron, tactical munition dispenser kit.

Guidance: via WCMD.

Dimensions: length 7.7 ft, diameter 15 in.

Performance: delivers a high-speed volley of nearly 4,000 metal projectiles in three sizes from a single canister; projectiles: 15 in rods (350), 7 in rods (1,000), and small-nail size (2,400).

GBU-10/12/49 Paveway II

Brief: Laser guided free-fall bomb used for targets at short standoff range.

COMMENTARY

The Paveway II kit is a folding wing version of the earlier, fixed wing Paveway I, with seeker and reliability improvements. GBU-10 is the Paveway II seeker and tail kit mounted on a 2,000-lb general-purpose bomb and primarily used against nonhardened targets. It is, however, capable of penetration. The GBU-12 uses a 500-lb bomb body and is primarily used against stationary armored targets. GBU-49 is also a 500-lb body, but adds GPS guidance for all-weather precision delivery. The weapons can be employed from under 2,500 ft and from up to 40,000 ft.

Extant Variant(s)

- GBU-10. Laser/GPS guided 2,000-lb bomb.
- GBU-12. Laser guided 500-lb bomb.
- GBU-49. Laser/GPS guided 500-lb bomb.

Function: Air-to-surface guided munition.

First Flight: early 1970s.

IOC: 1976.

Contractor: Lockheed Martin, Raytheon.

Guidance: semi-active laser.

Warhead: Mk 84 bomb 2,000 lb (GBU-10); Mk 82 500-lb blast/fragmentation bomb (GBU-12/49).

Dimensions: span 5.5 ft, length approx 14.8 ft, diameter 18 in (GBU-10); span 4.4 ft, length 10.8 ft, diameter 11-18 in (GBU-12/49).

Performance: CEP 29.7 ft, range 9.2 miles (GBU-10); CEP 29.7 ft, range about six miles (GBU-12/49).



GBU-10 Paveway II (via USAF)

GBU-24/28 Paveway III

Brief: Advanced laser guided free-fall bomb used against high-value targets from medium standoff range and any altitude.

COMMENTARY

Paveway III is the third generation laser guided seeker/tail kit package. Its advanced guidance enables greater precision over Paveway II, and its high-lift

airframe enables longer glide slopes for greater standoff employment. It can be dropped from low, medium, or high altitude and is effective against a broad range of high-value targets. GBU-24 is fitted to a 2,000-lb bomb body, with a BLU-109 penetrating warhead. GBU-28 variants are large 5,000-lb class air-to-ground penetrating warhead developed for use against Iraq's deeply buried, hardened C2 facilities, used for the first time in 1991 during Desert Storm. The GBU-28B adds GPS/INS guidance to the existing laser seeker for all-weather targeting and entered production in 1999. The GBU-28C adds a more powerful penetrating BLU-122 warhead in addition to the enhanced guidance package and entered production in 2005.

Extant Variant(s)

- GBU-24. Laser guided 2,000-lb penetrating bomb.
- GBU-28B/B. Laser/GPS/INS guided 5,000-lb penetrating bomb.
- GBU-28C/B. Laser/GPS/INS guided 5,000-lb improved penetrating bomb.

Function: Air-to-surface penetrating glide bomb.

First Flight: GBU-24 in service May 1985.

IOC: 1986 (GBU-24); 1991 (GBU-28).

Contractor: Raytheon.

Guidance: semi-active laser.

Warhead: BLU-109 2,000-lb bomb (GBU-24); BLU-113 or BLU-122 5,000-lb bombs (GBU-28).

Dimensions: span 6.7 ft, length 14.4 ft, diameter 18 in (GBU-24); length approx 20 ft, diameter 15 in (GBU-28).

Performance: range more than 11 miles (GBU-24); range more than 5.75 miles (GBU-28).

GBU-31/32/38 Joint Direct Attack Munition (JDAM)

Brief: GPS/INS guided family of weapons designed for highly accurate, autonomous, all-weather conventional attack.

COMMENTARY

JDAM is a joint USAF-Navy program that 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. The weapons acquire targeting information from the aircraft's avionics system. After release, an inertial guidance kit directs the weapon, aided by periodic GPS updates. FY15 budget would continue production at low rate. GBU-31 debuted in 1999. JDAM seeker/tail kits can be mounted on general-purpose (GP) or penetrating warheads in each weight class.

Extant Variant(s)

- GBU-31. GPS/INS guided 2,000-lb GP, or BLU-109 penetrating weapon.
- GBU-32. GPS/INS guided 1,000-lb GP, or BLU-110 penetrating weapon.
- GBU-38. GPS/INS guided 500-lb GP or BLU-111 penetrating weapon.

Function: Air-to-surface guided bomb.

First Flight: Oct. 22, 1996.

IOC: 1998.

Contractor: Boeing, Textron, Honeywell.

Guidance: GPS/INS.

Warhead: 2,000-lb Mk 84/BLU-109 (GBU-31), 1,000-lb Mk 83/BLU-110 (GBU-32), 500-lb Mk 82/BLU-111 (GBU-38).

Dimensions: span 25 in (GBU-31), 19.6 in (GBU-32), 14 in (GBU-38); length (with JDAM and warhead) approx 12 ft (GBU-31), 10 ft (GBU-32), 7.8 ft (GBU-38). **Performance:** range up to 15 miles, CEP with GPS 16.4 ft, CEP with INS only 98 ft.

GBU-39 Small Diameter Bomb II/I

Brief: Limited-yield, standoff precision guided munition.

COMMENTARY

SDB is a low-yield, all-weather, precision guided munition designed to limit collateral damage and strike targets from up to 46 miles away. Its size allows it to be carried in fighters' and bombers' internal weapons bays or to increase overall loadout to enable more independent strikes per sortie. SDB I employs an advanced anti-jam GPS/INS, and acquires target coordinates before release. Several SDBs can be simultaneously released against multiple targets. The weapon was first employed in combat by an F-15E over Iraq in 2006. SDB II is a joint USAF-Navy developmental program designed to provide the capability to attack moving targets as well, from standoff range, in all weather. SDB II adds a millimeter-wave radar, uncooled IIR, and semi-active laser packaged into a tri-mode seeker to track moving targets. The bomb is retargetable after release. Improvements include reduced susceptibility to countermeasures and network-enabled capability through Link 16 and UHF data links. Raytheon won a competition for SDB II in 2010, and the weapon completed testing required to enter LRIP in 2014.

Extant Variant(s)

- GBU-39B SDB I. GPS/INS guided 250-lb low-yield bomb.
- GBU-53/B SDB II. Tri-mode guided 250-lb low-yield bomb.

First Flight: May 23, 2003 (guided SDB I); 2012 (SDB II).

IOC: Oct. 2, 2006.

Production: 24,000 (planned) (SDB I); 12,000 (planned) (SDB II).

Contractor: Boeing.

Guidance: GPS/INS (SDB I); Tri-mode seeker millimeter-wave radar, uncooled IIR, and digital semi-active laser (SDB II).

Warhead: 250-lb class penetrating blast fragmentation munition.

Dimensions: bomb: length 6 ft, width 7.5 in; BRU-61/A carriage (four bombs) length 12 ft, width 16 in, height 16 in.

Performance: near-precision capability at standoff range up to 46 miles.

GBU-43 Massive Ordnance Air Blast (MOAB) Bomb

Brief: Massive weapon designed to destroy large area or buried targets.

COMMENTARY

MOAB is the largest satellite guided, air-delivered weapon ever employed. The conventional HE bomb is GPS guided, with fins and inertial gyro for pitch and roll. It was developed in only nine weeks to be available for the 2003 Iraq campaign and given name Massive Ordnance Air Blast (MOAB) but unofficially known as "Mother of All Bombs." The weapon is designed for deployment from the ramp of a C-130 without a parachute. It provides power to attack large area targets or enemy hidden in tunnels or caves. A total of 18,700 lb of the weapon's 21,000-lb weight is attributed to BLU-120/B warhead.

Extant Variant(s)

- GBU-43/B. GPS guided 18,000-lb bomb.

Function: Massive guided bomb.

Guidance: GPS/INS.

Warhead: BLU-120/B 18,000-lb HE.

Dimensions: length 30 ft, diameter 3.3 ft.

GBU-54 Laser JDAM

Brief: GPS/INS guided weapon equipped with additional laser seeker and designed for highly accurate, autonomous, all-weather conventional attack against fixed and moving targets.

COMMENTARY

LJDAM is a joint USAF-Navy development that combines a laser guidance kit with the GPS/INS-based navigation of existing GBU-38 JDAM. The current LJDAM is a dual mode 500-lb guided weapon capable of attacking moving targets with precision. It was developed as an urgent operational need, and testing was completed in less than 17 months. It was first delivered in May 2008 and deployed in combat in Iraq three months later. FY15 budget would continue production at low rate. Boeing is also developing GBU-31 and GBU-32 variants.

Extant Variant(s)

- GBU-54 Laser JDAM. Laser/GPS/INS guided 500-lb bomb.

Function: Air-to-surface guided bomb.

First Flight: 2005.

IOC: 2008.

Contractor: Boeing.

Guidance: GPS/INS with laser.

Warhead: Mk 82 500-lb munition.

Dimensions: length (with JDAM and warhead) approx 8 ft.

Performance: range up to 15 miles.

GBU-57 Massive Ordnance Penetrator

Brief: Massive GPS guided, earth-penetrating weapon used against hard and deeply buried targets.

COMMENTARY

MOP was developed and tested through a USAF and Defense Threat Reduction Agency partnership in 2004. Flight testing was conducted from 2008 to 2010, when the program transitioned to USAF. Boeing received contract in 2009 for B-2A bomber integration, which was completed in June 2011. A B-2 successfully test-dropped the GBU-57 at White Sands Missile Range, N.M., in 2014.

Extant Variant(s)

- GBU-57B. GPS guided 5,300-lb penetrating weapon.

Function: Massive PGM.

Guidance: GPS.

Warhead: 5,300-lb HE.

Dimensions: length 20.5 ft, diameter 31.5 in.

SATELLITE SYSTEMS

Advanced Extremely High Frequency (AEHF) Satellite System

Brief: Satcom constellation providing global, secure, protected, and jam-resistant military communication.

COMMENTARY

AEHF is replacing existing Milstar satellites and operates at much higher capacity and data rate. It offers secure, anti-jam tactical and strategic communications around the world. AEHF uses cross-linked satellites, eliminating



AEHF Satellite (USAF illustration)

the need for ground relay stations. The program is a collaboration with Canada, the Netherlands, and the United Kingdom. An anomaly with the propulsion system of the first satellite, SV-1, delayed its arrival in operational orbit until October 2011. It completed on-orbit testing February 2012, ahead of the launch of the second vehicle, SV-2, in May 2012. SV-3 was launched in September 2013, reached its assigned orbit in January 2014, and completed on-orbit testing in June 2014. SV-4 is scheduled to launch in 2017, paving the way for the constellation's full operational capability.

Extant Systems

- AEHF SV-1. Launched in 2010, on orbit and operational.
- AEHF SV-2. Launched in 2012, on orbit and operational.
- AEHF SV-3. Launched in 2013, on orbit and operational.
- AEHF SV-4. Planned for launch in 2017.

Function: Communications.

Operator: AFSPC.

First Launch: August 2010.

IOC: 2017 (planned).

Constellation: four.

Design Life: 14 years.

Launch Vehicle: Atlas V.

Operational Location: Schriever AFB, Colo.

Orbit Altitude: Geosynchronous at 22,000+ miles.

Contractor: Lockheed Martin, Northrop Grumman.

Power: solar arrays generating 20,000 watts.

Dimensions: length 31 ft, width 98 ft (with full solar array extension).

Weight: 13,400 lb.

Performance: 24-hr low, medium, and extended data rate connectivity from 65 north to 65 south latitude worldwide.

Defense Meteorological Satellite Program (DMSP)

Brief: Satellite constellation used to collect air, land, sea, and space environmental data in support of worldwide military operations.

COMMENTARY

DMSP provides timely and high-quality weather information to strategic and tactical combat units worldwide. It uses operational linescan sensor to image cloud cover in visible and thermal IR and analyze cloud patterns. It is equipped with microwave imagers and sounders and a suite of space environment sensors that provide critical land, sea, and space environment data. Block 5D-3 improved spacecraft bus and sensors for longer and more capable missions. Six operational DMSP satellites now survey the entire Earth four times a day. The last was launched in 2014. One spacecraft (DMSP-20) remains to be launched after DMSP-19 was successfully launched into orbit on April 3, 2014. USAF is considering requirements for a follow-on system.

Extant Variant(s)

- Block 5D-3. Improved spacecraft bus and sensors for longer, more capable missions.

Function: Space and Earth environmental data collection.

Operator: National Oceanic and Atmospheric Administration (NOAA).

First Launch: May 23, 1962.

IOC: 1965.

Constellation: two low Earth orbit (LEO).

Design Life: 48 months.

Launch Vehicle: Delta IV; Atlas V.

Operational Location: NOAA Satellite Operations Facility, Suitland, Md.

Orbit Altitude: approx 527 miles.

Contractor: Lockheed Martin, Northrop Grumman.

Power: solar arrays generating 1,200-1,300 watts.

Dimensions: length 25 ft (with array deployed), width 4 ft.

Weight: 2,545 lb, incl 772-lb sensor; 2,270 lb with 592-lb sensor payload.

Performance: polar orbits, cover Earth in about 6 hr, primary sensor scans 1,800-mile-wide area.

Defense Satellite Communications System (DSCS)

Brief: Joint service satellite system providing high-capacity communications for deployed air, land, and sea forces.

COMMENTARY

DSCS is the workhorse of US military's SHF communications system. It provides military communications to troops in the field and commanders worldwide. The last of 14 DSCS IIIs launched in 2003. AFSPC deactivated the oldest DSCS satellite (B-12) after 22 years on orbit, on July 30, 2014. B-12 exceeded its designed lifespan by 12 years. The final four DSCS satellites received SLEP before launch, providing higher power amplifiers, more sensitive receivers, and increased antenna connection options. The satellites also carry a single channel transponder to disseminate emergency action and force direction messages to nuclear-capable forces.

Extant Variant(s)

- DSCS III. Current base on orbit variant.
- DSCS III. SLEP. Upgrade configuration of last four satellites launched.

Function: Communications.

Operator: AFSPC.

First Launch: DSCS II 1971; DSCS III 1982; DSCS III/SLEP 2000.

IOC: Dec. 13, 1978 (DSCS II).

Constellation: five (III); 14 deployed/seven currently operational.

Design Life: 10 yr (III).

Launch Vehicle: Atlas II and EELV.

Operational Location: Schriever AFB, Colo.

Orbit Altitude: 22,000+ miles in geosynchronous orbit.

Contractor: Lockheed Martin.



GPS III (Lockheed Martin illustration)

Power: 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: employ six independent SHF transponder channels for secure voice and high-rate data communications.

Defense Support Program (DSP)

Brief: Ballistic missile early warning spacecraft in geosynchronous orbit, guarding US forces and the US homeland against attack.

COMMENTARY

DSP is a key part of North American and theater early warning systems. It is capable of detecting missile launches and nuclear detonations and was originally aimed at the Soviet military. It was used extensively in 1991 Gulf War to detect Iraqi theater missile launches against coalition forces and allies in the region. The 23rd and final DSP satellite launched in December 2007. Block 5 is the latest variant and is more survivable than predecessors. It includes a medium wavelength IR sensor for more mission utility and accommodates 6,000 detectors. Nine Block 5 satellites were deployed between 1989 and 2007.

Extant Variant(s)

- Block 5. Most current on-orbit version.

Function: Strategic and tactical launch detection.

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.

Operational Location: Buckley AFB, Colo.; Schriever AFB, Colo.

Orbit Altitude: geosynchronous at 22,000+ miles.

Contractor: TRW (now Northrop Grumman), Aerojet.

Power: solar arrays generating 1,485 watts.

Dimensions: diameter 22 ft, height 32.8 ft, with solar paddles deployed.

Weight: approx 5,200 lb.

Performance: uses IR sensors to sense heat from missile and booster plumes against Earth's background.

Global Positioning System (GPS)

Brief: Space-based radio-positioning constellation providing highly accurate worldwide location, velocity, and timing services to military and civilian users.

COMMENTARY

GPS is a fundamental contribution to precision bombing, CSAR, mapping, and rendezvous. Provides accurate 3-D (latitude, longitude, and altitude) position, velocity, and time data in an uninterrupted way. GPS Block IIA first launched in 1990. The current constellation includes three IIAs, launched to replace original GPS Block I series. GPS Block IIR and IIR-M (modernized) included 21 vehicles launched between 2005 and 2009. Modernization upgrades included two new signals, enhanced encryption, anti-jamming capabilities, and a second civil signal. GPS Block IIF is a follow-on to IIR-M. Upgrades include extended design life, faster processors, and improved anti-jam and accuracy, with a new military signal and a second and third dedicated civil signal. Eight satellites were launched between 2010 and 2014. The most recent was launched on Oct. 29, 2014. Four are still in storage or awaiting completion. GPS Block IIIA is the future generation expected to provide improved accuracy, availability, integrity, and resistance to jamming. It is in production. Lockheed Martin and Raytheon completed the first launch readiness exercise in September 2013. First launch was pushed back from 2014 to a tentative 2017 target.

Extant Variant(s)

- GPS Block IIA. Launched 1990 to 1997; three active.
- GPS Block IIR. Launched 1997 to 2004; 12 active.
- GPS Block IIR-M. Launched in 2005 to 2009; seven active.
- GPS Block IIF. Launched in 2010 to present; eight active, four stored.
- GPS Block IIIA. Future generation expected to launch in 2017.

Function: Worldwide navigation, timing, and velocity data.

Operator: AFSPC.

First Launch: Feb. 22, 1978.

IOC: Dec. 9, 1993.

Constellation: 31 spacecraft.

Design Life: 7.5 yr (II/IIA); 7.5 yr (IIR/IIR-M); 12 yr (IIF); 15 yr (IIIA).

Launch Vehicle: Delta II, Delta IV.

Operational Location: Schriever AFB, Colo.

Orbit Altitude: 10,988 miles.

Contractor: Boeing (II, IIA, IIF), Lockheed Martin (IIR, IIR-M, IIIA).

Power: solar panels generating 700 watts (II/IIA); 1,136 watts (IIR/IIR-M); up to 2,900 watts (IIF).

Dimensions: (IIR/IIR-M) 5 x 6.3 x 6.25 ft, span incl solar panels 38 ft; (IIF) 9.6 x 6.5 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: orbits the Earth every 12 hr, emitting continuous signals, providing time to within one-millionth of a second, velocity within a fraction of a mile per hour, and location to within a few feet.

Milstar Satellite Communications System (Milstar)

Brief: Joint service satcom constellation that provides global, secure, protected, and jam-resistant military communications.

COMMENTARY

Milstar is the backbone of strategic-tactical DOD communications. It provides secure, anti-jam communications around the world and uses cross-linked satellites, eliminating the need for ground relay stations. Offers 24-hours-a-day capability. The last of six satellites launched in 2003. AEHF will eventually replace Milstar as the DOD's primary satcom.

Extant Variant(s)

- Block I. Two Milstar I satellites launched 1994-95 and still active.
- Block II. Four Milstar II satellites launched in period 1999-2003. First one was placed in nonusable orbit; three still active.

Function: Communications.

Operator: AFSPC.

First Launch: Feb. 7, 1994.

IOC: July 1997 (Milstar I).

Constellation: five.

Design Life: 10 yr.

Launch Vehicle: Titan IV/Centaur.

Operational Location: Schriever AFB, Colo.

Orbit Altitude: geosynchronous at 22,000+ miles.

Contractor: Lockheed Martin, Boeing, TRW (now Northrop Grumman).

Power: solar arrays generating 8,000 watts.

Dimensions: length 51 ft, width 116 ft with full solar array extension.

Weight: 10,000 lb.

Performance: Milstar I sats have low data rate (LDR) payload, transmitting 75 to 2,500 bps of data over 192 channels in EHF range; Milstar II sats have both LDR and medium data rate (MDR) payloads, transmitting 4,800 bps to 1.5 Mbps over 32 channels.

Space Based Infrared System (SBIRS)

Brief: Advanced space surveillance and missile warning system, capable of battlespace characterization and technical intelligence gathering.

COMMENTARY

SBIRS is the follow-on to the Defense Support Program satellite. The system includes IR sensor payloads on host satellites in highly elliptical orbit (HEO), two IR sensors each on dedicated satellites in geosynchronous Earth orbit (GEO), and ground assets. HEO sensor detects launch of submarine-launched ballistic missiles (SLBMs) from the North Pole region and can be tasked for other IR detection missions. GEO scanning IR sensor performs strategic missile warning mission, global technical intelligence, and initial phase for the strategic missile defense mission, providing two times the revisit rate and three times the sensitivity of DSP. HEO-1 and HEO-2 went operational in 2008



SBIRS (Erik Simonsen illustration)

and 2009, respectively. HEO-3 was delivered to the host for incorporation in 2013, and HEO-4 is expected to be delivered in May 2015. USAF launched the GEO-1 satellite in 2011, and officials say the quality of its data is exceeding performance expectations. GEO-2 launched in March 2013 and was accepted for operations. Delivery of GEO-3 is slated for September 2015, with GEO-4 following in September 2016.

Extant Systems

- SBIRS HEO-1. Payload operational in 2008; currently active.
- SBIRS HEO-2. Payload operational in 2009; currently active.
- SBIRS GEO-1. Launched in 2011; currently active.
- SBIRS GEO-2. Launched in 2013; currently active.

Function: space surveillance.

Operator: AFSPC.

First Launch: GEO 1, May 2011.

IOC: HEO 1, Dec. 5, 2008. (Increment 1, Dec. 8, 2001)

Constellation: four GEO sats, two HEO sensors (hosted).

Design Life: n/a.

Launch Vehicle: GEO, Atlas V.

Operational Location: Buckley AFB, Colo.; Schriever AFB, Colo.

Orbit Altitude: geosynchronous and high elliptical.

Contractor: Lockheed Martin, Northrop Grumman.

Power: solar array, 2,435 watts (GEO).

Dimensions: GEO 7 x 6.3 x 19.7 ft.

Weight: 5,603 lb (GEO on orbit).

Space Based Surveillance System (SBSS)

Brief: Satellite constellation used to track, characterize, and measure orbital vehicles and hazardous orbital debris.

COMMENTARY

SBSS is designed to track and collect optical signatures of Earth-orbiting objects, including space debris, from a space-based platform. The first operational satellite (SBSS Block 10) was launched in September 2010. In March 2011, USAF announced satellite control authority had transferred to 1st Space Operations Squadron at Schriever AFB, Colo., culminating the on-orbit initialization, checkout, calibration, and system characterization process. AFSPC is working to extend SBSS service life to cover a potential four-year gap in coverage before it can launch a follow-on spacecraft in 2021—the earliest date based on projected funding.

Extant Systems

- SBSS Block 10. Launched in 2010; currently active.

Function: Space surveillance and object identification.

Operator: AFSPC.

First Launch: Sept. 25, 2010.

IOC: Aug. 17, 2012.

Constellation: one LEO satellite.

Design Life: seven years.

Launch Vehicle: Minotaur IV.

Operational Location: Schriever AFB, Colo.

Orbit Altitude: 390 miles, sun-synchronous orbit.

Contractor: Boeing (system integration, ground segment, operations and sustainment); Ball Aerospace (satellite).

Power: solar arrays and batteries generating 750 watts.

Dimensions: height approx 10 ft; 10 x 3.2 ft, plus solar panels.

Weight: approx 2,273 lb.

Wideband Global SATCOM (WGS) Satellite

Brief: Satellites providing high-capacity communications for deployed air, land, and sea forces.

COMMENTARY

WGS is designed to provide worldwide communications coverage for tactical and fixed users and to augment and then replace DSCS X-band frequency service. Also augments the one-way Global Broadcast Service Joint Program Ka-band frequency capabilities. WGS satellites also provide a new high-capacity two-way Ka-band frequency service. Block I includes: SV-1 (Pacific region), SV-2 (Middle East), and SV-3 (Europe and Africa). Block II satellites are modified to better support the airborne ISR mission and include: SV-4 (Indian Ocean) and SV-5 and SV-6, purchased by Australia in 2013. The US is partnering with Canada, Denmark, Luxembourg, the Netherlands, and New Zealand on Block II follow-on sats, SV-7 to SV-10. They are expected to launch over FY15 to FY18 and be operational by 2019.

Extant Variant(s)

- Block I. Satellites SV-1 to SV-3; launched 2007 to 2009; currently active.
- Block II. Satellites SV-4 to SV-6; launched 2009 to 2013; currently active.

Function: Communications.

Operator: AFSPC.

First Launch: October 2007.

IOC: April 16, 2008.

Constellation: six satellites.

Design Life: 14 years.

Launch Vehicle: Atlas V, Delta IV.

Operational Location: Schriever AFB, Colo.

Orbit Altitude: geosynchronous at 22,000+ miles.

Contractor: Boeing.

Power: solar arrays generating 9,934 watts.

Dimensions: based on Boeing 702 Bus.

Weight: 13,000 lb at launch.

Performance: approx 10 times the capability of a DSCS satellite.

Leaders Through the Years



■ 2015 USAF Almanac

The Nation's Air Arm and Its Early Leaders

Designation	Commander	Dates of Service
Aeronautical Division, US Signal Corps Aug. 1, 1907-July 18, 1914	Chief, Aeronautical Division Capt. Charles deForest Chandler Capt. Arthur S. Cowan Capt. Charles deForest Chandler Maj. Samuel Reber	Aug. 1, 1907-June 30, 1910 July 1, 1910-June 19, 1911 June 20, 1911-Sept. 9, 1913 Sept. 10, 1913-July 17, 1914
Aviation Section, US Signal Corps^a July 18, 1914-May 20, 1918	Chief, Aviation Section Lt. Col. Samuel Reber Lt. Col. George O. Squier Lt. Col. John B. Bennet Maj. Benjamin D. Foulois Brig. Gen. Arthur I. Dade Col. Lawrence Brown	July 18, 1914-May 5, 1916 May 20, 1916-Feb. 19, 1917 Feb. 19, 1917-June 30, 1917 June 30, 1917-Nov. 12, 1917 Nov. 12, 1917-Feb. 27, 1918 Feb. 27, 1918-May 20, 1918
Division of Military Aeronautics, Secretary of War May 20, 1918-May 24, 1918	Director of Military Aeronautics Maj. Gen. William L. Kenly (Kept same title three months into absorption by Air Service)	May 20, 1918-August 1918
Air Service May 24, 1918-July 2, 1926	Director of Air Service John D. Ryan Maj. Gen. Charles T. Menoher Chief of Air Service Maj. Gen. Charles T. Menoher Maj. Gen. Mason M. Patrick	Aug. 28, 1918-Nov. 27, 1918 Jan. 2, 1919-June 4, 1920 June 4, 1920-Oct. 4, 1921 Oct. 5, 1921-July 2, 1926
Air Corps^b July 2, 1926-Sept. 18, 1947	Chief of Air Corps Maj. Gen. Mason M. Patrick Maj. Gen. James E. Fechet Maj. Gen. Benjamin D. Foulois Maj. Gen. Oscar Westover Maj. Gen. Henry H. Arnold	July 2, 1926-Dec. 13, 1927 Dec. 14, 1927-Dec. 19, 1931 Dec. 20, 1931-Dec. 21, 1935 Dec. 22, 1935-Sept. 21, 1938 Sept. 29, 1938-June 20, 1941
Army Air Forces June 20, 1941-Sept. 18, 1947	Chief, Army Air Forces Lt. Gen. Henry H. Arnold Commanding General, AAF Gen. of the Army Henry H. Arnold ^c Gen. Carl A. Spaatz	June 20, 1941-March 9, 1942 March 9, 1942-Feb. 9, 1946 Feb. 9, 1946-Sept. 26, 1947
United States Air Force Sept. 18, 1947	Chief of Staff Gen. Carl A. Spaatz	Sept. 26, 1947-April 29, 1948

^aBetween April 1917 and May 1918, the Aviation Section was known by various other names: Aeronautical Division, Airplane Division, Air Division, and Air Service Division.

^bThe Air Corps became a subordinate element of the Army Air Forces June 20, 1941. Since the 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 Air Corps continued to exist as a combatant arm, and personnel of the Army Air Forces were still assigned to the Air Corps.

^cThe 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.

Headquarters USAF Leaders

Secretary

Stuart Symington	Sept. 18, 1947	April 24, 1950	John J. Welch Jr. (acting)	April 29, 1989	May 21, 1989
Thomas K. Finletter	April 24, 1950	Jan. 20, 1953	Donald B. Rice	May 22, 1989	Jan. 20, 1993
Harold E. Talbott	Feb. 4, 1953	Aug. 13, 1955	Michael B. Donley (acting)	Jan. 20, 1993	July 13, 1993
Donald A. Quarles	Aug. 15, 1955	April 30, 1957	Gen. Merrill A. McPeak (acting)	July 14, 1993	Aug. 5, 1993
James H. Douglas Jr.	May 1, 1957	Dec. 10, 1959	Sheila E. Widnall	Aug. 6, 1993	Oct. 31, 1997
Dudley C. Sharp	Dec. 11, 1959	Jan. 20, 1961	F. Whitten Peters*	Nov. 1, 1997	Jan. 20, 2001
Eugene M. Zuckert	Jan. 23, 1961	Sept. 30, 1965	Lawrence J. Delaney (acting)	Jan. 20, 2001	June 1, 2001
Harold Brown	Oct. 1, 1965	Feb. 14, 1969	James G. Roche	June 1, 2001	Jan. 20, 2005
Robert C. Seamans Jr.	Feb. 15, 1969	May 14, 1973	Peter B. Teets (acting)	Jan. 20, 2005	March 25, 2005
John L. McLucas*	May 15, 1973	Nov. 23, 1975	Michael L. Dominguez (acting)	March 25, 2005	July 29, 2005
James W. Plummer (acting)	Nov. 23, 1975	Jan. 2, 1976	Preston M. Geren (acting)	July 29, 2005	Nov. 3, 2005
Thomas C. Reed	Jan. 2, 1976	April 6, 1977	Michael W. Wynne	Nov. 3, 2005	June 20, 2008
John C. Stetson	April 6, 1977	May 18, 1979	Michael B. Donley*	June 21, 2008	June 21, 2013
Hans M. Mark*	May 18, 1979	Feb. 9, 1981	Eric Fanning (acting)	June 21, 2013	Dec. 20, 2013
Verne Orr	Feb. 9, 1981	Nov. 30, 1985	Deborah Lee James	Dec. 20, 2013	
Russell A. Rourke	Dec. 6, 1985	April 7, 1986			
Edward C. Aldridge Jr.*	April 8, 1986	Dec. 16, 1988			
James F. McGovern (acting)	Dec. 16, 1988	April 29, 1989			

*Served as acting Secretary: McLucas, until July 18, 1973; Mark, until July 26, 1979; Aldridge, until June 9, 1986; Peters, until July 30, 1999; Donley, until Oct. 17, 2008.

CSAF

Gen. Carl A. Spaatz	Sept. 26, 1947	April 29, 1948	Gen. Michael J. Dugan	July 1, 1990	Sept. 17, 1990
Gen. Hoyt S. Vandenberg	April 30, 1948	June 29, 1953	Gen. John Michael Loh (acting)	Sept. 18, 1990	Oct. 27, 1990
Gen. Nathan F. Twining	June 30, 1953	June 30, 1957	Gen. Merrill A. McPeak	Oct. 27, 1990	Oct. 25, 1994
Gen. Thomas D. White	July 1, 1957	June 30, 1961	Gen. Ronald R. Fogleman	Oct. 25, 1994	Sept. 1, 1997
Gen. Curtis E. LeMay	June 30, 1961	Jan. 31, 1965	Gen. Ralph E. Eberhart (acting)	Sept. 1, 1997	Oct. 6, 1997
Gen. John P. McConnell	Feb. 1, 1965	July 31, 1969	Gen. Michael E. Ryan	Oct. 6, 1997	Sept. 6, 2001
Gen. John D. Ryan	Aug. 1, 1969	July 31, 1973	Gen. John P. Jumper	Sept. 6, 2001	Sept. 2, 2005
Gen. George S. Brown	Aug. 1, 1973	June 30, 1974	Gen. T. Michael Moseley	Sept. 2, 2005	July 12, 2008
Gen. David C. Jones	July 1, 1974	June 20, 1978	Gen. Duncan J. McNabb (acting)	July 12, 2008	Aug. 12, 2008
Gen. Lew Allen Jr.	July 1, 1978	June 30, 1982	Gen. Norton A. Schwartz	Aug. 12, 2008	Aug. 10, 2012
Gen. Charles A. Gabriel	July 1, 1982	June 30, 1986	Gen. Mark A. Welsh III	Aug. 10, 2012	
Gen. Larry D. Welch	July 1, 1986	June 30, 1990			

Vice CSAF

Gen. Hoyt S. Vandenberg	Oct. 10, 1947	April 28, 1948	Gen. Jerome F. O'Malley	June 1, 1982	Oct. 5, 1983
Gen. Muir S. Fairchild	May 27, 1948	March 17, 1950	Gen. Lawrence A. Skantze	Oct. 6, 1983	July 31, 1984
Lt. Gen. Lauris Norstad (acting)	May 22, 1950	Oct. 9, 1950	Gen. Larry D. Welch	Aug. 1, 1984	July 31, 1985
Gen. Nathan F. Twining	Oct. 10, 1950	June 29, 1953	Gen. John L. Piotrowski	Aug. 1, 1985	Jan. 31, 1987
Gen. Thomas D. White	June 30, 1953	June 30, 1957	Gen. Monroe W. Hatch Jr.	Feb. 1, 1987	May 24, 1990
Gen. Curtis E. LeMay	July 1, 1957	June 30, 1961	Gen. John Michael Loh	May 25, 1990	March 25, 1991
Gen. Frederic H. Smith Jr.	July 1, 1961	June 30, 1962	Gen. Michael P. C. Carns	May 16, 1991	July 28, 1994
Gen. William F. McKee	July 1, 1962	July 31, 1964	Gen. Thomas S. Moorman Jr.	July 29, 1994	July 11, 1997
Gen. John P. McConnell	Aug. 1, 1964	Jan. 31, 1965	Gen. Ralph E. Eberhart	July 11, 1997	May 26, 1999
Gen. William H. Blanchard	Feb. 19, 1965	May 31, 1966	Gen. Lester L. Lyles	May 27, 1999	April 17, 2000
Lt. Gen. Hewitt T. Wheeler (acting)	June 13, 1966	July 31, 1966	Gen. John W. Handy	April 17, 2000	Nov. 5, 2001
Gen. Bruce K. Holloway	Aug. 1, 1966	July 31, 1968	Gen. Robert H. Foglesong	Nov. 5, 2001	Aug. 11, 2003
Gen. John D. Ryan	Aug. 1, 1968	July 31, 1969	Gen. T. Michael Moseley	Aug. 12, 2003	Sept. 2, 2005
Gen. John C. Meyer	Aug. 1, 1969	April 30, 1972	Gen. John D. W. Corley	Sept. 2, 2005	Sept. 17, 2007
Gen. Horace M. Wade	May 1, 1972	Oct. 31, 1973	Gen. Duncan J. McNabb	Sept. 17, 2007	Sept. 4, 2008
Gen. Richard H. Ellis	Nov. 1, 1973	Aug. 18, 1975	Gen. William M. Fraser III	Oct. 8, 2008	Aug. 27, 2009
Gen. William V. McBride	Sept. 1, 1975	March 31, 1978	Gen. Carol H. Chandler	Aug. 27, 2009	Jan. 14, 2011
Gen. Lew Allen Jr.	April 1, 1978	June 30, 1978	Gen. Philip M. Breedlove	Jan. 14, 2011	July 27, 2012
Gen. James A. Hill	July 1, 1978	Feb. 29, 1980	Gen. Larry O. Spencer	July 27, 2012	
Gen. Robert C. Mathis	March 1, 1980	May 31, 1982			

CMSAF

CMSAF Paul W. Airey	April 3, 1967	July 31, 1969	CMSAF Gary R. Pfingston	Aug. 1, 1990	Oct. 25, 1994
CMSAF Donald L. Harlow	Aug. 1, 1969	Sept. 30, 1971	CMSAF David J. Campanale	Oct. 26, 1994	Nov. 4, 1996
CMSAF Richard D. Kisling	Oct. 1, 1971	Sept. 30, 1973	CMSAF Eric W. Benken	Nov. 5, 1996	July 30, 1999
CMSAF Thomas N. Barnes	Oct. 1, 1973	July 31, 1977	CMSAF Frederick J. Finch	July 30, 1999	July 1, 2002
CMSAF Robert D. Gaylor	Aug. 1, 1977	July 31, 1979	CMSAF Gerald R. Murray	July 1, 2002	June 30, 2006
CMSAF James M. McCoy	Aug. 1, 1979	July 31, 1981	CMSAF Rodney J. McKinley	June 30, 2006	June 30, 2009
CMSAF Arthur L. Andrews	Aug. 1, 1981	July 31, 1983	CMSAF James A. Roy	June 30, 2009	Jan. 24, 2013
CMSAF Sam E. Parish	Aug. 1, 1983	June 30, 1986	CMSAF James A. Cody	Jan. 24, 2013	
CMSAF James C. Binnicker	July 1, 1986	July 31, 1990			

Leaders of Active Major Commands and ANG

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	Sept. 10, 2009
Gen. William M. Fraser III	Sept. 10, 2009	Sept. 13, 2011
Gen. Gilmary Michael Hostage III	Sept. 13, 2011	Nov. 4, 2014
Gen. Herbert J. Carlisle	Nov. 4, 2014	

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	July 2, 2008
Gen. Stephen R. Lorenz	July 2, 2008	Nov. 17, 2010
Gen. Edward A. Rice Jr.	Nov. 17, 2010	Oct. 10, 2013
Gen. Robin Rand	Oct. 10, 2013	

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

Air Force Global Strike Command

Lt. Gen. Frank G. Klotz	Aug. 7, 2009	Jan. 6, 2011
Lt. Gen. James M. Kowalski	Jan. 6, 2011	Oct. 23, 2013
Lt. Gen. Stephen W. Wilson	Oct. 23, 2013	

Established as Continental Air Forces Dec. 13, 1944. Redesignated Strategic Air Command March 21, 1946. (See SAC in Inactive Major Commands section.) Inactivated June 1, 1992. Redesignated and activated as AFGSC Aug. 7, 2009.

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	Nov. 21, 2008
Gen. Donald J. Hoffman	Nov. 21, 2008	June 5, 2012
Gen. Janet C. Wolfenbarger	June 5, 2012	

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	June 24, 2008
Lt. Gen. Charles E. Stenner Jr.	June 24, 2008	July 30, 2012
Lt. Gen. James F. Jackson	July 30, 2012	

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 (acting)	Oct. 3, 2007	Oct. 12, 2007
Gen. C. Robert Kehler	Oct. 12, 2007	Jan. 5, 2011
Gen. William L. Shelton	Jan. 5, 2011	Aug. 15, 2014
Gen. John E. Hyten	Aug. 15, 2014	

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	June 24, 2011
Lt. Gen. Eric E. Fiel	June 24, 2011	July 3, 2014
Lt. Gen. Bradley A. Heithold	July 3, 2014	

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	Nov. 20, 2009
Gen. Raymond E. Johns Jr.	Nov. 20, 2009	Nov. 30, 2012
Gen. Paul J. Selva	Nov. 30, 2012	May 5, 2014
Gen. Darren W. McDew	May 5, 2014	

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	Nov. 17, 2008
Maj. Gen. Emmett R. Titshaw Jr. (acting)	Nov. 17, 2008	Feb. 2, 2009
Lt. Gen. Harry M. Wyatt III	Feb. 2, 2009	March 22, 2013
Lt. Gen. Stanley E. Clarke III	March 22, 2013	

Pacific Air Forces

Lt. Gen. Ennis C. Whitehead	Dec. 30, 1945	April 25, 1949
Lt. Gen. George E. Stratemeyer	April 26, 1949	May 20, 1951
Lt. Gen. Earle E. Partridge (acting)	May 21, 1951	June 9, 1951
Gen. Otto P. Weyland	June 10, 1951	March 25, 1954
Gen. Earle E. Partridge	March 26, 1954	May 31, 1955
Gen. Laurence S. Kuter	June 1, 1955	July 31, 1959
Gen. Emmett O'Donnell Jr.	Aug. 1, 1959	July 31, 1963
Gen. Jacob E. Smart	Aug. 1, 1963	July 31, 1964
Gen. Hunter Harris Jr.	Aug. 1, 1964	Jan. 31, 1967
Gen. John D. Ryan	Feb. 1, 1967	July 31, 1968
Gen. Joseph J. Nazzaro	Aug. 1, 1968	July 31, 1971
Gen. Lucius D. Clay Jr.	Aug. 1, 1971	Sept. 30, 1973
Gen. John W. Vogt Jr.	Oct. 1, 1973	June 30, 1974
Gen. Louis L. Wilson Jr.	July 1, 1974	May 31, 1977
Lt. Gen. James A. Hill	June 1, 1977	June 14, 1978
Lt. Gen. James D. Hughes	June 15, 1978	July 1, 1981
Lt. Gen. Arnold W. Braswell	July 1, 1981	Sept. 30, 1983
Gen. Jerome F. O'Malley	Oct. 8, 1983	Nov. 1, 1984
Gen. Robert W. Bazley	Nov. 1, 1984	Dec. 16, 1986
Gen. Jack I. Gregory	Dec. 16, 1986	July 22, 1988
Gen. Merrill A. McPeak	July 22, 1988	Oct. 30, 1990
Lt. Gen. James B. Davis	Nov. 5, 1990	Feb. 19, 1991
Gen. Jimmie V. Adams	Feb. 19, 1991	Jan. 25, 1993
Gen. Robert L. Rutherford	Jan. 26, 1993	Oct. 12, 1994
Gen. John G. Lorber	Oct. 12, 1994	July 7, 1997
Gen. Richard B. Myers	July 7, 1997	July 23, 1998
Gen. Patrick K. Gamble	July 23, 1998	April 9, 2001
Lt. Gen. Lansford E. Trapp (acting)	April 9, 2001	May 4, 2001
Gen. William J. Begert	May 4, 2001	July 2, 2004
Gen. Paul V. Hester	July 2, 2004	Nov. 30, 2007
Gen. Carrol H. Chandler	Nov. 30, 2007	Aug. 19, 2009
Gen. Gary L. North	Aug. 19, 2009	Aug. 3, 2012
Gen. Herbert J. Carlisle	Aug. 3, 2012	Oct. 16, 2014
Gen. Lori J. Robinson	Oct. 16, 2014	

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

US Air Forces in Europe-Air Forces Africa

Brig. Gen. John F. McBlain (acting)	Aug. 14, 1947	Oct. 20, 1947
Lt. Gen. Curtis E. LeMay	Oct. 20, 1947	Oct. 15, 1948
Lt. Gen. John K. Cannon	Oct. 16, 1948	Jan. 20, 1951
Gen. Lauris Norstad	Jan. 21, 1951	July 26, 1953
Lt. Gen. William H. Tunner	July 27, 1953	June 30, 1957
Gen. Frank F. Everest	July 1, 1957	July 31, 1959
Gen. Frederic H. Smith Jr.	Aug. 1, 1959	June 30, 1961
Gen. Truman H. Landon	July 1, 1961	July 31, 1963
Gen. Gabriel P. Disosway	Aug. 1, 1963	July 31, 1965
Gen. Bruce K. Holloway	Aug. 1, 1965	July 31, 1966
Gen. Maurice A. Preston	Aug. 1, 1966	July 31, 1968
Gen. Horace M. Wade	Aug. 1, 1968	Jan. 31, 1969
Gen. Joseph R. Holzapple	Feb. 1, 1969	Aug. 31, 1971
Gen. David C. Jones	Sept. 1, 1971	June 30, 1974
Gen. John W. Vogt	July 1, 1974	Aug. 31, 1975
Gen. Richard H. Ellis	Sept. 1, 1975	July 31, 1977
Gen. William J. Evans	Aug. 1, 1977	Aug. 1, 1978
Gen. John W. Pauly	Aug. 1, 1978	Aug. 1, 1980
Gen. Charles A. Gabriel	Aug. 1, 1980	June 30, 1982
Gen. Billy M. Minter	July 1, 1982	Nov. 1, 1984
Gen. Charles L. Donnelly Jr.	Nov. 1, 1984	May 1, 1987
Gen. William L. Kirk	May 1, 1987	April 12, 1989
Gen. Michael J. Dugan	April 12, 1989	June 26, 1990
Gen. Robert C. Oaks	June 26, 1990	July 29, 1994
Gen. James L. Jamerson	July 29, 1994	July 16, 1995
Gen. Richard E. Hawley	July 17, 1995	April 4, 1996
Gen. Michael E. Ryan	April 4, 1996	Oct. 5, 1997
Lt. Gen. William J. Begert (acting)	Oct. 6, 1997	Dec. 5, 1997
Gen. John P. Jumper	Dec. 5, 1997	Jan. 13, 2000
Gen. Gregory S. Martin	Jan. 13, 2000	Aug. 12, 2003
Gen. Robert H. Foglesong	Aug. 12, 2003	Dec. 6, 2005
Gen. William T. Hobbins	Dec. 6, 2005	Dec. 10, 2007
Maj. Gen. Marc E. Rogers (acting)	Dec. 10, 2007	Jan. 17, 2008
Gen. Roger A. Brady	Jan. 17, 2008	Dec. 13, 2010
Gen. Mark A. Welsh III	Dec. 13, 2010	July 31, 2012
Gen. Philip M. Breedlove	July 31, 2012	May 10, 2013
Lt. Gen. Noel T. Jones (acting)	May 10, 2013	Aug. 2, 2013
Gen. Frank Gorenc	Aug. 2, 2013	

Activated as 8th Air Force (1942). Redesignated: Eighth Air Force Sept. 18, 1942; US Strategic Air Forces in Europe (1944); USAFE Aug. 7, 1945; USAFE-AFAFRICA, April 20, 2012.

Photo by John M. Dibbs



An A-10 flies over South Korea.



USAF C-130Js in France commemorating D-Day.

USAF photo by A1C Jordan Castellan

Leaders of Inactive Major Commands

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. Assigned to Continental Air Command 1948. Discontinued 1950. Regained Majcom status 1951. Redesignated Aerospace Defense Command Jan. 15, 1968. Inactivated March 31, 1980.

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 1979. Changed to Field Operating Agency July 1, 1991.

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

Antecedents: AAF Materiel and Services 1944; AAF Technical Service Command 1944; Air Technical Service Command 1945; Air Materiel Command 1946; Air Force Logistics Command 1961. Inactivated July 1, 1992.

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 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

With lineage dating to the Air Service School, Feb. 25, 1920. Designated Air University, a major command, March 12, 1946. Lost Majcom status July 1, 1978; regained July 1, 1983; lost again July 1, 1993.

Alaskan Air Command

Brig. Gen. Joseph H. Atkinson	Oct. 1, 1946	Feb. 25, 1949
Brig. Gen. Frank A. Armstrong Jr.	Feb. 26, 1949	Dec. 27, 1950
Maj. Gen. William D. Old	Dec. 27, 1950	Oct. 14, 1952
Brig. Gen. W. R. Agee	Oct. 27, 1952	Feb. 26, 1953
Maj. Gen. George R. Acheson	Feb. 26, 1953	Feb. 1, 1956

Brig. Gen. T. Alan Bennett (acting)	Feb. 1, 1956	Feb. 24, 1956
Lt. Gen. Joseph H. Atkinson	Feb. 24, 1956	July 16, 1956
Maj. Gen. Frank A. Armstrong Jr.	July 17, 1956	Oct. 23, 1956
Maj. Gen. James H. Davies	Oct. 24, 1956	June 27, 1957
Lt. Gen. Frank A. Armstrong Jr.	June 28, 1957	Aug. 18, 1957
Brig. Gen. Kenneth H. Gibson	Aug. 19, 1957	Aug. 13, 1958
Maj. Gen. C. F. Necrason	Aug. 14, 1958	July 19, 1961
Brig. Gen. Jack A. Gibbs (acting)	July 20, 1961	July 25, 1961
Maj. Gen. Wendell W. Bowman	July 26, 1961	Aug. 8, 1963
Col. Alfred Walton (acting)	Aug. 9, 1963	Aug. 14, 1963
Maj. Gen. James C. Jensen	Aug. 15, 1963	Nov. 14, 1966
Maj. Gen. Thomas E. Moore	Nov. 15, 1966	July 24, 1969
Maj. Gen. Joseph A. Cunningham	July 25, 1969	July 31, 1972
Maj. Gen. Donavon F. Smith	Aug. 1, 1972	June 5, 1973
Maj. Gen. Charles W. Carson Jr.	June 18, 1973	March 2, 1974
Col. David T. Stockman (acting)	March 3, 1974	March 18, 1974
Maj. Gen. Jack K. Gamble	March 19, 1974	June 30, 1975
Lt. Gen. James E. Hill	July 1, 1975	Oct. 14, 1976
Lt. Gen. M. L. Boswell	Oct. 15, 1976	June 30, 1978
Lt. Gen. Winfield W. Scott Jr.	July 1, 1978	April 1, 1981
Lt. Gen. Lynwood E. Clark	April 1, 1981	Aug. 31, 1983
Lt. Gen. Bruce K. Brown	Sept. 1, 1983	Sept. 26, 1985
Lt. Gen. David L. Nichols	Sept. 27, 1985	May 22, 1988
Lt. Gen. Thomas G. McInerney	May 22, 1988	Aug. 9, 1990

Activated as Alaskan Air Force (1942). Redesignated: Eleventh Air Force (1942); Alaskan Air Command (1945); 11th Air Force Aug. 9, 1990, under PACAF.

Continental Air Command

Lt. Gen. George E. Stratemeyer	Dec. 1, 1948	April 15, 1949
Lt. Gen. Ennis C. Whitehead	April 15, 1949	Dec. 14, 1950
Maj. Gen. Willis H. Hale	Dec. 14, 1950	Feb. 18, 1952
Lt. Gen. Leon W. Johnson	Feb. 18, 1952	Dec. 14, 1955
Lt. Gen. Charles B. Stone III	Dec. 15, 1955	June 30, 1957
Lt. Gen. William E. Hall	July 1, 1957	Sept. 30, 1961
Lt. Gen. Gordon A. Blake	Sept. 30, 1961	June 30, 1962
Lt. Gen. Edward J. Timberlake	July 1, 1962	June 19, 1965
Maj. Gen. Albert T. Wilson Jr. (acting)	June 19, 1965	Aug. 18, 1965
Lt. Gen. Cecil H. Childre	Aug. 18, 1965	May 1966
Maj. Gen. J. Stanley Holtoner (acting)	May 1966	July 30, 1966
Lt. Gen. Henry Viccellio Sr.	Aug. 1, 1966	Aug. 1, 1968

Established Dec. 1, 1948. Inactivated Aug. 1, 1968.

Electronic Security Command/ Air Force Intelligence Command

Col. Roy H. Lynn	Oct. 26, 1948	July 5, 1949
Col. Travis M. Hetherington	July 6, 1949	Feb. 21, 1951
Maj. Gen. Roy H. Lynn	Feb. 22, 1951	Feb. 13, 1953
Maj. Gen. Harold H. Bassett	Feb. 14, 1953	Jan. 3, 1957
Maj. Gen. Gordon L. Blake	Jan. 4, 1957	Aug. 5, 1959
Maj. Gen. John B. Ackerman	Aug. 6, 1959	Sept. 20, 1959
Maj. Gen. Millard Lewis	Sept. 21, 1959	Aug. 31, 1962
Maj. Gen. Richard P. Klocko	Sept. 1, 1962	Oct. 15, 1965
Maj. Gen. Louis E. Coira	Oct. 16, 1965	July 18, 1969
Maj. Gen. Carl W. Stapleton	July 19, 1969	Feb. 23, 1973
Maj. Gen. Walter T. Galligan	Feb. 24, 1973	May 16, 1974
Maj. Gen. Howard P. Smith	May 17, 1974	July 31, 1975
Maj. Gen. Kenneth D. Burns	Aug. 1, 1975	Jan. 18, 1979
Maj. Gen. Doyle E. Larson	Jan. 19, 1979	July 31, 1983
Maj. Gen. John B. Marks	Aug. 1, 1983	April 16, 1985
Maj. Gen. Paul H. Martin	April 17, 1985	Aug. 14, 1989
Maj. Gen. Gary W. O'Shaughnessy	Aug. 15, 1989	June 1, 1993
Maj. Gen. Kenneth A. Minihan	June 2, 1993	Oct. 1, 1993

Formerly USAF Security Service. Redesignated: Electronic Security Command Aug. 1, 1979; Air Force Intelligence Command Oct. 1, 1991. Changed to FOA, Air Intelligence Agency Oct. 1, 1993.

Headquarters Command

Brig. Gen. Burton M. Hovey	Jan. 3, 1946	Dec. 13, 1948
Brig. Gen. Sydney D. Grubbs	Dec. 14, 1948	Oct. 1, 1950
Brig. Gen. Morris J. Lee	Oct. 2, 1950	June 13, 1952
Brig. Gen. Stoyte O. Ross	June 14, 1952	July 4, 1956
Maj. Gen. Reuben C. Hood Jr.	Aug. 1, 1956	June 30, 1959
Maj. Gen. Brooke E. Allen	Aug. 3, 1959	Dec. 31, 1965
Maj. Gen. Rollen H. Anthis	Jan. 10, 1966	Nov. 30, 1967
Maj. Gen. Milton B. Adams	Dec. 1, 1967	June 30, 1968
Maj. Gen. Nils O. Ohman	July 5, 1968	April 30, 1972
Maj. Gen. John L. Locke	May 1, 1972	Feb. 25, 1974
Maj. Gen. Maurice R. Reilly	Feb. 26, 1974	August 1975
Maj. Gen. William C. Norris	Sept. 1, 1975	June 30, 1976

Established as Bolling Field Command (1946). Redesignated Headquarters Command, USAF, March 17, 1948. Inactivated 1976.

An F-82 Twin Mustang belonging to Alaskan Air Command in the early 1950s.



Photo by Bill Madsen via Warren Thompson

Military Airlift Command

Maj. Gen. Robert W. Harper	July 1, 1947	June 1, 1948
Lt. Gen. Laurence S. Kuter	June 1, 1948	Oct. 28, 1951
Lt. Gen. Joseph Smith	Nov. 15, 1951	June 30, 1958
Lt. Gen. William H. Tunner	July 1, 1958	May 31, 1960
Gen. Joe W. Kelly Jr.	June 1, 1960	July 18, 1964
Gen. Howell M. Estes Jr.	July 19, 1964	July 31, 1969
Gen. Jack J. Catton	Aug. 1, 1969	Sept. 12, 1972
Lt. Gen. Jay T. Robbins (acting)	Sept. 12, 1972	Sept. 25, 1972
Gen. Paul K. Carlton	Sept. 26, 1972	March 31, 1977
Gen. William G. Moore Jr.	April 1, 1977	June 30, 1979
Gen. Robert E. Huyser	July 1, 1979	June 26, 1981
Gen. James R. Allen	June 26, 1981	June 30, 1983
Gen. Thomas M. Ryan Jr.	July 1, 1983	Sept. 19, 1985
Gen. Duane H. Cassidy	Sept. 20, 1985	Sept. 20, 1989
Gen. Hansford T. Johnson	Sept. 20, 1989	June 1, 1992

Antecedents: AAC Ferrying Command (1941); AAF Ferrying Command (1942); Air Transport Command (1942); Military Air Transport Service (June 1, 1948); Military Airlift Command (Jan. 1, 1966). Inactivated June 1, 1992.

Northeast Air Command

Maj. Gen. Lyman P. Whitten	Oct. 6, 1950	March 14, 1952
Maj. Gen. Charles T. Myers	March 14, 1952	July 26, 1954
Lt. Gen. Glenn O. Barcus	July 26, 1954	March 31, 1957

Newfoundland Base Command, part of Military Air Transport Service, reorganized and redesignated Northeast Air Command, a new major command, Oct. 1, 1950. Inactivated March 31, 1957.

USAF photo



A Military Airlift Command C-141 in 1966.

USAF photo



Strategic Air Command B-47 bomber.

Pacific Air Command/Seventh Air Force

Maj. Gen. Ralph H. Wooten	May 22, 1947	Aug. 31, 1948
Brig. Gen. Robert F. Travis	Sept. 1, 1948	June 1, 1949

Antecedents: Hawaiian Air Force (1940); 7th/Seventh Air Force (1942); Pacific Air Command (Dec. 15, 1947). Discontinued June 1, 1949.

Strategic Air Command

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

Established as Continental Air Forces Dec. 13, 1944. Redesignated Strategic Air Command March 21, 1946. Inactivated June 1, 1992. Redesignated and activated Air Force Global Strike Command Aug. 7, 2009. (See AFGSC entry.)

Tactical Air Command

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

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

US Air Forces Southern Command/Caribbean

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

Antecedents: Panama Canal Air Force (1940); Caribbean Air Force (1941); Sixth Air Force (1942); Caribbean Air Command (July 31, 1946); US Air Forces Southern Command (July 8, 1963). Inactivated Jan. 1, 1976.

Headquarters DOD Leaders

Secretaries of Defense

James V. Forrestal	Sept. 17, 1947	March 28, 1949	Harold Brown	Jan. 21, 1977	Jan. 20, 1981
Louis A. Johnson	March 28, 1949	Sept. 19, 1950	Caspar W. Weinberger	Jan. 21, 1981	Nov. 23, 1987
George C. Marshall	Sept. 21, 1950	Sept. 12, 1951	Frank C. Carlucci	Nov. 23, 1987	Jan. 20, 1989
Robert A. Lovett	Sept. 17, 1951	Jan. 20, 1953	Richard B. Cheney	March 21, 1989	Jan. 20, 1993
Charles E. Wilson	Jan. 28, 1953	Oct. 8, 1957	Les Aspin	Jan. 21, 1993	Feb. 3, 1994
Neil H. McElroy	Oct. 9, 1957	Dec. 1, 1959	William J. Perry	Feb. 3, 1994	Jan. 23, 1997
Thomas S. Gates	Dec. 2, 1959	Jan. 20, 1961	William S. Cohen	Jan. 24, 1997	Jan. 20, 2001
Robert S. McNamara	Jan. 21, 1961	Feb. 29, 1968	Donald H. Rumsfeld	Jan. 20, 2001	Dec. 18, 2006
Clark M. Clifford	March 1, 1968	Jan. 20, 1969	Robert M. Gates	Dec. 18, 2006	July 1, 2011
Melvin R. Laird	Jan. 22, 1969	Jan. 29, 1973	Leon E. Panetta	July 1, 2011	Feb. 27, 2013
Elliot L. Richardson	Jan. 30, 1973	May 24, 1973	Chuck Hagel	Feb. 27, 2013	Feb. 17, 2015
James R. Schlesinger	July 2, 1973	Nov. 19, 1975	Ashton B. Carter	Feb. 17, 2015	
Donald H. Rumsfeld	Nov. 20, 1975	Jan. 20, 1977			

Chairmen of the Joint Chiefs of Staff

Gen. of the Army Omar N. Bradley	Aug. 16, 1949	Aug. 15, 1953	Adm. William J. Crowe Jr., USN	Oct. 1, 1985	Sept. 30, 1989
Adm. Arthur W. Radford, USN	Aug. 15, 1953	Aug. 15, 1957	Gen. Colin L. Powell, USA	Oct. 1, 1989	Sept. 30, 1993
Gen. Nathan F. Twining, USAF	Aug. 15, 1957	Sept. 30, 1960	Adm. David Jeremiah, USN (acting)	Oct. 1, 1993	Oct. 24, 1993
Gen. Lyman L. Lemnitzer, USA	Oct. 1, 1960	Sept. 30, 1962	Gen. John M. Shalikashvili, USA	Oct. 25, 1993	Sept. 30, 1997
Gen. Maxwell D. Taylor, USA	Oct. 1, 1962	July 1, 1964	Gen. Henry H. Shelton, USA	Oct. 1, 1997	Oct. 1, 2001
Gen. Earle G. Wheeler, USA	July 3, 1964	July 2, 1970	Gen. Richard B. Myers, USAF	Oct. 1, 2001	Sept. 30, 2005
Adm. Thomas H. Moorer, USN	July 2, 1970	July 1, 1974	Gen. Peter Pace, USMC	Sept. 30, 2005	Oct. 1, 2007
Gen. George S. Brown, USAF	July 1, 1974	June 20, 1978	Adm. Michael G. Mullen, USN	Oct. 1, 2007	Sept. 30, 2011
Gen. David C. Jones, USAF	June 21, 1978	June 18, 1982	Gen. Martin E. Dempsey, USA	Sept. 30, 2011	
Gen. John W. Vessey Jr., USA	June 18, 1982	Sept. 30, 1985			

Vice Chairmen of the Joint Chiefs of Staff

Gen. Robert T. Herres, USAF	Feb. 6, 1987	Feb. 28, 1990	Gen. Peter Pace, USMC	Oct. 1, 2001	Aug. 12, 2005
Adm. David E. Jeremiah, USN	March 1, 1990	Feb. 28, 1994	Adm. Edmund P. Giambastiani Jr., USN	Aug. 12, 2005	Aug. 3, 2007
Adm. William A. Owens, USN	March 1, 1994	Feb. 27, 1996	Gen. James E. Cartwright, USMC	Aug. 4, 2007	Aug. 4, 2011
Gen. Joseph W. Ralston, USAF	March 1, 1996	Feb. 29, 2000	Adm. James A. Winnefeld Jr., USN	Aug. 4, 2011	
Gen. Richard B. Myers, USAF	March 1, 2000	Oct. 1, 2001			

The Joint Chiefs of Staff on Jan. 4, 1971. They are, left to right: Adm. Elmo Zumwalt Jr., Army Gen. William Westmoreland, Adm. Thomas Moorer, Chairman, USAF Gen. John Ryan, and USMC Gen. Leonard Chapman Jr.



USN photo

Leaders of Unified Commands, National Guard Bureau, and NORAD

US Africa Command

Gen. William E. Ward, USA	Oct. 1, 2008	March 9, 2011
Gen. Carter F. Ham, USA	March 9, 2011	April 5, 2013
Gen. David M. Rodriguez, USA	April 5, 2013	

US Central Command

Gen. Robert C. Kingston, USA	Jan. 1, 1983	Nov. 27, 1985
Gen. George B. Crist, USMC	Nov. 27, 1985	Nov. 23, 1988
Gen. H. Norman Schwarzkopf, USA	Nov. 23, 1988	Aug. 9, 1991
Gen. Joseph P. Hoar, USMC	Aug. 9, 1991	Aug. 5, 1994
Gen. J. H. Binford Peay III, USA	Aug. 5, 1994	Aug. 13, 1997
Gen. Anthony C. Zinni, USMC	Aug. 13, 1997	July 6, 2000
Gen. Tommy R. Franks, USA	July 6, 2000	July 7, 2003
Gen. John P. Abizaid, USA	July 7, 2003	March 16, 2007
Adm. William J. Fallon, USN	March 16, 2007	March 31, 2008
Lt. Gen. Martin E. Dempsey, USA (acting)	March 31, 2008	Oct. 31, 2008
Gen. David H. Petraeus, USA	Oct. 31, 2008	June 30, 2010
Lt. Gen. John R. Allen, USMC (acting)	June 30, 2010	Aug. 11, 2010
Gen. James N. Mattis, USMC	Aug. 11, 2010	March 22, 2013
Gen. Lloyd J. Austin III, USA	March 22, 2013	

US European Command

Gen. Matthew B. Ridgway, USA	Aug. 1, 1952	July 11, 1953
Gen. Alfred M. Gruenther, USA	July 11, 1953	Nov. 20, 1956
Gen. Lauris Norstad, USAF	Nov. 20, 1956	Nov. 1, 1962
Gen. Lyman L. Lemnitzer, USA	Nov. 1, 1962	May 5, 1969
Gen. Andrew J. Goodpaster, USA	May 5, 1969	Nov. 1, 1974
Gen. Alexander M. Haig Jr., USA	Nov. 1, 1974	June 27, 1979
Gen. Bernard W. Rogers, USA	June 27, 1979	June 25, 1987
Gen. John R. Galvin, USA	June 25, 1987	June 23, 1992
Gen. John M. Shalikashvili, USA	June 23, 1992	Oct. 21, 1993
Gen. George A. Joulwan, USA	Oct. 21, 1993	July 10, 1997
Gen. Wesley K. Clark, USA	July 10, 1997	May 2, 2000
Gen. Joseph W. Ralston, USAF	May 2, 2000	Jan. 16, 2003
Gen. James L. Jones, USMC	Jan. 16, 2003	Dec. 4, 2006
Gen. Bantz J. Craddock, USA	Dec. 4, 2006	June 30, 2009
Adm. James G. Stavridis, USN	June 30, 2009	May 10, 2013
Gen. Philip M. Breedlove, USAF	May 10, 2013	

US Northern Command

Gen. Ralph E. Eberhart, USAF	Oct. 1, 2002	Nov. 5, 2004
Adm. Timothy J. Keating, USN	Nov. 5, 2004	March 23, 2007
Gen. Victor E. Renuart Jr., USAF	March 23, 2007	May 19, 2010
Adm. James A. Winnefeld Jr., USN	May 19, 2010	Aug. 4, 2011
Gen. Charles H. Jacoby Jr., USA	Aug. 4, 2011	Dec. 5, 2014
Adm. William E. Gortney, USN	Dec. 5, 2014	

US Pacific Command

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

Adm. Joseph W. Prueher, USN	Jan. 31, 1996	Feb. 20, 1999
Adm. Dennis C. Blair, USN	Feb. 20, 1999	May 2, 2002
Adm. Thomas B. Fargo, USN	May 2, 2002	Feb. 26, 2005
Adm. William J. Fallon, USN	Feb. 26, 2005	March 12, 2007
Lt. Gen. Daniel P. Leaf, USAF (acting)	March 12, 2007	March 26, 2007
Adm. Timothy J. Keating, USN	March 26, 2007	Oct. 19, 2009
Adm. Robert F. Willard, USN	Oct. 19, 2009	March 9, 2012
Adm. Samuel J. Locklear III, USN	March 9, 2012	

US Southern Command

Lt. Gen. Willis D. Crittenger, USA	Nov. 1, 1947	June 28, 1948
Lt. Gen. Matthew B. Ridgway, USA	June 28, 1948	Oct. 1, 1949
Lt. Gen. William H. H. Morris, USA	Oct. 1, 1949	April 1, 1952
Lt. Gen. Horace L. McBride, USA	April 1, 1952	June 15, 1954
Lt. Gen. William K. Harrison Jr., USA	June 15, 1954	Jan. 5, 1957
Lt. Gen. Robert M. Montague, USA	Jan. 5, 1957	Feb. 20, 1958
Maj. Gen. Truman H. Landon, USAF (acting)	Feb. 20, 1958	April 1, 1958
Lt. Gen. Ridgely Gaither, USA	April 1, 1958	July 15, 1960
Lt. Gen. Robert F. Sink, USA	July 15, 1960	Feb. 1, 1961
Gen. Andrew P. O'Meara, USA	Feb. 1, 1961	Feb. 22, 1965
Gen. Robert W. Porter Jr., USA	Feb. 22, 1965	Feb. 18, 1969
Gen. George R. Mather, USA	Feb. 18, 1969	Sept. 20, 1971
Gen. George V. Underwood, USA	Sept. 20, 1971	Jan. 17, 1973
Gen. William B. Rosson, USA	Jan. 17, 1973	Aug. 1, 1975
Lt. Gen. Dennis P. McAuliffe, USA	Aug. 1, 1975	Oct. 1, 1979
Lt. Gen. Wallace H. Nutting, USA	Oct. 1, 1979	May 24, 1983
Gen. Paul F. Gorman, USA	May 24, 1983	March 1, 1985
Gen. John R. Galvin, USA	March 1, 1985	June 6, 1987
Gen. Fred F. Woerner, USA	June 6, 1987	Oct. 1, 1989
Gen. Maxwell R. Thurman, USA	Oct. 1, 1989	Nov. 21, 1990
Gen. George A. Joulwan, USA	Nov. 21, 1990	October 1993
Maj. Gen. W. T. Worthington, USAF (acting)	October 1993	Feb. 17, 1994
Gen. Barry R. McCaffrey, USA	Feb. 17, 1994	March 1, 1996
RAdm. James B. Perkins III, USN (acting)	March 1, 1996	June 26, 1996
Gen. Wesley K. Clark, USA	June 26, 1996	July 13, 1997
RAdm. Walter F. Doran, USN (acting)	July 13, 1997	Sept. 25, 1997
Gen. Charles E. Wilhelm, USMC	Sept. 25, 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. Bantz J. Craddock, USA	Nov. 9, 2004	Oct. 19, 2006
Adm. James G. Stavridis, USN	Oct. 19, 2006	June 25, 2009
Gen. Douglas M. Fraser, USAF	June 25, 2009	Nov. 19, 2012
Gen. John F. Kelly, USMC	Nov. 19, 2012	

Formerly US Caribbean Command (Nov. 1, 1947). Redesignated June 6, 1963.

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	Aug. 15, 2011
Adm. William H. McRaven, USN	Aug. 15, 2011	Aug. 28, 2014
Gen. Joseph L. Votel, USA	Aug. 28, 2014	

US Strategic Command

Gen. George L. Butler, USAF	June 1, 1992	Feb. 13, 1994
Adm. Henry G. Chiles Jr., USN	Feb. 14, 1994	Feb. 21, 1996
Gen. Eugene E. Habiger, USAF	Feb. 22, 1996	June 25, 1998
Adm. Richard W. Mies, USN	June 26, 1998	Nov. 30, 2001
Adm. James O. Ellis Jr., USN	Nov. 30, 2001	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	Jan. 28, 2011

Gen. C. Robert Kehler, USAF	Jan. 28, 2011	Nov. 15, 2013
Adm. Cecil D. Haney, USN	Nov. 15, 2013	

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	Aug. 11, 2008
VAdm. Ann E. Rondeau, USN (acting)	Aug. 12, 2008	Sept. 4, 2008
Gen. Duncan J. McNabb, USAF	Sept. 5, 2008	Oct. 14, 2011
Gen. William M. Fraser III, USAF	Oct. 14, 2011	May 5, 2014
Gen. Paul J. Selva, USAF	May 5, 2014	

National Guard Bureau

Maj. Gen. Butler B. Miltonberger, USA	Feb. 1, 1946	Sept. 29, 1947
Maj. Gen. Kenneth F. Cramer, USA	Sept. 30, 1947	Sept. 4, 1950
Maj. Gen. Raymond H. Fleming, USA	Sept. 5, 1951	Feb. 15, 1953
Maj. Gen. Earl T. Ricks, USAF (acting)	Feb. 16, 1953	June 21, 1953
Maj. Gen. Edgar C. Erickson, USA	June 22, 1953	May 31, 1959
Maj. Gen. Winston P. Wilson, USAF (acting)	June 1, 1959	July 19, 1959
Maj. Gen. Donald W. McGowan, USA	July 20, 1959	Aug. 30, 1963
Maj. Gen. Winston P. Wilson, USAF	Aug. 31, 1963	Aug. 31, 1971
Maj. Gen. Francis S. Greenlief, USA	Sept. 1, 1971	June 23, 1974
Lt. Gen. La Vern E. Weber, USA	Aug. 16, 1974	Aug. 15, 1982
Lt. Gen. Emmett H. Walker Jr., USA	Aug. 16, 1982	Aug. 15, 1986
Lt. Gen. Herbert R. Temple Jr., USA	Aug. 16, 1986	Jan. 31, 1990
Lt. Gen. John B. Conaway, USAF	Feb. 1, 1990	Dec. 1, 1993

Maj. Gen. Raymond F. Rees, USA (acting)	Jan. 1, 1994	July 31, 1994
Lt. Gen. Edward D. Baca, USA	Oct. 1, 1994	July 31, 1998
Lt. Gen. Russell C. Davis, USAF	Aug. 4, 1998	Aug. 3, 2002
Maj. Gen. Raymond F. Rees, USA (acting)	Aug. 4, 2002	April 10, 2003
Lt. Gen. H. Steven Blum, USA	April 11, 2003	Nov. 16, 2008
Gen. Craig R. McKinley, USAF	Nov. 17, 2008	Sept. 7, 2012
Gen. Frank J. Grass, USA	Sept. 7, 2012	

Served as acting chief: Fleming until Aug. 14, 1951.

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	May 19, 2010
Adm. James A. Winnefeld Jr., USN	May 19, 2010	Aug. 4, 2011
Gen. Charles H. Jacoby Jr., USA	Aug. 4, 2011	Dec. 5, 2014
Adm. William E. Gortney, USN	Dec. 5, 2014	



MSgt. Chris Talbert, a crew chief with the Air National Guard, pulls the wheel chocks from an F-16 at Kandahar Airfield, Afghanistan, in 2012.

USAF photo by TSgt. Caycee Cook

Leaders of Inactive Unified Commands

Alaskan Command

Maj. Gen. Howard A. Craig, USAF	Jan. 1, 1947	Oct. 17, 1947
Lt. Gen. Nathan F. Twining, USAF	Oct. 17, 1947	July 1, 1950
Lt. Gen. William E. Kepner, USAF	July 1, 1950	March 1, 1953
Lt. Gen. Joseph A. Atkinson, USAF	March 1, 1953	Oct. 1, 1956
Lt. Gen. Frank A. Armstrong Jr., USAF	Oct. 1, 1956	Aug. 1, 1961
Lt. Gen. George W. Mundy, USAF	Aug. 1, 1961	Aug. 1, 1963
Lt. Gen. Raymond J. Reeves, USAF	Aug. 1, 1963	July 28, 1966
Lt. Gen. Glen R. Birchard, USAF	July 28, 1966	June 29, 1967
Lt. Gen. Robert A. Breitweiser, USAF	June 29, 1967	Aug. 1, 1969
Lt. Gen. Robert G. Ruegg, USAF	Aug. 1, 1969	Aug. 1, 1972
Lt. Gen. James C. Sherrill, USAF	Aug. 1, 1972	Sept. 1, 1974
Lt. Gen. James E. Hill, USAF	Sept. 1, 1974	July 1, 1975

Disestablished July 1, 1975.

Continental Air Defense Command

Gen. Benjamin W. Chidlaw, USAF	Sept. 1, 1954	July 1, 1955
Gen. Earle E. Partridge, USAF	July 1, 1955	Aug. 1, 1959
Gen. Laurence S. Kuter, USAF	Aug. 1, 1959	Aug. 1, 1960
Gen. John K. Gerhart, USAF	Aug. 1, 1960	April 1, 1965
Gen. Dean C. Strother, USAF	April 1, 1965	Aug. 1, 1966
Gen. Raymond J. Reeves, USAF	Aug. 1, 1966	Aug. 1, 1969
Gen. Seth J. McKee, USAF	Aug. 1, 1969	Oct. 1, 1973
Gen. Lucius D. Clay Jr., USAF	Oct. 1, 1973	June 30, 1975

Disestablished June 30, 1975. Established as specified command, Aerospace Defense Command, July 1, 1975. ADCOM disestablished Dec. 19, 1986.

European Command

Gen. Lucius D. Clay, USA	March 15, 1947	Aug. 23, 1949
Gen. Thomas T. Handy, USA	Aug. 23, 1949	Aug. 1, 1952

Redesignated US Army Europe as Army component of new US European Command Aug. 1, 1952.

Far East Command

Gen. of the Army Douglas MacArthur, USA	Jan. 1, 1947	April 11, 1951
Gen. Matthew B. Ridgway, USA	April 11, 1951	May 9, 1952
Gen. Mark W. Clark, USA	May 9, 1952	Oct. 5, 1953
Gen. John E. Hull, USA	Oct. 5, 1953	April 1, 1955
Gen. Maxwell D. Taylor, USA	April 1, 1955	June 5, 1955
Gen. Lyman L. Lemnitzer, USA	June 5, 1955	July 1, 1957

Disestablished July 1, 1957. Functions assumed by US Pacific Command.

Northeast Command

Maj. Gen. Lyman P. Whitten, USAF	Oct. 1, 1950	March 20, 1952
Lt. Gen. Charles T. Myers, USAF	March 20, 1952	July 26, 1954
Lt. Gen. Glenn O. Barcus, USAF	July 26, 1954	Sept. 1, 1956

Disestablished Sept. 1, 1956.

US Joint Forces Command

Adm. William H. P. Blandy, USN	Dec. 1, 1947	Feb. 1, 1950
Adm. William M. Fechteler, USN	Feb. 1, 1950	Aug. 15, 1951
Adm. Lynde D. McCormick, USN	Aug. 15, 1951	April 12, 1954
Adm. Jerauld Wright, USN	April 12, 1954	Feb. 28, 1960
Adm. Robert L. Dennison, USN	Feb. 28, 1960	April 30, 1963
Adm. Harold P. Smith, USN	April 30, 1963	April 30, 1965
Adm. Thomas H. Moorer, USN	April 30, 1965	June 17, 1967
Adm. Ephraim P. Holmes, USN	June 17, 1967	Sept. 30, 1970
Adm. Charles K. Duncan, USN	Sept. 30, 1970	Oct. 31, 1972
Adm. Ralph W. Cousins, USN	Oct. 31, 1972	May 30, 1975
Adm. Isaac C. Kidd Jr., USN	May 30, 1975	Sept. 30, 1978
Adm. Harry D. Train II, USN	Sept. 30, 1978	Sept. 30, 1982
Adm. Wesley D. McDonald, USN	Sept. 30, 1982	Nov. 27, 1985
Adm. Lee Baggett Jr., USN	Nov. 27, 1985	Nov. 22, 1988
Adm. Frank B. Kelso II, USN	Nov. 22, 1988	May 18, 1990
Adm. Leon A. Edney, USN	May 18, 1990	July 13, 1992
Adm. Paul D. Miller, USN	July 13, 1992	Oct. 31, 1994
Gen. John J. Sheehan, USMC	Oct. 31, 1994	Sept. 24, 1997
Adm. Harold W. Gehman Jr., USN	Sept. 24, 1997	Sept. 5, 2000
Gen. William F. Kernan, USA	Sept. 5, 2000	Oct. 2, 2002
Adm. Edmund P. Giambastiani Jr., USN	Oct. 2, 2002	Aug. 1, 2005
Lt. Gen. Robert W. Wagner, USA (acting)	Aug. 1, 2005	Nov. 10, 2005
Gen. Lance L. Smith, USAF	Nov. 10, 2005	Nov. 9, 2007
Gen. James N. Mattis, USMC	Nov. 9, 2007	Aug. 8, 2010
Lt. Gen. Keith L. Huber, USA (acting)	Aug. 8, 2010	Oct. 29, 2010
Gen. Raymond T. Odierno, USA	Oct. 29, 2010	Aug. 4, 2011

Formerly US Atlantic Command, established Dec. 1, 1947. Redesignated US Joint Forces Command Oct. 7, 1999. Disestablished Aug. 4, 2011.

US Readiness Command

Gen. John L. Throckmorton, USA	Jan. 1, 1972	Feb. 1, 1973
Gen. Bruce Palmer Jr., USA	Feb. 1, 1973	Dec. 9, 1974
Gen. John J. Hennessey, USA	Dec. 9, 1974	Aug. 1, 1979
Gen. Volney F. Warner, USA	Aug. 1, 1979	Aug. 1, 1981
Gen. Donn A. Starry, USA	Aug. 1, 1981	June 22, 1983
Gen. Wallace H. Nutting, USA	June 22, 1983	June 28, 1985
Gen. Fred K. Mahaffey, USA	June 28, 1985	Sept. 30, 1986
Lt. Gen. Harry A. Goodall, USAF (acting)	Sept. 30, 1986	Oct. 10, 1986
Gen. James J. Lindsay, USA	Oct. 10, 1986	Sept. 30, 1987

Assumed functions of US Strike Command. Disestablished Sept. 30, 1987.

US Space Command

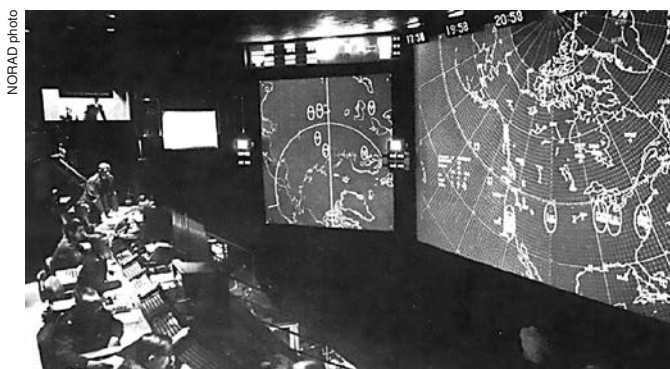
Gen. Robert T. Herres, USAF	Sept. 23, 1985	Feb. 5, 1987
Gen. John L. Piotrowski, USAF	Feb. 6, 1987	March 30, 1990
Gen. Donald J. Kutyna, USAF	April 1, 1990	June 30, 1992
Gen. Charles A. Horner, USAF	June 30, 1992	Sept. 12, 1994
Gen. Joseph W. Ashy, USAF	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes 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

Disestablished Oct. 1, 2002. Functions assumed by US Strategic Command.

US Strike Command

Gen. Paul D. Adams, USA	Oct. 9, 1961	Nov. 1, 1966
Gen. Theodore J. Conway, USA	Nov. 1, 1966	Aug. 1, 1969
Gen. John L. Throckmorton, USA	Aug. 1, 1969	Dec. 31, 1971

Established December 1961. Disestablished Dec. 31, 1971. Functions assumed by US Readiness Command.



The "war room" of NORAD/Continental Air Defense Command, Colorado Springs, Colo., in the early 1960s.

Guide to Aces and Heroes

■ 2015 USAF Almanac

Major Decorations

USAF Recipients of the Medal of Honor

Name 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	Binerville, France
Goettler, 1st Lt. Harold E.	Chicago	Oct. 6, 1918	Binerville, 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, Texas	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



Harold Goettler



Frank Luke



Frederick Castle



Maynard Smith



George Davis



George Day

*Living Medal of Honor recipient

World War II (continued)

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, Texas	Aug. 1, 1943	Ploesti, Romania
Kearby, Col. Neel E.	Wichita Falls, Texas	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, Texas	March 18, 1943	Veogesack, 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, Texas	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	Saint-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	Wimereux, France
Vosler, TSgt. Forrest L.	Lyndonville, N.Y.	Dec. 20, 1943	Bremen, Germany
Walker, Brig. Gen. Kenneth N.	Cerrillos, N.M.	Jan. 5, 1943	Rabaul, New Britain
Wilkins, Maj. Raymond H.	Portsmouth, Va.	Nov. 2, 1943	Rabaul, New Britain
Zeamer, Capt. Jay Jr.	Carlisle, Pa.	June 16, 1943	Buka, Solomon Islands

Korea

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

Vietnam

Bennett, Capt. Steven L.	Palestine, Texas	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
Etchberger, CMSgt. Richard L.	Hamburg, Pa.	March 11, 1968	Phou Pha Thi, Laos
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	Da Lat, S. Vietnam
Young, Capt. Gerald O.	Anacortes, Wash.	Nov. 9, 1967	Khe Sanh, S. Vietnam

USAF Recipients of the Distinguished Service Cross

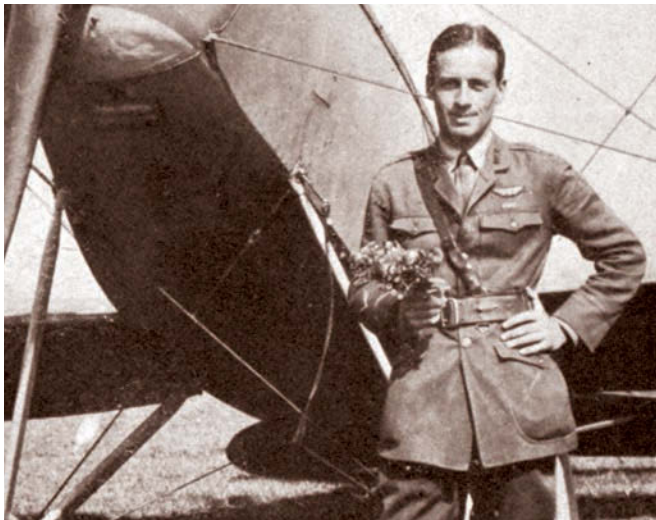
World War I

Abernathy, 2nd Lt. Thomas J.
Aldrich, 1st Lt. Perry H.
Alexander, 1st Lt. Arthur H.
Alexander, 1st Lt. Stirling C.
Allen, 1st Lt. Gardner P.
Andrew, 1st Lt. Flynn L. A.
Armstrong, 1st Lt. Rodney M.
Arthur, Capt. Dogan H. (2)
Atwater, 1st Lt. Benjamin L.
Avery, 1st Lt. Walter L.
Babcock, 1st Lt. Philip R.
Backus, 1st Lt. David H. (2)
Badham, 1st Lt. William T.
Baer, 1st Lt. Paul F. (2)
Bagby, 1st Lt. Ralph B.
Bartholf, 1st Lt. Herbert B.
Baucom, Capt. Byrne V. (2)
Beane, 1st Lt. James D.
Beebe, 2nd Lt. David C.
Bellows, 2nd Lt. Franklin B.
Belzer, 2nd Lt. William E.
Benell, 2nd Lt. Otto E.
Bernheimer, 1st Lt. Louis G. (2)
Biddle, Capt. Charles J.
Bissell, 1st Lt. Clayton L.
Blake, 1st Lt. Charles R.
Bonnalie, 1st Lt. Allan F.
Borden, 2nd Lt. Horace L.
Bowers, 1st Lt. Lloyd G.
Bowman, 2nd Lt. Samuel A.
Boyd, 2nd Lt. Theodore E.
Breese, 2nd Lt. Clinton S.
Bretton, Maj. Lewis H.
Brewster, 1st Lt. Hugh
Brooks, 2nd Lt. Arthur R.
Broomfield, 1st Lt. Hugh D. G.
Brotherton, 2nd Lt. William E.
Brown, 2nd Lt. Mitchell H.
Buckley, 1st Lt. Harold R. (2)
Buford, 1st Lt. Edward Jr.
Burdick, 2nd Lt. Howard
Burger, 2nd Lt. Valentine J. (2)
Burns, 2nd Lt. James S. D.

Burt, 1st Lt. Byron T. Jr.
Campbell, 1st Lt. Douglas (5)
Carroll, 1st Lt. George C.
Cassady, 1st Lt. Thomas G. (2)
Castleman, 1st Lt. John R.
Chambers, 1st Lt. Reed M. (4)
Chapman, 2nd Lt. Charles W. Jr.
Clapp, 2nd Lt. Kenneth S.
Clarke, 1st Lt. Sheldon V.
Clay, 1st Lt. Henry R.
Coleman, 1st Lt. Wallace A.
Conover, 1st Lt. Harvey
Cook, Capt. Everett R.
Cook, Capt. Harvey W. (2)
Coolidge, Capt. Hamilton
Cousins, 1st Lt. John W.
Creech, 1st Lt. Jesse O.
Curtis, 1st Lt. Edward P.
Cutter, 1st Lt. Edward B.
Dawson, 1st Lt. Leo H. (2)
De Castro, 2nd Lt. Ralph E.
Diekema, 1st Lt. Willis A.
Dillon, 1st Lt. Raymond P.
D'Olive, 1st Lt. Charles R.
Donaldson, 2nd Lt. John O.
Douglass, Capt. Kingman
Dowd, 2nd Lt. Meredith L.
Drew, 1st Lt. Charles W.
Duckstein, 1st Lt. Arthur W.
Easterbrook, 1st Lt. Arthur E. (2)
Eaton, 1st Lt. Warren E.
Elliott, 1st Lt. Robert P.
Erwin, 1st Lt. William P. (2)
Este, 1st Lt. J. Dickinson
Farnsworth, 1st Lt. Thomas H.
Ferrenbach, 1st Lt. Leo
Fisher, Capt. George F.
Fleeson, 2nd Lt. Howard T. (2)
Follette, 1st Lt. Justin P.
Fontaine, 1st Lt. Hugh L. (2)
Ford, Capt. Christopher W.
Frank, 1st Lt. William F.
Frost, 1st Lt. John
Furlow, 1st Lt. George W. (2)

Gaylord, 1st Lt. Bradley J.
George, 1st Lt. Harold H.
Giroux, 1st Lt. Ernest A.
Goldthwaite, 1st Lt. George E.
Grant, 1st Lt. Alfred A.
Graveline, Sfc. Fred C.
Greist, 1st Lt. Edwards H.
Grey, Capt. Charles G.
Gundelach, 1st Lt. Andre H.
Guthrie, 1st Lt. Murray K. (3)
Hall, Capt. James N.
Hambleton, 1st Lt. John A. (2)
Hamilton, 1st Lt. Lloyd A.
Hammond, 1st Lt. Leonard C.
Hart, 2nd Lt. Percival G.
Hartney, Maj. Harold E.
Harwood, 1st Lt. Benjamin P.
Haslett, Capt. Elmer R.
Hays, 2nd Lt. Frank K.
Healy, 1st Lt. James A.
Henderson, 1st Lt. Phil A.
Herbert, 1st Lt. Thomas J.
Higgs, 1st Lt. James A. Jr.
Hill, Capt. Maury
Hill, 1st Lt. Raymond C.
Hitchcock, 2nd Lt. Roger W.
Holden, 1st Lt. Kenneth H.
Holden, 1st Lt. Lansing C. Jr. (2)
Holland, 1st Lt. Spessard L.
Hoover, 1st Lt. William J.
Hopkins, 2nd Lt. Stephen T.
Hudson, 1st Lt. Donald
Hunter, 1st Lt. Frank O'D. (5)
Irving, 1st Lt. Livingston G.
Jeffers, 1st Lt. John N.
Jervy, 1st Lt. Thomas M.
Jones, 2nd Lt. Arthur H.
Jones, 2nd Lt. Clinton (2)
Jordan, 2nd Lt. John W.
Kahle, 1st Lt. Clarence C.
Kaye, 1st Lt. Samuel Jr. (2)
Keating, 1st Lt. James A.
Kelty, 1st Lt. Asher E.
Kenney, 1st Lt. George C.
Kindley, 1st Lt. Field E. (2)
Kinney, 1st Lt. Clair A.
Kinsley, 2nd Lt. Wilbert E.
Knotts, 2nd Lt. Howard C.
Knowles, 1st Lt. James Jr.
Lake, 2nd Lt. Horace A.
Lambert, 1st Lt. John H.
Landis, Capt. Reed G.
Larner, 1st Lt. Gorman D. (2)
Lawson, Capt. Walter R.
Lee, 2nd Lt. John B.
Lindsay, 1st Lt. Robert O.
Littauer, Maj. Kenneth P.
Llewellyn, Capt. Frank A.
Lowry, 2nd Lt. Francis B.
Luke, 2nd Lt. Frank Jr. (2)
MacArthur, 2nd Lt. John K.
MacBrayne, 1st Lt. Winfred C.
Manning, 1st Lt. James F. Jr.
Maughan, 1st Lt. Russell L.
McClendon, 1st Lt. Joel H.
McDermott, 2nd Lt. Cleveland W.

McDevitt, 1st Lt. James A.
McDougall, 1st Lt. Harry O.
McKay, 2nd Lt. Elmore K.
McKay, 1st Lt. James R.
McMurry, 1st Lt. Ora R. (2)
Meissner, 1st Lt. James A. (2)
Mell, 1st Lt. Patrick H.
Michener, 1st Lt. John H.
Mitchell, Capt. John
Mitchell, Brig. Gen. William
Moore, 1st Lt. Edward R.
Morris, 2nd Lt. Edward M.
Morse, 2nd Lt. Guy E.
Myers, 1st Lt. Oscar B.
Neel, 2nd Lt. Roland H.
Neibling, 1st Lt. Harlow P.
Neidecker, 1st Lt. Bertrande C.
Nichols, Sfc. Harold O.
Nixon, 1st Lt. George R.
Norris, 2nd Lt. Sigbert A. G.
Norton, 1st Lt. Fred W.
Noyes, Capt. Stephen H.
Nutt, 1st Lt. Alan
O'Donnell, 2nd Lt. Paul J.
O'Neill, 1st Lt. Ralph A. (3)
Orr, 1st Lt. Edward
Page, Capt. Richard C. M.
Palmer, 2nd Lt. Joseph A.
Palmer, 1st Lt. William W.
Paradise, 1st Lt. Robert C.
Patterson, 1st Lt. Alfred B. Jr. (2)
Payne, 1st Lt. Karl C.
Pegues, 1st Lt. Josiah J.
Pendell, 1st Lt. Elmer
Peterson, Capt. David M. (2)
Petree, 1st Lt. Harris E.
Phelps, 1st Lt. Glenn
Phillips, 1st Lt. George R.
Plummer, 2nd Lt. Charles W.
Plush, 1st Lt. Lewis C.
Polley, 1st Lt. Britton
Ponder, 1st Lt. William T.
Porter, 2nd Lt. Charles P. (2)
Porter, 2nd Lt. Earl W.
Porter, 2nd Lt. Kenneth L.
Potter, 1st Lt. William C.
Preston, 2nd Lt. Glen A. (3)
Putnam, 1st Lt. David E.
Pyne, 1st Lt. Percy R.
Quinn, 1st Lt. John J.
Raible, 1st Lt. Joseph C. Jr.
Ralston, 1st Lt. Orville A.
Rancourt, 1st Lt. John I.
Rath, 2nd Lt. Howard G.
Raymond, 1st Lt. Robert F.
Reeves, 1st Lt. Dache M.
Reynolds, Capt. Clearton H.
Reynolds, Maj. John N. (2)
Richardson, 2nd Lt. James M.
Rickenbacker, Capt. Edward V. (7)
Rooney, 1st Lt. Paul N. A.
Rorison, 1st Lt. Harmon C.
Ross, 1st Lt. Cleo J.



Charles Biddle

Numbers in parentheses are total DSCs received by the individual.

Rucker, 1st Lt. Edward W.
Rummell, 1st Lt. Leslie J.
Saunders, Capt. William H.
Schenck, 1st Lt. Alexander P.
Schoen, 1st Lt. Karl J.
Seaver, 1st Lt. Arthur F.
Sellers, 1st Lt. Cecil G.
Sewall, 1st Lt. Sumner (2)
Shelby, 1st Lt. Richard D.
Simon, 1st Lt. Louis C. Jr. (2)
Snyder, 1st Lt. John H.
Spaatz, Maj. Carl A.
Springs, 1st Lt. Elliott W.
Steele, 2nd Lt. Richard W.
Stenseth, 1st Lt. Martinus
Stevens, 2nd Lt. John H.
Stokes, 1st Lt. John Y. Jr.
Stout, 1st Lt. Penrose V.
Stovall, 1st Lt. William H.
Strahm, Maj. Victor H.
Suiter, 1st Lt. Wilbur C.
Swaab, 1st Lt. Jacques M.
Taylor, 1st Lt. William H. Jr.
Taylor, 1st Lt. W. J. R.
Ten Eyck, 2nd Lt. Walton B. Jr.
Thaw, Maj. William (2)
Thomas, 2nd Lt. Gerald P.
Thompson, 2nd Lt. Robert E.
Tillman, 2nd Lt. Fred A.
Tittman, 1st Lt. Harold H.
Tobin, 1st Lt. Edgar G.
Treadwell, 1st Lt. Alvin H.
Vail, 1st Lt. William H.
Vaughn, 1st Lt. George A.
Vernam, 1st Lt. Remington D.
Wallis, Capt. James E. Jr.
Waring, 1st Lt. William W.
Warner, 1st Lt. Donald D.
Way, 2nd Lt. Pennington H.
Wehner, 1st Lt. Joseph F. (2)
White, 2nd Lt. Wilbert W. (2)
Williams, 1st Lt. Bertram
Winslow, 2nd Lt. Alan F.
Wright, 1st Lt. Burdette S.
Wright, 1st Lt. Chester E. (2)
Wylie, 1st Lt. Lawrence T.

World War II

Able, Sgt. Johnnie J. Jr.
Adams, 1st Lt. Jack
Adams, Maj. Robert H.
Adkins, 2nd Lt. Frank E.
Alexander, 1st Lt. John A.
Alison, Maj. John R.
Allen, Lt. Col. Brooke E.
Allen, Lt. Col. Keith N.
Alsip, Cpl. Raymond H.
Ambrose, 1st Lt. Talmadge L.
Anderson, 2nd Lt. Bernard E.
Anderson, Lt. Col. Bernard L.
Anderson, 1st Lt. Marshall J.
Anderson, 1st Lt. Richard H.
Anderson, 2nd Lt. Sheldon K.
Anderson, 1st Lt. Sherman E.
Anderson, Maj. William N.
Anderson, Cpl. William T.
Andres, Capt. Arthur E.
Appold, Maj. Norman C.
Armsby, 2nd Lt. Sherman
Armstrong, Brig. Gen. Frank A. Jr.
Arnold, Pfc. Altus L.
Arooth, SSgt. Michael
Aschenbrener, Capt. Robert W.
Ashley, Pfc. Earl D.
Atkinson, Col. Gwen G.
Atkinson, Capt. Paul G.
Avery, 1st Lt. Lloyd
Bade, 2nd Lt. Jack A.
Bail, 1st Lt. Bernard W.
Bakalar, 1st Lt. John E.
Bankey, Capt. Ernest E. Jr.
Banks, 2nd Lt. Arthur E.
Barbiero, TSgt. Samuel S.
Barbosa, Cpl. Vicente R.
Barnicle, 2nd Lt. Gerald J.
Barrall, 1st Lt. Robert W.
Battaglia, SSgt. Salvatore
Battalio, 1st Lt. Samuel T.
Beam, Maj. James C.
Beam, 1st Lt. Ralph E.
Beck, 1st Lt. Joseph A. II
Beckham, Capt. Walter C.
Beerbower, Maj. Don M.



Richard Bong

Beeson, Capt. Duane W.
Beeson, 2nd Lt. Frank H.
Bell, 1st Lt. Robert D.
Bengel, TSgt. George H.
Benn, Maj. William G.
Benson, 1st Lt. Marion A.
Berryman, 1st Lt. Richard C.
Bevlock, 2nd Lt. James J.
Billingsley, Capt. Leonard F.
Blakeslee, Col. Donald J. M. (2)
Bleyer, Lt. Col. Julian M.
Blickenstaff, Lt. Col. Wayne K.
Blissard, 2nd Lt. Grover C.
Blumer, Capt. Laurence E.
Boelens, 1st Lt. Leo A.
Boggs, Capt. Hampton E.
Bolefah, Capt. Wayne N.
Bong, 1st Lt. Richard I.
Booth, Capt. Charles H. Jr.
Bostrom, Capt. Frank P.
Boudreaux, TSgt. Marcus A.
Boyd, Maj. Charles K.
Boyle, 1st Lt. Francis M.
Bradley, Maj. Jack T.
Brandon, Maj. William H.
Breeding, 1st Lt. Paul R.
Brereton, Lt. Gen. Lewis H.
Bright, SSgt. James C. Jr.
Brill, 1st Lt. Allen
Britton, 2nd Lt. John T.
Brooks, Lt. Col. John A. III
Brown, Sgt. Albert C.
Brown, Sgt. David W.
Brown, Maj. George S.
Brown, 2nd Lt. Henry W.
Brown, Maj. Samuel J.
Brown, SSgt. Walter I.
Brueland, Capt. Lowell K.
Bryan, Capt. Donald S.
Buck, Lt. Col. William E. Jr.
Burdue, SSgt. Clayton C.
Burleson, 1st Lt. Robert B.
Burney, 2nd Lt. Willis W.
Burns, Sgt. Wilbert R.
Caldwell, Capt. Kenneth M.

Caldwell, 2nd Lt. Wilma T. Jr.
Cameron, Capt. William R.
Campbell, 1st Lt. David A.
Cannon, SSgt. James L.
Carmichael, Col. Richard H. (2)
Carpenter, 1st Lt. Reginald L.
Carr, 1st Lt. Bruce W.
Carrington, TSgt. John R.
Carruth, 1st Lt. Thomas A.
Carswell, Capt. Horace S. Jr.
Catallo, SSgt. Albert L.
Caton, SSgt. Edward H.
Ceuleers, Maj. George F.
Christensen, 1st Lt. Harold R.
Christianson, 1st Lt. Franklin O.
Christopher, 2nd Lt. Guyton M.
Church, 1st Lt. Russell M.
Clark, 2nd Lt. Phillip R.
Clary, SSgt. Guy W.
Classen, Capt. Thomas J.
Cleven, Maj. Gale W.
Cobb, Capt. James B.
Cockriel, Sgt. James R.
Coleman, Capt. Carlyle
Coleman, Capt. William F.
Collett, SSgt. Howard G.
Collins, Capt. James F.
Coltharp, Maj. Chester A.
Compton, Col. Keith K.
Conger, Capt. Paul A.
Connick, 2nd Lt. Arden D.
Corl, TSgt. George P.
Corsetti, 1st Lt. John
Cox, 1st Lt. Leonard L.
Cox, Capt. Ray L.
Cragg, Maj. Edward
Crandall, SSgt. Donald O.
Crenshaw, Capt. Claude J.
Crimmins, 1st Lt. Fred T. Jr.
Crosbie, 1st Lt. Maurice G.
Cullerton, 1st Lt. William J.
Curtis, Capt. Robert C.
Czechowski, Sgt. Chester M.
Dadson, SSgt. Pat J.
Dahlberg, Capt. Kenneth H.



Donald Blakeslee

Dale, 2nd Lt. Jack D.
 Dallas, Capt. Frederick W. Jr.
 Dalton, SSgt. Malcolm C.
 Daniell, 1st Lt. J. S.
 Danver, SSgt. Edison K.
 Davies, Lt. Col. John H.
 Davis, Capt. Clayton E.
 Davis, 1st Sgt. Robert R.
 Davis, 1st Lt. Robert T.
 Dawkins, 2nd Lt. Cecil H.
 Deal, 2nd Lt. James F.
 Decker, SSgt. Richard C.
 DeGenaro, 2nd Lt. August V.
 Dello-Buono, 2nd Lt. Thomas J.
 Dent, Capt. Elliott E. Jr.
 Diehl, Capt. John H. Jr. (2)
 Dillman, TSgt. Forrest E.
 Dinn, 1st Lt. Wallace S.
 Dixon, Capt. Robert J.
 Doherty, Maj. William K.
 Dolk, 1st Lt. Carl E.
 Donaldson, 2nd Lt. I. B. Jack
 Donegan, 1st Lt. John M.
 Dorwart, 1st Lt. Robert J.
 Douglas, Lt. Col. Paul P. Jr. (2)
 Dregne, Col. Irwin H.
 Drier, Capt. William C.
 Dubisher, Capt. Francis E.
 Dufrane, 1st Lt. John L. Jr.
 Dunagan, 1st Lt. Sidney W.
 Dunaway, 1st Lt. John S.
 Duncan, 2nd Lt. Daniel D.
 Duncan, Maj. Glen E.
 Dunham, Maj. William D.
 Dunn, 1st Lt. Edward B.
 Dunn, Sgt. Jack D.
 Dunn, Capt. John A.
 Durand, 2nd Lt. Edward D.
 Durand, SSgt. Frederick W.
 Duval, 1st Lt. Jessie B.
 Dyer, 1st Lt. Fred W.
 Dyess, Maj. William E. (2)
 Eagleston, Capt. Glen T.
 Eareckson, Col. William O.
 Eaton, Lt. Col. Frederick C. Jr.
 Eckrich, 2nd Lt. James F.
 Edeburn, F.O. Harry E.
 Elam, Maj. Daniel F.
 Ellis, 1st Lt. Lewis N.
 Ellis, Lt. Col. Richard H.
 Embree, SSgt. Hoy D.
 Emerson, 2nd Lt. Elwood R.
 Emmer, Capt. Wallace N.
 Endres, Pvt. Robert J.
 Engel, 2nd Lt. Russel W.
 England, 2nd Lt. George H.
 Ent, Brig. Gen. Uzal G.
 Erickson, 2nd Lt. Irving A.
 Evans, Capt. John G.
 Exon, Maj. Arthur E.
 Fairies, SSgt. George D.
 Falletta, 2nd Lt. Charlie
 Fegan, SSgt. Robert W.
 Ferguson, 1st Lt. William H. Jr.
 Fields, Maj. Virgil C. Jr.
 Fletcher, 1st Lt. Leo C.
 Forrest, Brig. Gen. Nathan B. III
 Forti, SSgt. Joseph J.
 Fowler, Lt. Col. Gordon W.
 Fox, TSgt. Edward K.

Fox, 1st Lt. Joseph M.
 Frazier, SSgt. James L.
 French, TSgt. Clifford E.
 Fridge, Maj. Benjamin W.
 Fries, Cpl. Robert A.
 Fry, Capt. Robert M.
 Fulmer, 2nd Lt. Edward S.
 Gabreski, Maj. Francis S.
 Gallagher, 1st Lt. Robert J.
 Galloway, TSgt. Paul E.
 Gambonini, 2nd Lt. Paul B.
 Garris, 2nd Lt. Benjamin L.
 Garry, 1st Lt. William J.
 Gatterdam, Maj. Richard P.
 Gause, 1st Lt. Damon J.
 Gautier, Capt. George J.
 Gay, Capt. William M.
 Geiser, Capt. Anthony W.
 Gentile, Capt. Dominic S. (2)
 Gerrits, 2nd Lt. James F.
 Gettys, SSgt. Richard O.
 Gibbs, Maj. David R.
 Gibson, 1st Lt. Balfour C.
 Gies, 2nd Lt. Carl P.
 Gilliland, Capt. Leown A.
 Gilpin, 2nd Lt. John A.
 Glades, TSgt. Harry V.
 Glass, Capt. Walter L. Jr.
 Globber, Maj. George E.
 Glover, 2nd Lt. John G.
 Gogoj, SSgt. John J.
 Goldberg, 2nd Lt. Hyman M.
 Gooden, 1st Lt. Clarence W.
 Goodson, Maj. James A.
 Gowder, 2nd Lt. Charles F.
 Grashio, 2nd Lt. Samuel C.
 Gray, Maj. Leon W.
 Green, Maj. Herschel H.
 Greene, 1st Lt. George B. Jr.
 Grundmann, 1st Lt. Hugh S.
 Guilfoil, SSgt. William K.
 Haberle, 2nd Lt. Frank J.
 Hageman, 1st Lt. Earl L. Jr.
 Hagerstrom, 1st Lt. James P.
 Hahn, Maj. Delbert H.
 Hall, Lt. Col. Donald P. (2)
 Hall, 2nd Lt. Jack W.
 Hambleton, Capt. Roscoe L.
 Haning, 1st Lt. William F. Jr.
 Hanson, 1st Lt. Robert T.
 Hantman, 1st Lt. Sidney
 Hardison, Maj. Felix M.
 Hargis, 2nd Lt. William D. Jr.
 Harriger, 1st Lt. Robert L.
 Harrington, 1st Lt. Archibald A.
 Harris, TSgt. Arizona T.
 Harrison, SSgt. Edgar E.
 Harrison, SSgt. James A.
 Hascall, TSgt. Alva S.
 Hasek, 1st Lt. Ivan S. Jr.
 Hass, 1st Lt. Floyd N.
 Hatch, 1st Lt. Herbert B. Jr.
 Hawke, 2nd Lt. Thomas C.
 Hawthorne, Maj. Harry J.
 Hedlund, Maj. Earl C.
 Heidger, Maj. Luther C.
 Helder, 2nd Lt. Ronald L.
 Heller, 1st Lt. Edwin L.
 Helmick, 1st Lt. Frederick E.
 Helmick, Capt. George H.

Henderson, Cpl. Ivan W.
 Hendricks, Maj. Randall W.
 Henebry, Maj. John P.
 Henry, TSgt. Maurice V.
 Herlevic, TSgt. Frank A.
 Herres, F.O. Francis E.
 Herriott, 2nd Lt. Harold T.
 Herron, 1st Lt. Christian I.
 Herron, 1st Lt. Edwin R.
 Hicks, F.O. Paul L.
 Hill, Maj. David L.
 Hill, Maj. James E.
 Hill, Capt. Robert J.
 Hillebrand, 1st Lt. Mahlon A.
 Hillsinger, Lt. Col. Loren B.
 Hinze, Capt. Frederick S. Jr.
 Hipps, Maj. William G.
 Hively, Capt. Howard D.
 Hoag, 2nd Lt. Carl L. Jr.
 Hodge, Maj. Dexter L.
 Hodges, 1st Lt. Charles W.
 Hoenshell, 1st Lt. Carl C.
 Hoevet, Maj. Dean C.
 Hoff, SSgt. Thomas A.
 Holbury, Capt. Robert J.
 Holliday, Cpl. Robert L.
 Holmes, Capt. Walter T.
 Holsberg, 2nd Lt. Wilfred G.
 Holub, TSgt. Anthony
 Homer, Capt. Cyril F.
 Hoover, Maj. John R.
 Horton, 1st Lt. Robert W.
 House, 2nd Lt. A. T.
 Hovde, Maj. William J.
 Howat, 2nd Lt. Kenneth W.
 Howell, 1st Lt. John J.
 Hubbard, Capt. Ronald D.
 Hudson, 2nd Lt. Charles S.
 Huffstickler, Sgt. Benjamin F.
 Hughes, 2nd Lt. Charles W.
 Hull, 2nd Lt. Charles T.
 Hull, 2nd Lt. Jack T.
 Ingelido, Lt. Col. Michael J.
 Inman, SSgt. Harold R.
 Irons, MSgt. John P.
 Jackson, 1st Lt. Roland B.
 James, SSgt. Joseph H. Jr.
 Jamison, 1st Lt. Roger W.
 Jernigan, Capt. William D. J. Jr.
 Jewell, 1st Lt. Kenneth G.
 Johnson, Capt. Albert L.
 Johnson, Maj. Gerald R. (2)
 Johnson, Capt. Gerald W.
 Johnson, Capt. Robert S.
 Johnson, 2nd Lt. Russell H.
 Johnson, SSgt. Theron E.
 Johnson, SSgt. Thomas E.
 Johnson, 1st Lt. William H.
 Johnston, Maj. Robert D.
 Johnston, 1st Lt. Ruby E.
 Jolly, 1st Lt. Hoyt A. Jr.
 Jones, 1st Lt. Charles T.
 Jones, 1st Lt. Cyril W. Jr.
 Jones, 1st Lt. William Jr.
 Joyce, Cpl. John D.
 Juchheim, 1st Lt. Alwin M.
 Judy, 2nd Lt. James D.
 Kase, TSgt. Louis N.
 Kaufman, Sgt. Robert P.
 Keator, 2nd Lt. Randall

Rank Abbreviations

1st Lt.	First Lieutenant
1st Sgt.	First Sergeant
2nd Lt.	Second Lieutenant
Brig. Gen.	Brigadier General
Capt.	Captain
Col.	Colonel
Cpl.	Corporal
F.O.	Flight Officer
Lt. Col.	Lieutenant Colonel
Lt. Gen.	Lieutenant General
Maj.	Major
Maj. Gen.	Major General
MSgt.	Master Sergeant
Pfc.	Private First Class
Pvt.	Private
Sfc.	Sergeant First Class
Sgt.	Sergeant
SSgt.	Staff Sergeant
TSgt.	Technical Sergeant

Keen, 2nd Lt. Robert J.
 Kegelman, Capt. Charles C.
 Kehoe, 1st Lt. John W.
 Kelly, TSgt. Arthur G.
 Kelly, Capt. Colin P. Jr.
 Kemp, 1st Lt. William T.
 Kendrick, TSgt. George E.
 Kenney, Lt. Gen. George C.
 Keogh, Maj. Bernard M.
 Kerr, 1st Lt. William M.
 Key, Maj. Algene E.
 Kimmey, SSgt. Doyle
 Kinnard, Lt. Col. Claiborne H. Jr.
 Kiser, 1st Lt. George E.
 Kjosness, 2nd Lt. Gustav D.
 Klepinger, 2nd Lt. Nolan W.
 Klette, Lt. Col. Immanuel
 Knickerbocker, 2nd Lt. Malcolm M.
 Koenig, 1st Lt. Charles W.
 Koon, Col. Ralph E.
 Kosters, TSgt. Allen
 Kovacik, TSgt. Steve H.
 Kramer, 1st Lt. Vernon J.
 Krause, Maj. John E.
 Krug, 2nd Lt. Richard M.
 Kunkle, 2nd Lt. James K.
 Lackness, 1st Lt. Berdines
 Ladisic, SSgt. Peter
 Lael, 1st Lt. Francis V.
 LaFleur, 1st Lt. Joseph V.
 Lambert, SSgt. James V.
 Land, 2nd Lt. George R.
 Landry, 2nd Lt. Larry D. Jr.
 Lannon, TSgt. Louis A.
 Larson, 1st Lt. Harold B.
 Latham, Capt. John L. Jr.
 Lauraine, 1st Lt. Loye J.
 Laven, 1st Lt. George Jr.
 Ledford, Capt. Jack C.
 LeMay, Col. Curtis E.
 Leverette, Maj. William L.
 Levi, 1st Lt. Nelson
 Liimatainen, Sgt. Alvar A.
 Lillis, Cpl. Joseph D.
 Lines, 1st Lt. Ted E.
 Lipscomb, 1st Lt. Paul M.
 Littge, Capt. Raymond H.

USAF Recipients of the Distinguished Service Cross (continued)

Litton, Lt. Col. William P.
Loeeringer, Sgt. Weston A.
Lohmeyer, 2nd Lt. Marvin E.
London, Capt. Charles P.
Lonsway, SSgt. Louis G.
LoPresti, TSgt. Nicholas O.
Lowery, Capt. Herman F.
Lowry, 1st Lt. Allen W.
Ludolph, 1st Lt. George L.
Ludwig, 1st Lt. Vance P.
Lukic, 1st Lt. Carl J.
Lyle, Lt. Col. Lewis E.
Lynch, Capt. Thomas J.
MacDonald, Col. Charles H. (2)
Magoffin, Col. Morton D.
Mahoney, SSgt. John F.
Mahony, 1st Lt. Grant M.
Mahurin, Capt. Walker M.
Manders, Capt. John H.
Marett, 1st Lt. Samuel H.
Marpe, 1st Lt. Frank C. Jr.
Marshall, Capt. Lyndon O.
Martin, SSgt. Ernest V.
Martin, 1st Lt. John C.
Martin, Col. Kenneth R.
Martinson, SSgt. Meynard L.
Mason, Col. Joe L.
Matchitt, Pvt. Ray J.
Matson, SSgt. Rex E.
Matte, 1st Lt. Joseph Z.
Matthews, Pfc. John E.
Mayes, 1st Lt. Herbert C.
McArthur, 1st Lt. Paul G.
McCabe, 2nd Lt. Ernest J.
McCall, 2nd Lt. Ben J.
McCallister, 2nd Lt. Garrett H.
McCallum, 1st Lt. Gerald
McCormick, Capt. John B.
McCullar, Maj. Kenneth D.
McCurdy, TSgt. Jimmy E.
McDaniel, 1st Lt. Gordon H.
McElroy, Pfc. Joseph G.
McFarland, 1st Lt. Kenton D.
McGrath, SSgt. Thomas J.
McGuire, Maj. Thomas B. Jr.
McHenry, 2nd Lt. William S.
McLaughlin, 1st Lt. Frank B.
McLaughlin, 2nd Lt. John A.
McLeod, Sgt. Stanley A.
McMahan, 1st Lt. Darrell E.
McMahon, 2nd Lt. Robert F.
McNees, Capt. Richard A.
McNeese, 1st Lt. Harold G.
Meals, Capt. Elbert O.
Megura, 1st Lt. Nicholas
Melo, Cpl. Frank L. Jr.
Merkel, Capt. Howard W.
Merrill, 1st Lt. John O.
Meyer, Lt. Col. John C. (3)
Middlebrook, Capt. Garrett E.
Middleditch, 1st Lt. Lyman Jr.
Miles, Capt. James E.
Miller, 2nd Lt. Guy M.
Miller, Capt. Robert E.
Millikan, 1st Lt. Willard W.
Milton, Lt. Col. Theodore R.
Mitchell, Capt. John W.

Mix, TSgt. Joseph E.
Moats, 1st Lt. Sanford K.
Mohler, TSgt. William A.
Mohon, Sgt. Ernest M. Jr.
Momyer, Col. William W.
Monkton, Capt. Lyle
Montgomery, Lt. Col. Robert P.
Mooney, Capt. Robert C.
Moore, Sgt. Carl W.
Moore, 1st Lt. Clarence J.
Moore, 1st Lt. Joseph H.
Moore, 1st Lt. Pren L.
Moore, 2nd Lt. William W.
Moran, 1st Lt. Harold D.
Morehead, 2nd Lt. James B.
Morgan, Maj. Marion W.
Morris, Capt. James M.
Morrisset, Capt. Robert L.
Moses, 2nd Lt. John H.
Moullen, 2nd Lt. Roy F.
Moye, 2nd Lt. Albert J.
Muckley, 2nd Lt. Dwight S.
Mueller, 1st Lt. Alvin J.
Muir, 2nd Lt. Marvin F.
Mulligan, Sgt. Charles D.
Munsey, 1st Lt. James S.
Muri, 1st Lt. James P.
Murphy, Cpl. Philip J.
Myers, Capt. Joseph
Negley, 1st Lt. Richard V. W. Jr.
Nepil, SSgt. Slavomir
Nielsen, Capt. Leland C.
Noell, 1st Lt. Robert E.
Norton, 1st Lt. Charles E.
Nuchols, 2nd Lt. William L.
O'Brien, Maj. Kenneth J.
O'Connor, Maj. Frank Q.
Oestreicher, 2nd Lt. Robert G.
Oettel, Sgt. Fred W.
Old, Col. Archie J.
Oldham, Capt. Richard G.
O'Leary, SSgt. Eugene B.
Olson, 1st Lt. Henry L.
O'Neal, TSgt. James A.
O'Neill, Lt. Col. Brian
O'Neill, 1st Lt. Lawrence F.
O'Rourke, 1st Lt. Edward J.
Orr, Capt. William F.
Owen, Sgt. Albert E.
Owens, 1st Lt. Marion P.
Paisley, 2nd Lt. Melvyn R.
Partridge, SSgt. Donald D.
Patrick, SSgt. Augustus R. Jr.
Pawloski, Capt. Edward J.
Pear, 2nd Lt. Sidney A.
Pearson, 1st Lt. John M.
Pederson, 2nd Lt. Harold L.
Pell, Maj. Floyd J.
Perdomo, 1st Lt. Oscar F.
Peres, 2nd Lt. Jack R.
Perry, 2nd Lt. Elton S.
Peters, 1st Lt. Robert O.
Petersen, SSgt. Jacob
Peterson, Lt. Col. Chesley G.
Petty, 2nd Lt. Charles A.
Phillips, TSgt. Claude B.
Phillips, TSgt. Hubert E.

Phillips, Capt. Reginald H.
Pickard, Maj. John G.
Pierce, 1st Lt. Sammy A.
Pittman, 1st Lt. Charles K.
Ploetz, 1st Lt. Frederick F.
Polifka, Lt. Col. Karl L.
Poore, 1st Lt. Wesley A.
Posey, Lt. Col. James T.
Post, Capt. Arthur L.
Potter, SSgt. A. J.
Potts, Maj. Ramsey D. Jr.
Preddy, Maj. George E.
Price, 1st Lt. Herbert M.
Price, 1st Lt. Raymond E.
Priest, 2nd Lt. Royce W.
Prince, 1st Lt. George A.
Prince, TSgt. William H.
Pugh, Sgt. Herbert W.
Putnam, Capt. Walter B.
Radtke, 1st Lt. Dean M.
Rahner, 2nd Lt. Raymond M.
Ramey, 1st Lt. Gordon A.
Ramey, Brig. Gen. Howard K.
Ramey, Col. Roger M.
Randerson, Maj. Luther W.
Rankin, 1st Lt. Robert J.
Rau, 1st Lt. Oscar J.
Rauschkolb, 1st Lt. Frank
Ray, 2nd Lt. Charles P.
Ray, 1st Lt. John W.
Reams, 1st Lt. Luther S.
Reeder, 1st Lt. Sumner H.
Reeves, TSgt. Charles T.
Rice, 2nd Lt. Burt H.
Richards, 2nd Lt. Conrad B.
Ridolfi, SSgt. Peter J.
Righetti, Col. Elwyn G.
Rist, 2nd Lt. Robert P.
Ritchey, 1st Lt. Andrew J.
Robbins, 1st Lt. Jay T. (2)
Roberts, Capt. Daniel T.
Roberts, Maj. Eugene P.
Robinson, Lt. Col. Stanley K.
Roche, Capt. John R.
Rogers, Lt. Col. Arthur H.

Rogers, 2nd Lt. Robert J.
Roller, SSgt. John R.
Rorer, 1st Lt. George A. Jr.
Rose, 1st Lt. Dudley E.
Rose, 2nd Lt. Henry J.
Rosenthal, Maj. Robert
Royce, Brig. Gen. Ralph
Ruegg, 1st Lt. Robert G.
Sacks, 2nd Lt. Seymour
Sanford, Sgt. James T.
Sanford, Capt. William L.
Sans, SSgt. Charles H.
Saunders, SSgt. Lester W.
Schellin, SSgt. Roy L.
Schild, 1st Lt. William C.
Schilling, Lt. Col. David C. (2)
Schiltz, 1st Lt. Glenn D. Jr.
Scholz, 1st Lt. Richard J.
Schreiber, Capt. Leroy A.
Schulman, 2nd Lt. Herbert E.
Schuman, 2nd Lt. John P.
Sconiers, 2nd Lt. Ewart T.
Seaman, 1st Lt. Theodore L.
Seith, Capt. Louis T.
Seitz, Cpl. Bernard C.
Sellers, 2nd Lt. Thomas D.
Sewart, Maj. Allan J. Jr.
Shaw, Capt. William S.
Shelton, 2nd Lt. Stephen C.
Shingler, Maj. Herbert I.
Shirey, SSgt. Harry R.
Shubin, 1st Lt. Murray J.
Silva, MSgt. Louis T.
Simeral, Maj. George A.
Sims, 2nd Lt. Tommie J.
Skinner, TSgt. William E.
Slade, 1st Lt. Richard J.
Slessor, 2nd Lt. Lee D.
Smart, Col. Jacob E.
Smith, 1st Lt. Donovan F.
Smith, SSgt. Edmond H.
Smith, Maj. George A.
Smith, 2nd Lt. Harry W.
Smith, Sgt. Jack E.
Smith, 1st Lt. James R.



John Meyer

Smith, SSgt. Mack H.
 Smith, 1st Lt. Stephen M.
 Snyder, TSgt. Donald L.
 Spencer, 2nd Lt. Charles W.
 Spencer, 2nd Lt. Dale F.
 Sprague, Lt. Col. Charles A.
 Stach, Maj. Paul J.
 Starczweski, 1st Lt. Phillip R.
 Starks, 2nd Lt. Richard F.
 Steele, 1st Lt. Henry P.
 Steen, SSgt. Zerrill J.
 Steffy, 1st Lt. Robert F.
 Stewart, Maj. James C.
 Stewart, 1st Lt. Walter T.
 Stipe, Sgt. Leon D.
 Stireman, SSgt. John O.
 Storovich, SSgt. Robert D.
 Strand, 1st Lt. Robert E.
 Strasburger, 1st Lt. Alvin
 Stricker, 1st Lt. Thomas A.
 Strickland, 1st Lt. Robert F.
 Strother, Capt. Donald R.
 Sullivan, 2nd Lt. Leroy R.
 Sussky, 1st Lt. Ira M.
 Swain, Cpl. Andrew J.
 Sweeney, Lt. Col. Walter C. Jr.
 Talbott, Capt. Carlos M.
 Tapp, Maj. James B.
 Taylor, 2nd Lt. Kenneth M.
 Taylor, 1st Lt. Robert L.
 Tennille, Maj. William G. Jr.
 Thomas, Capt. Jay P.
 Thornbrough, Capt. George W.
 Thornell, 1st Lt. John F. Jr.
 Tibbets, Col. Paul W. Jr.
 Tidwell, SSgt. Billy M.
 Tiedemann, 1st Lt. John R.
 Tompkins, 1st Lt. Frederick L.
 Toomey, SSgt. Winston M.
 Trauth, 2nd Lt. Leo J. Jr.
 Travis, Brig. Gen. Robert F.
 Trimingham, 2nd Lt. Charles E.
 Trout, 1st Lt. Chester E.
 Troy, SSgt. Edward P.
 True, Lt. Col. Clinton U.
 Truluck, Capt. John H. Jr.
 Tubman, 1st Lt. Thomas J.
 Tufty, Capt. Iver O.
 Turner, 2nd Lt. William L.

Underwood, 1st Lt. Carol E.
 Urso, Maj. James D.
 Van Deventer, Capt. Cowell
 Van Ness, TSgt. James F.
 Vance, 1st Lt. Paul W.
 Vaughan, Sgt. William
 Via, 1st Lt. Charles A. Jr.
 Via, Sgt. James E.
 Villamor, Capt. Jesus A. (2)
 Villines, 2nd Lt. Colin O.
 Vitali, 1st Lt. Chester A.
 Vogt, Capt. John E.
 Voll, Capt. John J.
 Vondracek, SSgt. Charles E.
 Voss, SSgt. Raymond J.
 Wagner, 1st Lt. Boyd D.
 Wagner, 2nd Lt. Donald F.
 Wainwright, 1st Lt. John H. Jr.
 Walker, 2nd Lt. Clyde B.
 Walker, 2nd Lt. Leland A.
 Walker, 2nd Lt. William R.
 Wallace, Capt. Robert D.
 Walter, 2nd Lt. Donald A.
 Walters, Pvt. Roy W.
 Walton, 1st Lt. Victor E.
 Ward, Capt. Emery M.
 Ward, 1st Lt. Ralph E. Jr.
 Warmer, SSgt. Benjamin F.
 Waskowitz, 1st Lt. Frank T.
 Watkins, Capt. James A.
 Watson, 2nd Lt. William S.
 Watt, Lt. Col. James R.
 Wayland, 1st Lt. William J.
 Weeks, 1st Lt. Elbert W.
 Weems, 2nd Lt. Thomas N. Jr.
 Welch, 2nd Lt. George S.
 Werner, SSgt. William T. L.
 Wesche, Capt. Frederick F. III
 West, 1st Lt. Richard L.
 Westbrook, Maj. Robert B.
 Westby, 1st Lt. Morton K.
 Westerbeke, 1st Lt. Donald G.
 Wetmore, Capt. Ray S. (2)
 Whalen, 2nd Lt. Norman M.
 Wheless, 1st Lt. Hewitt T.
 Wherry, TSgt. William B.
 Whisner, Capt. William T. Jr. (2)
 White, TSgt. Raymond S.
 Whitehead, Brig. Gen. Ennis C.

Whitson, Capt. William D.
 Whittington, 2nd Lt. Leonard H.
 Wiecks, 2nd Lt. Max R.
 Wiegand, 2nd Lt. Arthur H.
 Wilde, 2nd Lt. Robert M.
 Wilkinson, Capt. James W.
 Williams, Pfc. Greeley B.
 Williamson, Capt. Felix D.
 Wilson, SSgt. Avis K.
 Wilson, SSgt. Frederick M.
 Wilson, Lt. Col. James W.
 Wilson, Col. Russell A.
 Winters, TSgt. Elmer R.
 Witt, 1st Lt. Gerald S.
 Witt, Capt. Lynn E. Jr.
 Wolf, 2nd Lt. John K.
 Woliver, 2nd Lt. Robert M.
 Wood, 2nd Lt. Howard C.
 Wood, Col. Jack W.
 Wood, 2nd Lt. Richard M.
 Woods, 1st Lt. Francis
 Woods, Lt. Col. Sidney S.
 Woody, Capt. Robert E.
 Wright, 2nd Lt. Arthur M. Jr.
 Wright, Sgt. Clifton J.
 Wright, Capt. Ellis W. Jr.
 Wright, Capt. John B.
 Wylie, 2nd Lt. John W.
 Yearwood, Lt. Col. Roy W.
 Yevich, SSgt. Edward S.
 Zdzanukas, 1st Lt. Vincent R.
 Zemke, Col. Hubert



Ray Wetmore

Ledford, TSgt. James H.
 MacArthur, 1st Lt. David W.
 McConnell, Capt. Joseph C. Jr.
 Moore, Capt. Lonnie R.
 Morse, 1st Lt. John Jr.
 Najarian, 1st Lt. John J.
 Nichols, Capt. Donald
 O'Donnell, Maj. Gen. Emmett Jr.
 Orr, Col. Robert H.
 Overton, 1st Lt. Dolphin D. III
 Parker, 1st Lt. Robert B.
 Parr, Capt. Ralph S. Jr.
 Partridge, Maj. Gen. Earle E.
 Rhoads, Capt. John K.
 Savage, 1st Lt. Richard L.
 Shields, 1st Lt. Everett L. Jr.
 Spath, 1st Lt. Charles R.
 Stratemeyer, Lt. Gen. George E.
 Tunner, Maj. Gen. William H.
 Vojvodich, Capt. Mele Jr.
 Whisner, Maj. William T. Jr.
 Wilkerson, Pfc. Desmond R.

Originally based on a compilation by C. Douglas Sterner.

USAF Recipients of the Air Force Cross

World War II

Brown, 2nd Lt. Charles L.
 Drew, 1st Lt. Urban L.
 Sloan, Lt. Col. William J.

Cuba Crisis

Anderson, Maj. Rudolph Jr.

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.



Rudolph Anderson

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. Aquila 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, 1st Lt. 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.
 Crawford, Barry F. Jr.
 Curtis, Capt. Thomas J.
 Dallman, Lt. Col. Howard M.
 Day, Col. George E.



Duane Hackney

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.
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.
Hoblitt, 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. Phillip 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. Jr.
Personett, Capt. Joseph A.
Peterson, Capt. Delbert R.
Pogreba, Lt. Col. Dean A.

Poling, Capt. Richard L.
Price, Capt. Donald S.
Richardson, Sgt. Dennis M.
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.



Zachary Rhyner

Whatley, Maj. Wayne N.
White, Col. Robert M.
Whitesides, Capt. Richard L.
Wilke, Col. Robert F.
Williams, Capt. David H.



Robert Gutierrez Jr.

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 A.
Crawford, Capt. Barry F. Jr.
Cunningham, SrA. Jason D.
Gutierrez, SSgt. Robert Jr.
Rhyner, SSgt. Zachary J.
Ruiz, MSgt. Ivan

USAF Recipients of Special Congressional Medals (highest noncombat award)

Name and Rank*	Type	Date Approved	Achievement
American Fighter Aces	Gold	May 19, 2014	Heroic military service and defense of freedom
Aldrin, Col. Buzz	Gold	Aug. 7, 2009	Second person to walk on the moon, Apollo 11 mission, July 21, 1969
Collins, Maj. Gen. Michael	Gold	Aug. 7, 2009	Command module pilot, Apollo 11 mission, July 21, 1969
Doolittle Tokyo Raiders	Gold	May 23, 2014	Bombing raid over Japan's capital, April 18, 1942
Eaker, Lt. Gen. Ira C.	Gold	Oct. 10, 1978	Distinguished aviation pioneer and Air Force leader
Lindbergh, Col. Charles A.	Gold	May 4, 1928	Achievements, specifically New York City-Paris flight, May 20-21, 1927
Mitchell, Brig. Gen. William	Gold	Aug. 8, 1946	Outstanding pioneer service and foresight in American military aviation
Tuskegee Airmen	Gold	April 11, 2006	Unique military record, inspiring revolutionary reform in US armed forces
Women's Airforce Service Pilots	Gold	July 2, 2009	Pioneering military service and exemplary record
World War II members of CAP	Gold	May 30, 2014	Wartime civilian volunteers for patrol and humanitarian missions
Yeager, Brig. Gen. Charles E.	Silver	Dec. 23, 1975	Risking life, piloting X-1 aircraft faster than speed of sound, Oct. 14, 1947

*Rank at time of award.

Air Force Aces

Some Famous Firsts

May 28, 1918	First AEF-trained AEF ace: Capt. Edward V. Rickenbacker
Dec. 7, 1941	First AAF victories of World War II (Pearl Harbor): Lt. Harry W. Brown, Lt. Philip M. Rasmussen, Lt. Lewis M. Sanders, Lt. Gordon H. Sterling Jr., Lt. Kenneth M. Taylor, Lt. George S. Welch
Dec. 16, 1941	First AAF ace of World War 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 (World War II and Korea): Maj. George A. Davis Jr. (seven in World War II and 14 in Korea)
Jan. 2, 1967	First (and only) USAF ace with victories in World War II and Vietnam: Col. Robin Olds (12 in World War II and four in Vietnam)
Aug. 28, 1972	First USAF ace of Vietnam: Capt. Richard S. Ritchie



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



Right: Manuel Fernandez Jr.

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 air-to-air aerial victory credits, which is the responsibility of the Air Force Historical Research Agency, Maxwell AFB, Ala.

This record does not include some 300 pilots credited by Eighth Air Force in World War II with destroying aircraft on the ground. Eighth was the only numbered air force to count ground kills, and the Air Force subsequently limited its official recognition of World War II aces to air-to-air victories.

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.

The criteria that the Air Force established for awarding aerial victory credits varied from war to war.

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.

American Aces of World War I



Eddie Rickenbacker (26)

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

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

Chambers, 1st Lt. Reed M.	7	Keating, 1st Lt. James A.	5
Cook, 1st Lt. Harvey W.	7	Knowles, 1st Lt. James Jr.	5
Creech, 1st Lt. Jesse O.	7	Larner, 1st Lt. G. DeFreest	5
Holden, 1st Lt. Lansing C.	7	Luff, 1st Lt. Frederick E.	5
Robertson, 1st Lt. Wendel A.	7	O'Neill, 2nd Lt. Ralph A.	5
Rummell, 1st Lt. Leslie J.	7	Owens, 2nd Lt. John S.	5
Schoen, 1st Lt. Karl J.	7	Porter, 2nd Lt. Kenneth L.	5
Sewall, 1st Lt. Sumner	7	Ralston, 1st Lt. Orville A.	5
Beane, 1st Lt. James D.	6	Seerley, 1st Lt. John J.	5
Biddle, Capt. Charles J.	6	Strahm, Capt. Victor H.	5
Brooks, 2nd Lt. Arthur R.	6	Todd, 2nd Lt. Robert M.	5
Campbell, 1st Lt. Douglas	6	Vernam, 1st Lt. Remington D. B.	5
Curtis, 1st Lt. Edward P.	6	Wehner, 1st Lt. Joseph F.	5
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		



Elliott Springs (12)

Army Air Forces Aces of World War II



Don Gentile (19.83)

Ranks are as of last victory in World War II.

Bong, Maj. Richard I.	40	Lynch, Lt. Col. Thomas J.	20
McGuire, Maj. Thomas B. Jr.	38	Westbrook, Lt. Col. Robert B.	20
Gabreski, Lt. Col. Francis S.	28	Gentile, Capt. Don S.	19.83
Johnson, Capt. Robert S.	27	Duncan, Col. Glenn E.	19.5
MacDonald, Col. Charles H.	27	Carson, Capt. Leonard K.	18.5
Preddy, Maj. George E.	26.83	Eagleton, Maj. Glenn T.	18.5
Meyer, Lt. Col. John C.	24	Beckham, Maj. Walter C.	18
Schilling, Col. David C.	22.5	Green, Maj. Herschel H.	18
Johnson, Lt. Col. Gerald R.	22	Herbst, Lt. Col. John C.	18
Kearby, Col. Neel E.	22	Zemke, Col. Hubert	17.75
Robbins, Maj. Jay T.	22	England, Maj. John B.	17.5
Christensen, Capt. Fred J.	21.5	Beeson, Capt. Duane W.	17.33
Wetmore, Capt. Ray S.	21.25	Thornell, 1st Lt. John F. Jr.	17.25
Voll, Capt. John J.	21	Varnell, Capt. James S. Jr.	17
Mahurin, Maj. Walker M.	20.75	Johnson, Maj. Gerald W.	16.5

Army Air Forces Aces of World War II

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.	15.5
Brown, Maj. Samuel J.	15.5
Peterson, Capt. Richard A.	15.5
Whisner, Capt. William T. Jr.	15.5
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.	14.5
Powers, Capt. Joe H.	14.5
Brown, Capt. Henry W.	14.2
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.	13.5
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
Moran, 1st Lt. Glennon T.	13
Parker, Capt. Harry A.	13
Stephens, Maj. Robert W.	13
Williamson, Capt. Felix D.	13
Bruehl, Maj. Lowell K.	12.5
Brown, Maj. Quince L.	12.33
Brezas, 1st Lt. Michael	12



L-r: Richard Peterson (15.5), Leonard Carson (18.5), John England (17.5), and Clarence Anderson Jr. (16.25).

Chase, Lt. Col. Levi R.	12	McDonald, Maj. Norman L.	11.5
East, Capt. Clyde B.	12	Stewart, Maj. James C.	11.5
Gleason, Capt. George W.	12	Yeager, Capt. Charles E.	11.5
Hively, Maj. Howard D.	12	Norley, Maj. Louis H.	11.33
Ladd, Capt. Kenneth G.	12	Frantz, 1st Lt. Carl M.	11
Moore, Maj. Robert W.	12	Goebel, Capt. Robert J.	11
Olds, Maj. Robin	12	Lawler, Capt. John B.	11
Schreiber, Capt. Leroy A.	12	Lent, 1st Lt. Francis J.	11
Skogstad, 1st Lt. Norman C.	12	Leverette, Lt. Col. William L.	11
Sloan, 1st Lt. William J.	12	Loisel, Maj. John S.	11
Watkins, Capt. James A.	12	Lowry, 1st Lt. Wayne L.	11
Megura, Capt. Nicholas	11.83	McCorkle, Col. Charles M.	11
Blakeslee, Col. Donald J. M.	11.5	McKennon, Maj. Pierce W.	11
Conger, Maj. Paul A.	11.5	Mitchell, Lt. Col. John W.	11
Kirla, 1st Lt. John A.	11.5	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.	10.5
		Clark, Lt. Col. James A. Jr.	10.5
		Doersch, Capt. George A.	10.5
		Halton, Maj. William T.	10.5
		Hovde, Maj. William J.	10.5
		Littge, Capt. Raymond H.	10.5
		Storch, Lt. Col. John A.	10.5
		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



John Godfrey (16.33)



Hubert Zemke (17.75)

Army Air Forces Aces of World War II



Jack Ilfrey (8)

Giroux, Capt. William K.	10
*Gladych, Squadron Leader 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

*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.

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
Miklajczyk, Capt. Henry J.	7.5
Righetti, Lt. Col. Elwyn G.	7.5



Robert Scott Jr. (10)

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
Davis, 1st Lt. Barrie S.	6
Dean, 2nd Lt. Cecil O.	6
Degraffenreid, 2nd Lt. Edwin L.	6



Vermont Garrison (17.33, WWII and Korea)



Urban Drew (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
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

Army Air Forces Aces of World War II



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

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
Lanphier, Capt. Thomas G. Jr.	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
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



Clinton Vincent (6)

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
Duffey, 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
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



Robert Ammon (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. Mildred 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
 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



Harrison Thyng (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 (16)

McConnell, Capt. Joseph C. Jr.	16
Jabara, Maj. James	15
Fernandez, Capt. Manuel J. Jr.	14.5
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.	8.5
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.	6.5
Gabreski, Col. Francis S.	6.5
Jones, Lt. Col. George L.	6.5
Marshall, Maj. Winton W.	6.5
*Bolt, Maj. John F.	6
Kasler, 1st Lt. James H.	6
Love, Capt. Robert J.	6
Whisner, Maj. William T. Jr.	5.5
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



Francis Gabreski (6.5)

*USMC exchange pilot.

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 (left) (6) and Richard Ritchie (right) (5)

AAF/USAF Aces With Victories in More Than One War

	WW II	Korean	Vietnam	Total
Gabreski, Col. Francis S.	28	6.5		34.5
Meyer, Col. John C.	24	2		26
Mahurin, Col. Walker M.	20.75	3.5		24.25
Davis, Maj. George A. Jr.	7	14		21
Whisner, Maj. William T. Jr.	15.5	5.5		21
Eagleston, Col. Glenn T.	18.5	2		20.5
Garrison, Lt. Col. Vermont	7.33	10		17.33
Baker, Col. Royal N.	3.5	13		16.5
Jabara, Maj. James	1.5	15		16.5
Olds, Col. Robin	12		4	16
Mitchell, Col. John W.	11	4		15
Brueland, Maj. Lowell K.	12.5	2		14.5
Hagerstrom, Maj. James P.	6	8.5		14.5
Hovde, Lt. Col. William J.	10.5	1		11.5
Johnson, Col. James K.	1	10		11
Ruddell, Lt. Col. George I.	2.5	8		10.5
Thyng, Col. Harrison R.	5	5		10
Colman, Capt. Philip E.	5	4		9
Heller, Lt. Col. Edwin L.	5.5	3.5		9
Chandler, Maj. Van E.	5	3		8
Hockery, Maj. John J.	7	1		8
Little, Maj. James W.	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



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

Leading Air Service/AAF/USAF Aces of All Wars

Bong, Maj. Richard I.	40	WW II	Godfrey, Capt. John T.	16.33	WW II
McGuire, Maj. Thomas B. Jr.	38	WW II	Anderson, Capt. Clarence E. Jr.	16.25	WW II
Gabreski, Col. Francis S.	34.5	WW II, Korea	Dunham, Lt. Col. William D.	16	WW II
Johnson, Capt. Robert S.	27	WW II	Harris, Lt. Col. Bill	16	WW II
MacDonald, Col. Charles H.	27	WW II	McConnell, Capt. Joseph C. Jr.	16	Korea
Preddy, Maj. George E.	26.83	WW II	Olds, Col. Robin	16	WW II, Vietnam
Meyer, Col. John C.	26	WW II, Korea	Welch, Capt. George S.	16	WW II
Rickenbacker, Capt. Edward V.	26	WW I	Beerbower, Capt. Don M.	15.5	WW II
Mahurin, Col. Walker M.	24.25	WW II, Korea	Brown, Maj. Samuel J.	15.5	WW II
Schilling, Col. David C.	22.5	WW II	Peterson, Capt. Richard A.	15.5	WW II
Johnson, Lt. Col. Gerald R.	22	WW II	Bradley, Lt. Col. Jack T.	15	WW II
Kearby, Col. Neel E.	22	WW II	Cragg, Maj. Edward	15	WW II
Robbins, Maj. Jay T.	22	WW II	Dahlberg, Capt. Kenneth H.	15	WW II
Christensen, Capt. Fred J.	21.5	WW II	Foy, Maj. Robert W.	15	WW II
Wetmore, Capt. Ray S.	21.25	WW II	Hofer, 2nd Lt. Ralph K.	15	WW II
Davis, Maj. George A. Jr.	21	WW II, Korea	Homer, Capt. Cyril F.	15	WW II
Voll, Capt. John J.	21	WW II			
Whisner, Capt. William T. Jr.	21	WW II, Korea			
Eagleston, Col. Glenn T.	20.5	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			
Duncan, Col. Glenn E.	19.5	WW II			
Carson, Capt. Leonard K.	18.5	WW II			
Beckham, Maj. Walter C.	18	WW II			
Green, Maj. Herschel H.	18	WW II			
Herbst, Lt. Col. John C.	18	WW II			
Luke, 2nd Lt. Frank Jr.	18	WW I			
Zemke, Col. Hubert	17.75	WW II			
England, Maj. John B.	17.5	WW II			
Beeson, Capt. Duane W.	17.33	WW II			
Garrison, Lt. Col. Vermont	17.33	WW II, Korea			
Thornell, 1st Lt. John F. Jr.	17.25	WW II			
Varnell, Capt. James S. Jr.	17	WW II			
Baker, Col. Royal N.	16.5	WW II, Korea			
Jabara, Maj. James	16.5	WW II, Korea			
Johnson, Maj. Gerald W.	16.5	WW II			



Fred Christensen (21.5)

Chart Page Special

Defense Budget at a Glance

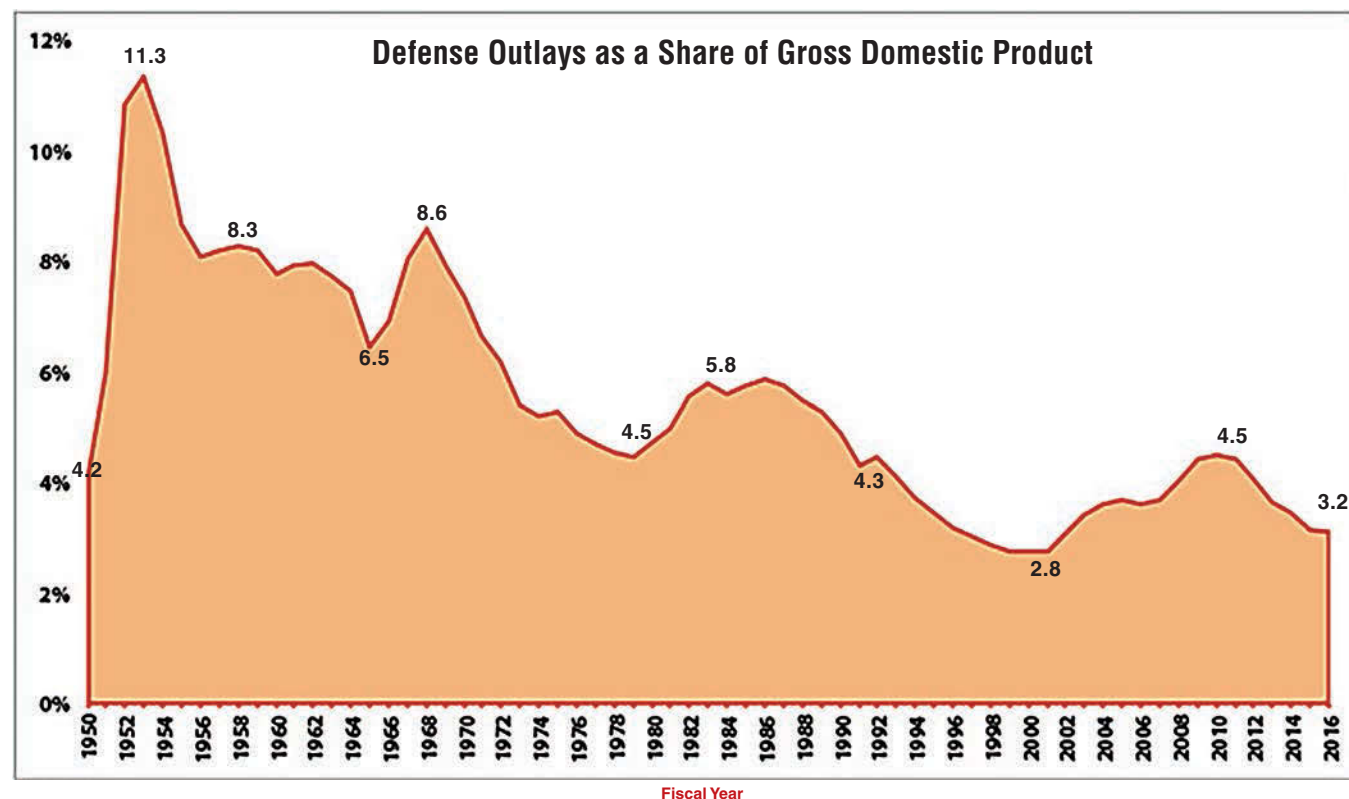
President Obama on Feb. 2 presented Congress a DOD budget request for Fiscal 2016. It seeks \$534.3 billion in budget authority not including war costs and \$585.3 billion counting war costs. Funding most often is stated in BA—the value of new obligations DOD can incur. (Some are

paid in future years.) Figures can also be expressed in outlays—actual checks written in a given year. “Current dollars” include inflation. With “constant dollars,” inflation has been factored out. Charts address only the Defense Department program.

Defense Budget Authority

(\$ billions)

	2014	2015	2016	Planned 2017	2018	2019	2020
No War Costs, Current Dollars							
	\$496.3	\$496.1	\$534.3	\$547.0	\$556.0	\$564.0	\$570.0
No War Costs, Constant FY 2016 Dollars							
	\$512.8	\$507.0	\$534.3	\$535.0	\$531.3	\$526.5	\$519.3
With War Costs, Current Dollars							
	\$581.4	\$560.4	\$585.3	\$574.0	\$583.0	\$591.0	\$597.0
With War Costs, Constant FY 2016 Dollars							
	\$600.7	\$572.7	\$585.3	\$561.4	\$557.1	\$551.7	\$543.9



Defense Outlays

(\$ billions)

	2014	2015	2016	Planned 2017	2018	2019	2020
Current Dollars							
	\$577.9	\$567.7	\$586.5	\$575.1	\$563.2	\$561.1	\$568.3
Constant FY 2016 Dollars							
	\$597.1	\$580.2	\$586.5	\$562.4	\$538.1	\$523.8	\$517.8

Service Shares

(Budget authority in billions of constant FY 2016 dollars)

	2014	2015	2016	2017	2018	2019	2020
Dollars							
Air Force	\$139.2	\$139.9	\$152.9	\$153.0	\$152.1	\$150.6	\$148.5
Army	125.7	122.1	126.5	126.8	126.0	124.8	123.1
Navy/Marine Corps	152.2	152.5	161.0	161.0	160.0	158.5	156.3
Defense agencies	95.4	92.6	94.0	94.2	93.6	92.7	91.4
Total	\$512.8	\$507.0	\$534.3	\$535.0	\$531.6	\$526.5	\$519.3

Percentages

Air Force	27.1%	27.6%	28.6%	28.6%	28.6%	28.6%	28.6%
Army	24.5%	24.1%	23.7%	23.7%	23.7%	23.7%	23.7%
Navy/Marine Corps	29.7%	30.1%	30.1%	30.1%	30.1%	30.1%	30.1%
Defense agencies	18.6%	18.3%	17.6%	17.6%	17.6%	17.6%	17.6%

Note: USAF shares above include non-Blue funding. Outyears estimates based on FY 2016 shares.

USAF's Blue-only share

Dollars	\$109.5	\$111.7	\$122.2
Percentage	21.4%	22.0%	22.9%

Note: USAF budget includes Blue dollars, money for programs actually managed by USAF, and non-Blue dollars, money (such as some intelligence and space-related funding) USAF does not manage but that passes through USAF accounts.

Cutting the Pie: Who Gets What

(Budget authority in billions of constant FY 2016 dollars)

	2014	2015	2016	2017	2018	2019	2020*
Military personnel	\$140.4	\$138.1	\$141.6	\$138.5	\$136.0	\$134.0	
O&M	199.2	203.0	213.7	214.2	212.7	210.5	
Procurement	95.5	92.3	108.1	110.2	112.6	112.8	
RDT&E	64.9	64.8	69.4	67.1	64.4	63.4	
Military construction	8.7	5.5	8.0	7.3	6.7	5.8	
Family housing	1.4	1.2	1.4	1.4	1.3	1.3	
Other	2.3	1.2	-0.8	-0.9	-0.7	-0.7	
Total	\$512.4	\$506.5	\$541.4	\$537.8	\$533.0	\$527.3	\$519.3

*Breakdown not available for 2020.

Manpower

(End strength in thousands)

	1990	2000	2014	Est. 2015	Est. 2016	Change 1990-2014
Total active duty	2,065	1,384	1,338	1,316	1,305	-727
Air Force	535	356	316	315	317	-219
Army	751	482	508	490	475	-243
Navy	582	373	326	328	329	-256
Marine Corps	197	173	188	183	184	-9
Selected reserves	1,128	865	824	817	811	-304
Civilians (FTE)	997	660	547	510	508	-450

Operational Training Rates

	1990	2000	2010	2014	Est. 2015	Est. 2016
Air Force						
Flying hours per crew per month, fighter/attack aircraft	19.5	17.2	19.4	13.2	12.9	12.9
Army						
Flying hours per tactical crew per month	14.2	12.7	12.0	11.6	10.6	11.3
FSTM*	800.0	669.0	427.0	764.0	1070.0	1,077.0
Navy						
Flying hours per tactical crew per month	23.9	20.9	16.6	18.9	19.5	18.9
Ship steaming days per quarter						
Deployed fleet	54.2	50.5	58.0	63.0	45.0	45.0
Nondeployed fleet	28.1	28.0	24.0	24.0	20.0	20.0

*Note: Data prior to 2012 is annual tank miles.

Acronyms and Abbreviations

AEHF	Advanced Extremely High Frequency
AFRC	Air Force Reserve Command
AGS	Alliance Ground Surveillance
AMRAAM	Advanced Medium-Range Air-to-Air Missile
ANG	Air National Guard
AWACS	Airborne Warning and Control System
BA	budget authority
BCT	Brigade Combat Team
BM	battle management
BUR	Bottom-Up Review
C3	command, control, and communications
CCS	combat coded squadrons
DCGS	Distributed Common Ground System
DMSP	Defense Meteorological Satellite Program
DSRP	Defense Space Reconnaissance Program
EELV	Evolved Expendable Launch Vehicle
FSTM	Full Spectrum Training Mile
FTE	Full-time Equivalent
FWE	Fighter Wing Equivalent
GPS	Global Positioning System
Helo	helicopter
ICBM	intercontinental ballistic missile
ISR	intelligence, surveillance, and reconnaissance
JASSM	Joint Air-to-Surface Standoff Missile
JDAM	Joint Direct Attack Munition
JSTARS	Joint Surveillance Target Attack Radar System
MEF	Marine Expeditionary Force
O&M	operation and maintenance
PAR	Presidential Aircraft Replacement
QDR	Quadrennial Defense Review
RDT&E	research, development, test, and evaluation
SATCOM	satellite communications
SBIRS	Space Based Infrared System
SDB	Small Diameter Bomb
Sigint	signals intelligence
SOF	Special Operations Forces
UAV	unmanned aerial vehicle

Major USAF Programs RDT&E

(Current million dollars)

	Program	2014	2015	2016
Bomber	B-1B	14.6	4.4	2.2
	B-2	329.2	215.3	380.1
	B-52	16.5	49.5	74.5
	Long-range strike	348.6	913.7	1,246.2
Fighter/Attack	A-10	11.4	0.0	0.0
	F-15C/D/E	227.9	281.0	365.8
	F-16	109.9	133.1	148.3
	F-22A	354.7	319.4	403.2
	F-35	619.6	608.0	704.3
Helo	HH-60	333.6	100.0	156.1
	UH-1N	0.0	0.0	0.0
ICBM	Minuteman III	22.9	6.1	4.1
	Airborne Recon Systems	47.1	37.7	50.2
ISR/BM/C3	Airborne Sigint Enterprise	84.0	74.1	112.8
	Air & Space Ops Center	79.3	111.6	68.8
	DCGS	25.6	44.1	51.2
	E-3 AWACS	143.4	180.8	161.8
	E-4	12.8	25.8	80.4
	E-8 JSTARS	27.3	73.1	44.3
	EC-130 Compass Call	10.7	14.3	14.2
	Endurance UAV	1.0	20.0	0.0
	MQ-1 Predator	0.8	0.0	0.7
	MQ-9 Reaper	104.0	148.6	123.4
	NATO AGS	221.6	232.9	197.5
	RC-135	0.0	0.0	0.0
	RQ-4 Global Hawk	120.2	241.8	208.1
	U-2 Dragon Lady	13.7	5.5	34.5
	C-5	48.6	38.8	42.9
	C-17	97.1	83.0	54.8
	C-130	47.7	0.0	34.0
	C-130J	22.4	26.7	31.0
	KC-10	0.0	2.7	1.8
	KC-46	1,505.5	786.4	602.4
Mobility	PAR	0.0	11.0	102.6
	AGM-158A JASSM	6.2	12.9	12.8
	AIM-9X Sidewinder	12.4	29.7	43.4
	AIM-120 AMRAAM	68.6	82.2	46.2
	GBU-31/32/38 JDAM	2.4	2.5	0.0
Munition	GBU-39 SDB	109.5	68.7	32.6
	Hellfire	0.0	0.0	0.0
	AEHF	261.2	307.9	228.2
	Counterspace systems	22.7	23.4	24.2
	Cyberspace	60.7	90.1	105.4
Space	DMSP	0.0	0.0	0.0
	DSRP	0.0	0.0	0.0
	EELV	19.4	225.6	84.4
	GPS	680.4	667.2	673.4
	Joint Space Ops Center	56.5	73.8	81.9
	MilSatCom	125.9	54.7	0.0
	SBIRS	322.4	308.8	292.2
	Space control technology	22.9	6.1	4.1
	Space Fence	0.0	200.1	244.0
	Space situation awareness	327.0	31.6	66.3
	Spacelift range system	12.0	32.8	25.9
	Wideband Global SATCOM	11.7	31.3	56.3
	AC-130J	0.0	0.0	0.0
	CV-22	46.7	38.7	36.6
	HC/MC-130	2.6	4.5	10.8

Major USAF Programs Procurement

(Current million dollars)

	Program	2014	2015	2016
Bomber	B-1B	142.8	219.9	114.1
	B-2	53.8	66.7	71.3
	B-52	96.4	181.7	154.9
	Long-range strike	0.0	0.0	0.0
Fighter/Attack	A-10	2.3	0.0	0.0
	F-15C/D/E	346.6	499.4	467.6
	F-16	12.6	19.0	32.1
	F-22A	238.1	186.1	127.1
	F-35	3,353.1	4,170.6	5,790.6
Helo	HH-60	27.7	60.1	85.0
	UH-1N	6.6	8.2	8.7
ICBM	Minuteman III	19.1	28.4	50.5
	Airborne Recon Systems	0.0	0.0	0.0
ISR/BM/C3	Airborne Sigint Enterprise	0.0	0.0	0.0
	Air & Space Ops Center	26.9	25.7	36.3
	DCGS	115.6	206.7	183.0
	E-3 AWACS	138.5	207.8	196.5
	E-4	17.2	17.1	23.9
	E-8 JSTARS	56.0	0.0	18.0
	EC-130 Compass Call	29.5	82.6	68.4
	Endurance UAV	0.0	0.0	0.0
	MQ-1 Predator	6.5	4.8	3.2
	MQ-9 Reaper	408.2	540.7	755.3
	NATO AGS	0.0	0.0	0.0
	RC-135	174.5	163.3	156.2
	RQ-4 Global Hawk	45.7	75.8	87.8
	U-2 Dragon Lady	49.5	0.0	22.1
	C-5	884.7	332.2	5.6
	C-17	148.1	109.5	77.1
	C-130	231.9	163.9	8.5
	C-130J	648.3	718.3	968.9
	KC-10	48.2	77.5	5.6
	KC-46	0.0	1,573.2	2,350.6
Mobility	PAR	0.0	0.0	0.0
	AGM-158A JASSM	271.2	139.2	440.6
	AIM-9X Sidewinder	105.2	129.1	200.8
	AIM-120 AMRAAM	318.4	329.6	390.1
	GBU-31/32/38 JDAM	250.5	228.4	559.1
Munition	GBU-39 SDB	4.0	58.2	136.2
	Hellfire	65.0	169.3	703.9
	AEHF	328.4	298.5	333.4
	Counterspace systems	8.0	59.4	43.1
	Cyberspace	81.5	90.5	103.7
Space	DMSP	80.5	77.9	89.4
	DSRP	145.4	84.0	128.7
	EELV	1,367.4	1,419.7	1,371.5
	GPS	506.1	365.3	265.4
	Joint Space Ops Center	0.0	0.0	0.0
	MilSatCom	101.5	60.9	35.5
	SBIRS	553.2	470.7	542.9
	Space control technology	0.0	0.0	0.0
	Space Fence	0.0	0.0	0.0
	Space situation awareness	0.0	0.0	0.0
	Spacelift range system	90.8	62.5	113.3
	Wideband Global SATCOM	34.0	36.1	53.5
	AC-130J	420.0	0.0	0.0
	CV-22	305.6	106.8	62.2
	HC/MC-130	679.9	798.2	1,409.8

Historical Force Structure

Current Force Structure

	Cold War Base 1990	1990 Base Force	1993 BUR Plan	1997 QDR Goal	2002 Defense Budget		2012	2013	2014	Est. 2015	Est. 2016
Air Force						Air Force					
Active FWEs	24	15	13	12+	12+	Active CCS*	41	41	40	40	37
ANG/AFRC FWEs	12	11	7	8	7+	ANG CCS	25	19	21	21	20
Army						AFRC CCS	4	3	3	3	3
Active divisions	18	12	10	10	10	Army					
Army National Guard	10	8	8	8	8	Active BCTs	45	45	38	32	30
Navy						Army National Guard BCTs	28	28	28	28	27
Active Aircraft Carriers	15	12	11	11	12	Navy					
Reserve Aircraft Carrier	1	1	1	1	0	Aircraft Carriers	11	10	10	10	11
Active Air Wings	13	11	10	10	10	Active Air Wings	10	10	10	10	10
Reserve Air Wings	2	2	1	1	1	Reserve Air Wing	1	1	1	1	1
Marine Corps						Marine Corps					
Active MEFs	3	3	3	3	3	Active MEFs	3	3	3	3	3
Marine Reserve Air Wing	1	1	1	1	1	Marine Reserve Air Wing	1	1	1	1	1

*Note: Active CCS includes fighter/attack and strategic bomber squadrons.



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AFA National Report

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By Frances McKenney, Assistant Managing Editor



Emerging Leaders

The Air Force Association's Emerging Leaders Program began in 2013 as a way to prepare volunteers for future AFA leadership roles. Emerging Leaders serve for a year. They participate on a national-level council, attend national leader orientations, and serve as National Convention delegates.

Emerging Leaders for 2015 are: Emilie S. Boschert, Shannon M. Farrell, Deborah A. Landry, Michael J. Liquori, Emily C. Shay, Christopher M. Talbot, James A. Thurber, Jeremy Trotter, and Daniel Whalen.

Here's the seventh profile in AFA's second group of Emerging Leaders.

James A. Thurber

Home State: Connecticut.

Chapter: Paul Revere (Mass.).

AFA Offices: Chapter treasurer; former chapter secretary.

Occupation: Senior manager, business development, Lockheed Martin.

Education: B.S., Air Force Academy; M.F.A., University of Alaska Fairbanks.



Photo by Talia Thurber

Q&A

Why is AFA relevant to young airmen? All the things we do with our local chapter are really focused on the young airman, whether that's scholarships for going back to school or providing assistance for various events being sponsored by the Air Force organizations on the base. I think it's valid to them because we're involved in everything they do day to day. ... I think CyberPatriot is starting to appeal to the young teens. Some of the excitement we've seen in the local chapter is from sponsoring those kinds of teams.

I would like to see AFA ... continue to focus on the local chapter and supporting it in succeeding. The local impact the chapter can make is the most important part of what AFA can do. I'd like to see that it's easier for local chapters to work in their [Air Force] community, so we can fan out to do more good work. I would like to see an expansion of support for wounded airmen. ... I love being on [AFA's Wounded Airman Program] committee. It's amazing to see the impact.



Photo by Maria Nicolet

If AFA's strength lies in its members, we're in good shape with Thurber. Here, he lifts nearly 200 pounds during a competition at his local gym last fall.

SMSgt. Leonard Stevens from the 614th Air and Space Operations Center, pauses during the reception at the Robert H. Goddard Chapter's awards ceremony at Vandenberg AFB, Calif. Chapter President Juan Cruz said some 200 guests—including community leaders from neighboring Lompoc—turned out. They celebrated the achievements of nearly two dozen award-wins. The chapter joined the Air Force Sergeants Association in hosting this 45th annual event.



Photos by MSgt. Herb Mosier

Gen. E. W. Rawlings Chapter President Larry Sagstetter (r) invited US Rep. Tom Emmer (R-Minn.), at left, to a chapter meeting to present a Civil Air Patrol Outstanding Squadron Cadet of the Year AFA award to Jonathan Keller.



Photo via Lawrence Sagstetter

Gold Coast Chapter member Leo Gray (l)—who's also a Tuskegee Airman—drew a crowd when he met up with Harold Johnson (r), a fellow World War II vet, at a Fort Lauderdale, Fla., airport. They had all turned out to view warbirds, flown in by the Collings Foundation.



Photo by Virginia Montalvo



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A Keystone Run

For competitors in the **Keystone Chapter's** 5K and 10K runs at Kadena AB, Japan, it really was the "Land of the Rising Sun." Registration opened at 5:10 a.m., and when the races began, "the sun was barely starting to come up," said Chapter President SSgt. Abraham N. Almonte. Despite the early hour, "we had a great turnout by the entire Air Force family," he commented. Just over 100 airmen, civilians, and family members participated.

SMSgt. James Clark, 18th Civil Engineer Squadron, completed the 10K in 42 minutes, as the top male finisher. The first-place female, civilian spouse Liz Andrews, came in at 48 minutes, 34 seconds. SSgt. Jones Kwan, of the 18th Operations Support Squadron, and Madison Dooghan, a high school student, won the 5K.

Since the event was part of Kadena's activities in observance of Women's History Month, Almonte did a head count and reported that of the 105 competitors, 38 were women—including the top stroller runner, Allie Lee, who pushed her baby jogger across the finish line in 48 minutes, 11 seconds.

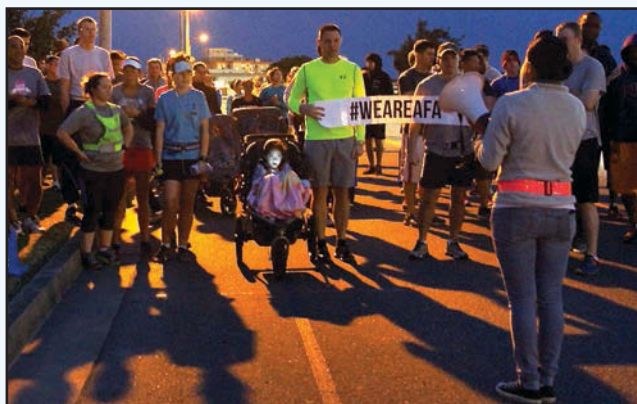


Photo by Grant Ellis

Bullhorn in hand, Keystone Chapter Community Relations VP Veronica Guerrero musters runners at 6 a.m. for the road races at Kadena AB, Japan. Notice the #WeAreAFA banner? It advertises AFA's campaign to build awareness on social media. See this month's Wingman Magazine, "We Are AFA," p. 8.

Photo by Grant Ellis



Col. Debra Lovette, 18th Mission Support Group commander—and an AFA Life Member—makes the closing remarks at the run. The event raised \$800 for scholarships.

Whether they ran 6.2 miles or 3.1 miles, A1C Armando Solis cheered all the racers. He was one of many who volunteered at the Keystone Chapter's 10K and 5K.



Photo by Antonio Evangelista

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Photo via William Solemone



AFA National Director Gary North (center) poses with a CAP color guard at a Seidel-AFA Dallas Chapter meeting. The former PACAF commander delivered a presentation called "Walk Around the World," covering USAF capabilities and responses to crises.

Photo by Gayle White



At left: Guests enjoy a pizza party co-hosted by the Lance P. Sijan Chapter at the Air Force Academy. The fundraiser took place before the academy's boxing tournament.



Photo via Lt. Col. Lynn Bentley

In Texas, San Jacinto Chapter's Lt. Col. Lynn Bentley (r), commander of University of Houston's AFROTC Det. 3, announced that Meaghanne Austin (l) received an AFROTC full scholarship. She is an Arnold Air Society member.

Look for more chapter news in *Wingman Magazine*.

Reunions reunions@afa.org

317th Tactical Airlift Wg, Lockbourne AFB, OH. 18th Troop Carrier Sq, 39th Tactical Airlift Sq, and 40th TAS (1966-70). Oct. 5-9 in Columbus, OH. **Contact:** T. Alfonsi (301-335-4321)(thomasalfonsi532@gmail.com).

317th Troop Carrier Wg/Airlift, including all 317th veterans. Sept. 10-13 in Savannah, GA. **Contact:** Jim Timmons, 758 221st St., Pasadena, MD 21122 (410-255-2735) (jimt0708@aol.com).

463rd Airlifters Assn & 316th TAW, Langley AFB, VA (1965-75). Sept. 21-26 at Wright-Patterson AFB, OH. **Contact:** Jerry Haines (937-325-9306) (gerald-haines@yahoo.com).

FB-111A. Sept. 9-13 at the Holiday Inn Dayton/Fairborn in Fairborn, OH. **Contact:** Curt Nelson (937-602-1221) (cnelson3@woh.rr.com).

Finland AFS, MN, veterans. July 11 at Silver Bay, MN. **Contact:** Marvin Crawford, 661 S. 196th Ave., Elkhorn, NE 68022 (402-571-9498) (mdcrawford@earthlink.net).

Minot Air Force Base firefighters, June 26-27, in Minot, N.D. **Contact:** Jim Clifford (701-340-0385) (jclifford@srt.com).

USAF radar station veterans, military or civilian. June 28-July 3 in Dayton, OH. **Contact:** Woody Woodworth (927-878-2495) (lgwdwrth@roadrunner.com) (www.mlrsinc.com/usafsvs). ★

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CORPORATE MEMBER SPOTLIGHT



The AFA Corporate Membership Program recognizes companies that support the Air Force Association's mission, people, and events. These businesses play a vital role in making AFA the most powerful advocate for every member of the Air Force family. This month we highlight selected corporate tier members. For more information on the Corporate Membership Program, please visit www.afa.org/CM.

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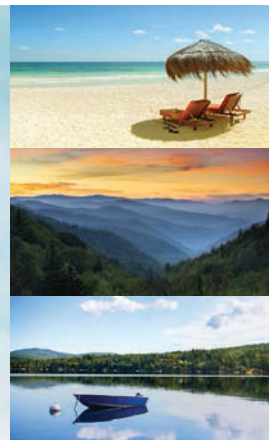
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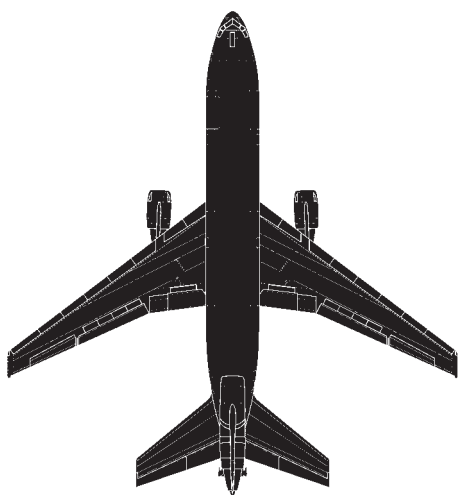
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KC-10 Extender



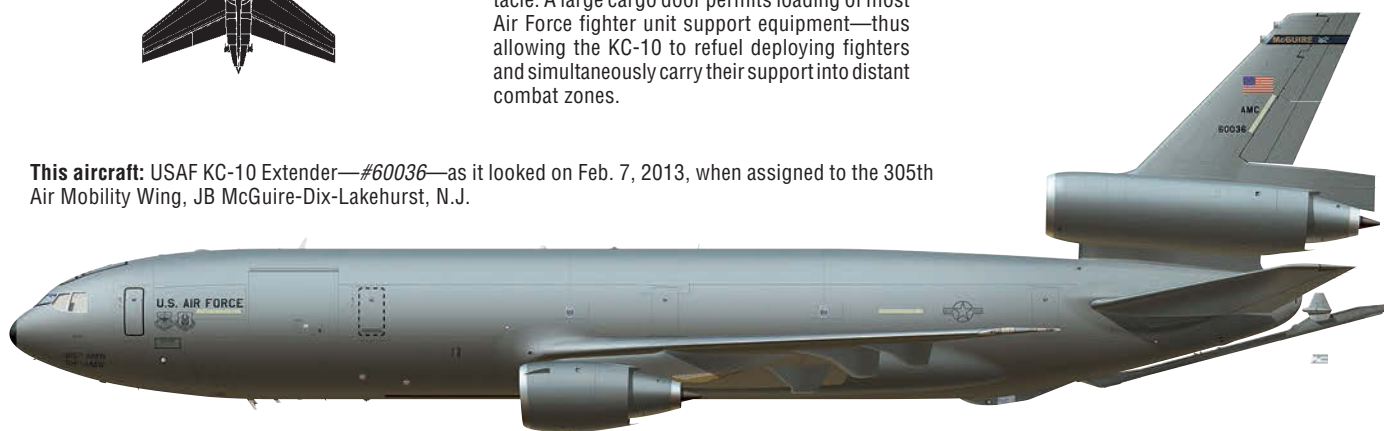
The KC-10 Extender is the major unsung hero of America's global airpower operations. Based on McDonnell Douglas's DC-10 freighter, the KC-10 was USAF's first widebody tanker/cargo aircraft and has flown in virtually every US combat operation since entering service in 1981. Each airplane sports a refueling boom and a hose-and-drogue system, allowing it to refuel not only USAF but also Navy, Marine Corps, and most allied systems in a single mission.

The three-engine KC-10 was born in 1977 after a competition among Lockheed's C-5 and L-1011, Boeing's 747, and the DC-10. The DC-10 was given (in addition to refueling systems) military avionics, an air refueling operator station, satellite communications, and its own air refueling receptacle. A large cargo door permits loading of most Air Force fighter unit support equipment—thus allowing the KC-10 to refuel deploying fighters and simultaneously carry their support into distant combat zones.

The KC-10 made its first combat deployment in the 1983 Grenada invasion. Since then, it has taken part in every US air operation—Eldorado Canyon (Libya), Just Cause (Panama), Desert Storm (the Persian Gulf), Northern-Southern Watch (Iraq), Deliberate Force (Bosnia), Allied Force (Serbia), Restore Hope (Somalia), Desert Fox (Iraq), Enduring Freedom (Afghanistan), Iraqi Freedom (Iraq), New Dawn (Libya)—not to mention tens of thousands of individual airlift and air refueling missions. In every case, the KC-10 was critical to success, though little glory has come its way.

—Robert S. Dudley with Walter J. Boyne

This aircraft: USAF KC-10 Extender—#60036—as it looked on Feb. 7, 2013, when assigned to the 305th Air Mobility Wing, JB McGuire-Dix-Lakehurst, N.J.



In Brief

Designed, built by McDonnell Douglas (now Boeing) ★ first flight July 12, 1980 ★ number built 60 ★ crew of four (pilot, copilot, navigator, boom operator) ★ no armament ★ **Specific to KC-10A:** Three General Electric CF6-50C2 turbofan engines ★ weight (loaded) 590,000 lb ★ max load 75 persons and 170,000 lb of cargo ★ max speed 610 mph ★ cruise speed 564 mph ★ max range 4,370 mi ★ span 165 ft 4 in ★ length 181 ft 7 in ★ height 58 ft 1 in ★ service ceiling 42,000 ft.

Famous Fliers

Mackay Trophy (1986): Crew of SAC 68th ARW—Marc Felman, Thomas Ferguson, Clarence Bridges Jr., Patrick Kennedy, Gerald Treadwell, Lester Boulter, Gerald Lewis, Samuel Flores, Scott Helms, Gary Smith. **Notables:** William Begert, Eugene Habiger, John Handy, Hal Hornburg, Raymond Johns Jr., Walter Kross, Arthur Lichte, Stephen Lorenz, Charles Robertson Jr., Paul Selva. **Other notables:** "Gucci Girls" all-female crew—Lindsey Bauer, Jen Carter, Lindy Campbell, Sarah Lockley. **Test pilots:** Walt Smith, George Jansen.

Interesting Facts

In Desert Storm, executed (with KC-135) 51,700 refuelings without missing a rendezvous ★ one of the best safety records in USAF ★ assigned 1981-92 to Strategic Air Command ★ carries twice as much fuel as KC-135 ★ six separate fuel tanks for refueling purposes ★ equipped with lighting for night operations ★ can refuel KC-10s and limited number of specially equipped KC-135s ★ transfers 1,100 gal/min via boom and 470 gal/min via probe-drogue ★ once wore distinctive light gray, white, blue paint scheme ★ in 1985, made a nonstop unrefueled flight of 8,982 miles from Saudi Arabia to California.



A KC-10 Extender refuels an SR-71 Blackbird in-flight during testing.



To those who were vigilant so we could rest,
Who gave everything that we might thrive,
Who are silent that we may breathe free,

We honor you.



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