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Cover Illustration: The ballpoint pen drawing "Aiming High," by Don Stewart, depicts a falcon composed of aircraft and insignia. Half the proceeds from sales of this print will be donated to AFA's Wounded Airman Program. See dsart.com for details and a description of aircraft and insignia in this drawing.

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By Adam J. Hebert, Editor in Chief

Stretch Mobility

April 13, 2017

This spring, Air Mobility Command's tankers and airlifters were busy supplying everything from beans to bullets, moving passengers and patients, and supplying fuel to aircraft flying combat missions worldwide. This is no surprise. Mobility has been in surge mode since at least 1990.

Wartime operations atop nonstop steady-state requirements will grind down the force if there are not enough pilots, maintainers, healthy airframes, or training opportunities to keep up the pace. This is the bind AMC finds itself in today.

The command's expeditionary airmen are deployed to 77 locations around the world—building and sustaining airfields, supporting flying operations, and assisting local governments and suffering populations. Some of the 23 nations AMC's expeditionary airmen have recently operated in include Iraq, Afghanistan, and Syria.

A remote airfield in northern Syria was built up from just a flat spot on the ground late last year. By the end of February, it had already hosted more than 150 C-17 and C-130 missions, according to US Air Forces Central Command (AFCENT).

These mobility flights provide US special operations forces and allied Syrian rebels the supplies and ammunition needed for attacks on ISIS strongholds deep inside Syria, AFCENT Deputy Commander Maj. Gen. Jay B. Silveria said at AFA's Air Warfare Symposium in March. Without this base it would be "much more difficult to get [supplies] into Syria," Silveria noted.

Overhead, AMC tankers are flying more than 40 percent of the sorties in the war against ISIS. They allow the Air Force, other military services, and international aircraft to survey the battlefield and press their attacks. Many of the same KC-135s that once flew over Vietnam now refuel coalition aircraft (one every five minutes) over the Middle East.

Meanwhile, a hemisphere away, AMC crews quickly responded to deadly flooding and landslides in Peru that killed more than 100 and left 150,000 people homeless. In April, two C-130Js and 25 airmen from Little Rock AFB, Ark., delivered urgently needed relief supplies to the devastated area.

1956: The year this Chevy and the KC-135 were born.

MSgt. Vincent De Groot/ANG

In the aggregate, an AMC aircraft takes off for a mission once every 2.8 minutes, around the clock, every day. The command does this with far fewer airmen than it had in 1990, 2001, or even 2011—with an aircraft inventory that is getting ever smaller and older.

USAF is "too small for what the nation expects of it," Air Force Secretary nominee Heather A. Wilson told lawmakers at her confirmation hearing in March. "I think we sometimes take for granted American dominance in air and space power."

The nation should not take anything for granted when the airmen operating and supporting today's KC-135 and KC-10 tankers typically perform their missions in aircraft older than they are. The Stratotanker's first flight was in 1956 and the fleet averages 55 years old.

Excessive demand grinds away at USAF's mobility force.

Even the KC-10 Extender, the "new" tanker, is now 31 years old.

This fleet is being run ragged and is only sustained through careful planning and airmen's perseverance and sweat.

"Between Fiscal Year 2012 and Fiscal Year 2016, AMC's tanker fleet—the KC-135s and KC-10s—overflew their program flying hours by 237 percent and 178 percent, respectively," said Gen. Carlton D. Everhart II, AMC commander, in an April meeting with defense reporters.

In other words, for four straight years, USAF's tankers flew about twice as many hours as expected. "The demand on Air Mobility Command is excessive," Everhart stated, "and I don't see that stopping."

The question is: How long can USAF keep this up? Hopefully for a long time, because under current plans those geriatric KC-135s will, shockingly, be nearly 100 years old before the last of them is replaced under a three-phase modernization program.

Phase one, the nascent KC-46 program, will deliver 179 aircraft. That acquisition then needs to be followed by two additional tanker recapitalization programs.

The notion of airmen someday flying century-old tankers into war would be comical if it were not so frightening, but this will have to be addressed in stages. First things first: The Air Force and Boeing need to quickly work out the kinks in the KC-46 program, get deliveries up to speed, and hopefully accelerate or increase purchases in the future.

No other nation has air mobility comparable to the United States. Allies have "always relied on us, and they'll continue to rely on us," Everhart said.

Mobility capability allows America to be a global leader—able to deliver aid or lead a fight, anywhere on Earth, on short notice. Don't take that for granted. ✪

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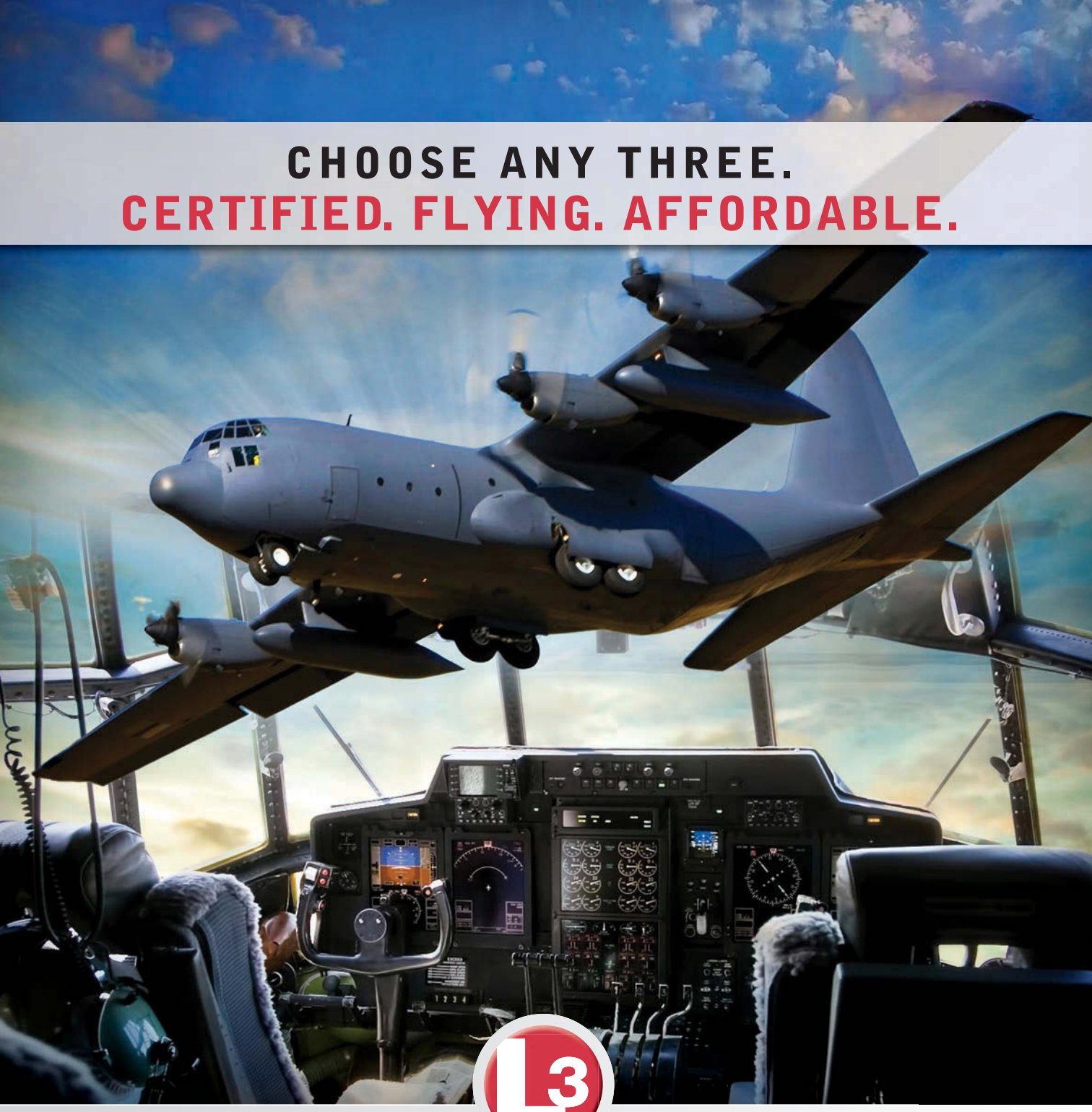

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Selfridge Selflessness

I certainly enjoyed Wilson Brissett's fine article commemorating the 100th anniversary of the Selfridge Air National Guard Base ["A Century of Action," March, p. 46].

The outstanding record of the host unit, the 127th Wing, is certainly commendable. I am, however, compelled to question the accuracy of: "The six-month stretch was the longest mass deployment of Selfridge airmen since the Korean War," attributed to wing officials, and describing the wing's 2015 deployment in support of Operation Inherent Resolve.

In October 1990, the Selfridge-based 927th (then Tactical Airlift Group) deployed eight C-130E aircraft along with several hundred airmen in support of Operations Desert Shield and Desert Storm. The 927th joined its sister 914th TAG with eight additional aircraft and airmen from Niagara Falls, N.Y., to form the 1650th TAW Provisional at Sharjah Airport in the UAE. The deployed base was affectionately named Mirage.

As of February of 1991, the 1650th had flown 10,000 sorties moving 15,000 passengers and 12,000 tons of cargo. Five thousand hours were flown over 3,200 sorties during 42 days of combat coded action.

Just before the initiation of Desert Storm, the tactics officers from the various deployed C-130 units met to plan the air logistics phase of the "left hook" redeployment of ground forces.

Over 100 C-130s flew nonstop for three days to complete the critical strategic move to the west. If my memory serves correctly, not a single missed sortie assignment was recorded during the entire six-month deployment of the combined 927th and 914th. The 1650th was reported to be the only AFRES support flying unit deployed to Desert Storm.

Col. Richard Sipp,
USAF (Ret.)
Midland, Mich.

Nukes Not for Everyone

I thoroughly enjoyed the feature article "Rebuilding the Missile Force" by Senior Editor Wilson Brissett in the February 2017 issue [p. 20].

I wrote a letter to the Secretary of Defense and the Secretary of the Air Force in 2014, based on newspaper [Associated Press] articles; TV shows; interviews with missile crew members on their concerns about missile duty [and the] firing of colonels at the operational wings, in the *Air Force Times;* and my operational ICBM experience starting in the 1960s.

As some background, I was commissioned in 1962 and was a procurement officer for the first 18 months. Then in 1963 and '64, the Air Force pulled most of the support officers into the missile field to fill slots for Minuteman, Atlas, and Titan missile crew commander positions. You had to be at least a first lieutenant as a deputy commander, and commanders were senior captains or junior majors (many of whom were on flying status). We were a very important part of the Strategic Air Command (SAC), one of the premier, if not the best, major commands to be in. All of us considered these crew commander positions very important and excellent opportunities for promotion. The flying status officers transferred into SAC from other major commands for the promotion potential.

Do you have a comment about a current article in the magazine? Write to "Letters," *Air Force Magazine,* 1501 Lee Highway, Arlington, VA 22209-1198. (Email: letters@afa.org.) Letters should be concise and timely. We cannot acknowledge receipt of letters. We reserve the right to condense letters. Letters without name and city/base and state are not acceptable. Photographs cannot be used or returned.

—THE EDITORS

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Our mission is to promote a dominant United States Air Force and a strong national defense and to honor airmen and our Air Force heritage.

To accomplish this, we:

- **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.
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We were posturing the Minuteman I wing at F. E. Warren Air Force Base in Wyoming, and I was deputy missile crew commander for over a year. During that time, my first crew commander, in training, was a senior captain (pilot) whom I turned in as not being stable to be in charge of nuclear weapons. This was under the Air Force Human Reliability Program, I think AFR 35-99, maybe now called the Personnel Reliability Program. This was with great risk to me, turning this senior captain into my lieutenant colonel squadron operations officer. Subsequently, he was relieved of his duties and left the Air Force. This point is extremely important. Not all officers are suited to be in charge of nuclear weapons.

I wrote a letter to DOD/AF officials because the Defense Department has, for whatever reasons, degraded the importance of the Air Force ICBM mission as a critical part of our nuclear deterrence strategy. When the Air Force reorganized and SAC was replaced by Space Command and then by Global Strike Command and defused further by Air Combat Command, the premier status of the nuclear strike force crumbled. Instead of seeking and getting the best and brightest officers with extremely high promotion potential, the Air Force demonstrated a lack of importance of the ICBM force, and consequently, problems followed. I do not believe it is only a money issue. It is a perceived nonchallenging assignment with minimal support of the Air Force leadership and with minimal rewards. Why are the academy officers so concerned about getting a missile crew assignment? I do not believe that the two general officer pilots, who were never missile crew commanders, should have been selected to head the investigation of the problems of the ICBM force.

More opportunities, challenging assignments, and promotions are needed for the MM III operational force. There should be a variety of career paths that allow this critical operational force to advance and experience challenging Air Force careers. In your article, there appears to be more career opportunities and wing-wide assignments with effective senior leadership in the 13N career field, which is good. However, there should be an expansion as follows: The junior officers should see multiple paths, while going in and out of the operational MM III positions. This could include related assignments at the MM III Program Office (various acquisition positions), the national targeting organization, depot assignments using their operational experience, operational test launch positions to include more live launches, RV acquisition and depot assignments, and related developmental work at the labs and industry. This is in addition to headquarters and Defense Department positions. This will allow a wide wealth of experience and will ultimately allow advancement into senior level missile operational positions.

Col. Don Damm,
USAF (Ret.)
Sumter, S.C.

The Right Stuff

As a cover-to-cover reader of your magazine, usually on the day it reaches my mailbox, and also having been a schoolboy who followed every detail on Project Mercury, it was very gratifying to see the great tribute to John Glenn in the current issue ["Air Force World: John H. Glenn, 1921-2016," March, p. 22].

I would, however, like to point out a technical error, which seems to be in most of the recent discussions of his mission. In point of fact, the MA-6 mission was not reduced in duration but was scheduled as a three-orbit mission, as was the following MA-7 "proving" mission flown by Scott Carpenter three months later. The confusion has arisen apparently from the radio transmission to Glenn when he reached orbit that his trajectory was "good for at least seven orbits." That meant only that the Atlas booster had inserted Friendship 7 into the planned orbit.

As described by the legendary flight controller Gene Kranz in his classic book of 17 years ago, *Failure Is Not an Option,* the mission plan was to have a trajectory good enough for additional orbits in the event it was desired to keep him up longer for some reason. The faulty indication that the heat shield had come loose did create much concern and a change in mission sequence in order to leave the retrorocket package on throughout re-entry, and that with consequent concern for damage to the shield, but it did not cause the mission to be cut short.

Details aside, thanks for all the great articles, especially the tribute to Colonel Glenn.

Joseph Cunningham
Jackson Heights, N.Y.

Out of Their Depth

John Correll's excellent article gave an in-depth account of the British aerial torpedo attack on the Italian battleships in Taranto Harbor ["The Air Raid at Taranto," March, p. 60]. This attack occurred more than a year before the Japanese raid on Pearl Harbor. Yet it did not lead to actions that could have protected the American fleet.

Mr. Correll reports that Taranto Harbor was 40 feet deep, about the same depth as Pearl Harbor. He also states that when Admiral Ingersoll sent a warning about Taranto to Pearl Harbor, the admiral erroneously listed the depth of the water where torpedoes were dropped at Taranto. He said that they were much deeper—between 84 to 90 feet, with a few runs at 66- to 72-foot depths. This difference in stated depths between Taranto and Pearl Harbor may have caused Admiral Kimmel to not consider the memo relevant to his situation.

Certainly, nearly every source on the Taranto Raid lists its depth as being about 40 feet, and that would make Ingersoll's memo incorrect. The book on Taranto by Lowry and Wellham is particularly noteworthy because Wellham was one of the pilots in the attack. On p. 68 of the 2000 paperback edition, the book states that Mare Grande is about 45 feet deep.

However, we may need to rethink this depth. Actual hydrographic studies of Taranto Harbor paint a very different picture of Mare Grande. Several have been done, and they agree that Mare Grande is a fairly deep harbor, citing depths of over 100 feet in many locations. Based on the after-action report by Captain Boyd of the HMS *Illustrious,* all torpedoes were dropped in and all battleships were moored [in depths ranging from 64 to 93 feet]. Based on hydrographic information, then, it appears that we should seriously question the statement that the British Taranto raid took place at Pearl Harbor depths. Where Ingersoll came up with his depth information is unknown, but it appears that he was actually correct.

If Ingersoll's correct statement of drop depths at Taranto deterred Kimmel from considering the memo as being relevant to Pearl Harbor, that was unfortunately because Taranto was only part of the British aerial torpedo story. As Mr. Correll notes, the British had earlier dropped their torpedoes successfully in water as shallow as 22 feet. That would certainly have gotten Kimmel's attention.

Ray Panko
Honolulu

■ *The numerous operational accounts that I have seen on the Taranto attack report an average depth in the outer harbor of between 39 and 49 feet.*

The after-action report Mr. Panko cites from Capt. D. W. Boyd, commander of Illustrious, *includes information on range and altitude of the attacks but does not mention harbor depth. The approximate point at which the torpedoes struck the water could be estimated from the range and the general direction of approach.*

Two of the battleships struck by the torpedoes were left with their decks awash but not completely submerged. Conte di Cavour, *with a 40-foot hole in the hull, settled on the bottom with its superstructure above water. This is at odds with the assumption of greater depth. The Italians managed to beach a third battleship to keep it from sinking.*

The gist of the advisory from US Rear Adm. Royal E. Ingersoll, assistant Chief of Naval Operations, in June 1941, was to state the threat level warning for aerial torpedoes at 75 feet or deeper. The quality of his assessment was seen six months later when Japanese torpedo bombers attacked the US fleet in 40 feet of water at Pearl Harbor.—John T. Correll

Getting Modern

I enjoyed retired Colonel Meilinger's article, "Learning the Not-So-Obvious Lessons," in the March 2017 issue [p. 68], but think that he and the Air Force are both failing to learn an extremely important, but which seems to be the not-so-obvious, lesson about what developments in technology are making possible regarding service roles. Thanks to advances in Ground Moving Target Indicator (GMTI) surveillance and moving target precision attack technologies that make it possible to locate and then destroy an enemy army's vehicles when they are moving deep in enemy territory, US Air Force airpower now has the potential to duplicate the change in roles that naval forces achieved during World War II.

Before Pearl Harbor, the US Navy's leaders expected that their naval aviation forces would be employed in support of their surface forces, with close combat battleship gunfire being their primary means of defeating the Japanese Navy. However, instead of just locating the opposing fleet, naval aviation proved to be able to defeat that fleet before it could move into gunfire range of our ships. But this change in roles between air and surface forces was not possible on land at that time because of the great difficulties airmen experienced in locating and then hitting an enemy army's vehicles, especially when they moved at night or during bad weather. As a result, it was necessary to employ airpower in support of our army by attempting to delay the movement of enemy vehicles through the targeting of fixed transportation infrastructure, like bridges and tunnels, and then providing close air support when the two armies had moved into close proximity to each other.

But during Desert Storm, advances in technology revealed the potential to change roles was possible because now we could detect and hit an enemy army's vehicles, even when they moved at night, well before they could get into close proximity to our land forces. During the Battle of Khafji, which someday historians will see as the land warfare equivalent of the Battle of the Coral Sea in World War II, Iraqi army vehicles attempting to use the cover of darkness to achieve a surprise attack were detected, located, and targeted by a prototype Joint Surveillance Target Attack Radar System (JSTARS) long before most of these vehicles could move into close proximity to coalition land forces.

The immense importance of being able to detect, locate, and precisely target an opposing army's vehicles when they are moving results from the fact that movement is how armies achieve the advantages of surprise, favorable position, and superior mass. Moreover, in addition to their mobility, modern armies depend on their vehicles for armored protection, heavy firepower, supplies, and engineering support. By targeting these vehicles when they are moving, the US gains a number of important advantages. Attacks will not be wasted on decoys or previously destroyed vehicles. Since they will be occupied by enemy soldiers, lethal precision air attacks can create such fear that enemy soldiers

will become unwilling to risk occupying a moving vehicle, making it possible to achieve widespread paralysis faster and with far fewer attacks than could be achieved solely by attrition. (We have already seen the value of using fear of precision HARM air attacks to suppress surface-to-air missile sites.) Yet another advantage of creating paralysis by targeting moving vehicles is the ability to measure effectiveness in real time.

Once widespread paralysis is achieved, friendly land forces will possess the dominant maneuver needed to complete the enemy's defeat with relatively little risk. But before this occurs, friendly land forces should be employed in support of our airpower by using their maneuver to put the enemy commander on the horns of a dilemma that has no satisfactory answer. The dilemma is this: If the enemy attempts to counter our Army's maneuver by moving, he makes his vehicles vulnerable to being seen and destroyed by precision air attacks, but if he attempts to reduce the risks from air attacks by dispersing and not moving, he will be unable to counter our Army's maneuver while providing even more time for his forces to be located and destroyed by air attacks. Unfortunately, this same issue of *Air Force Magazine* ["Air Force World: Moving Forward with JSTARS Recap, p. 19] states that the Air Force plans to limit the JSTARS recap fleet to only 17 aircraft, indicating that this not-so-obvious lesson regarding the potential of exploiting GMTI surveillance and targeting to reverse Air Force and Army roles has yet to be learned.

Lt. Col. Price T. Bingham,
USAF (Ret.)
Melbourne, Fla.

A Modest Proposal

I enjoyed Mr. Everstine's article, "Continuous Sandbox Presence," in the April/May edition of your magazine [p. 30]. However, the employment of a permanent bomber presence in the Middle East was proposed many years ago.

In 1981-82, I was fortunate enough to be selected as a USAF research associate (RA) and spent the year at the Mershon Center, Ohio State University. One of the requirements as an RA was to prepare and present a scholarly paper for the Air Staff. My paper, "Chain of Thunder: B-52D Firepower for America's Conventional Forces," purported establishing a permanent Air Force presence in the Middle East by moving two wings of the retiring B-52Ds to Southwest Asia,rather than sending them to the USAF "Bone Yard." Half of the aircraft would remain flyable and the other half could be used for cannibalization. Unfortunately, the timing was not good for such a plan. The B-1s were nearing readiness, and funding and maintaining a maintenance-demanding, vintage 1950 aircraft did not appear to meet serious headquarters consideration.

Hindsight is always nice, but what if USAF would have made such a move in the early or mid-80s? Would the presence of a full-time military force using even an old, but viable, weapon system have changed the environment of the Middle East during this period?

It is interesting that 35 years later, B-52Hs, not B-52Ds, are performing the same function for US Central Command that was envisioned in the paper.

Col. Jimmie W. Hanes Jr.,
USAF (Ret.)
Crawford, Texas

They Ain't Perks

In the January 2017 issue of *Air Force Magazine*, Megan Scully's article, "Retention Questions," touched on a variety of challenges our Air Force and DOD as a whole face, some of them repeats from various decades. On p. 49, Ms. Scully describes the comparison of military service to civilian service as "apples to oranges," which is a very key observation. However, she describes recent policies that the military has implemented as "perks that go along with military service" to improve retention. Ms. Scully should have used the term "readiness" rather than "perks" because that is what those policies support. As a squadron commander I had to look a female senior airman, who was a single parent, in the eye and order this professional to deploy to Southwest Asia for four months, so I don't view this policy in military service as a "perk." Also on p. 49, Ms. Scully states the "biggest challenge is convincing those airmen with six to 16 years"—again, the term "convincing" is misleading. The vast majority of airmen patriotically volunteered to be a member of the greatest Air Force in the world. There comes a point in an airman's career to weigh the facts when deciding it's time to separate from military service. Some of those key facts are family needs, medical issues, separation from the family, and pure deployment "burnout." So, there is no "convincing," but readiness

opportunities, to consider. The funding expended on bonuses to pilots and now remotely piloted aircraft operators will continue to be a challenge in meeting retention goals for these career fields.

Congress should put their money where their mouth is since congressional staffers seem to continue to always compare military service to the civilian workforce. My recommendations for military readiness improvements are: provide a program to fund a percentage of military members' college student loans (those who didn't attend a service academy or didn't utilized tuition assistance), institute an allowance program to qualifying service members for child care costs, make the officer and enlisted Basic Allowance for Housing (BAH) rates the same or near the same rate, and increase the household goods (HHGs) weight allowance for our enlisted corps at least 60 percent across the board. In the late 1980s, the military changed the policy for TDY per diem for all service members. The old policy entitled officers a higher per diem rate versus our enlisted corps. This didn't make sense to me because all service members have to eat while TDY, so why should rank factor into this? Now the per diem is the same rate. Our enlisted airmen who qualify for off-base housing need to live somewhere with their dependents, just as officers do. Why have segregated BAH rates? For example, an E-5 with dependents, assigned to the BAH Washington, D.C., area, has a BAH rate of $2,262, versus an O-3 with dependents, same area, having a BAH rate of $2,874. Why shouldn't the E-5 earn the same BAH as the O-3? Yes, there are all types of factors influencing the BAH rate, but does the E-5 pay less for public utilities than the O-3? This is a readiness concern because when the E-5 has to support a deployment, he/she can deploy, knowing dependents' housing will be secure. As for the HHGs weight allowance: In comparison to a federal civilian service employee, our enlisted airmen are at a disadvantage. For example, per the Defense Transportation Regulation, Part IV, for civilian employees the authorized HHGs allowance is "18,000 pounds net weight for each employee" who are funded for a move. An E-5 with over 10 years' time in service earns approximately $38,563 annually in base pay (not factoring in other allowances), in comparison to a GS-6 (Step 7), who earns $38,185 annually in pay (doesn't include locality pay), and the GS-6 (Step 7), if authorized a move, can ship 18,000 pounds in HHGs, but the E-5 with dependents can only ship 9,000 pounds. The issue is "readiness" not "retention" because if the services jointly advocate to Congress the readiness perspective, present the facts and basis to improve readiness, then our military members, especially our great airmen, will continue to be patriotic and serve a career of 16-plus years.

Col. Steven L. Amato,
USAF (Ret.)
Woodbridge, Va.

Good Mag, Bad Mag

You outdid yourselves with the March issue of *Air Force Magazine!* I found myself reading the whole issue from cover to cover. The clarity and strong statements in each of the articles came through loud and clear. Keep up the great work.

Lt. Col. David Newbern,
USAF (Ret.)
Fredericksburg, Va.

As one of the majority of voters who did not vote for President Trump, I would like to take issue with Mr. Leibundguth's critique of your editorial policies ["Letters: Soundly Defeated," April/May, p. 8]. Please continue to strongly question the policies and actions of the current administration, just as you did of President Obama's.

Sean M. Mallory
Edinboro, Pa.

Since becoming a member of the Air Force Association in 1968, I have anticipated receiving *Air Force Magazine.* Heretofore the magazine has been a refreshing alternative to the biases of the mainstream media. The content and tone of the March 2017 issue fell short of the standards set by the magazine for decades. One article in particular stands out as falling far below the standard we members expect.

"Action in Congress: Fasten Your Seatbelts" by Megan Scully [p. 13] is a thinly veiled, pedantic, anti-Trump piece that missed the mark and is an insult to our intelligence.

AFA members, whether or not they voted for the President, do not come to *Air Force Magazine* to ingest the same biased fodder we see in the mainstream media. We do not expect to see an irrelevant critique of the President's "tweeting" style. The caption of the picture, "Tweeting the strike fighter," is sophomoric.

Most, if not all of us, know that the contracting officials and not the President sign the contracting documents. But it is patently naïve to believe that the President, and other politicians, do not impact the decisions on which systems are selected. Where was Scully when Obama and Gates killed the F-22 buy? [See "State of the Arsenal," July 2009, p. 50.]

Scully writes: "The tweet underscores his aggressive negotiation tactics, but also highlighted his unfamiliarity with some of the intricacies of Pentagon acquisition." One can argue that the President's negotiation tactics have proved to be successful in business. Moreover, what has transpired during the last few days to lower the costs of the F-35, since President Trump weighed in, would suggest that the President can and does influence negotiations. Apparently the "intricacies of Pentagon acquisition" that have historically resulted in protracted acquisition and cost overruns did not stymie the President who pledged to voters to drain the bureaucratic swamp.

Scully writes: "The layers of bureaucracy between the President (or any other political figure, for that matter) and the contract officer exist for good reason: to prevent any undue political influence on the process." What is "undue political influence"? Why does

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Scully think the A-10 is still in service? I doubt that Sen. John McCain or Sen. Mark Levin would agree to her absurd assertion.

The readers of *Congressional Quarterly* might be accustomed to such journalistic dribble. The readers of *Air Force Magazine* are not. We can only hope *Air Force Magazine* will be able to find material that meets AFA standards for the coming issues.

Col. Eldon DeVere Henderson, USAF (Ret.)
Gardnerville, Nev.

Senior Staff Changes

RETIREMENTS: Gen. Herbert J. **Carlisle,** Maj. Gen. Frederick H. **Martin,** Maj. Gen. Robert N. **Polumbo,** Brig. Gen. Jeffrey K. **Barnson,** Brig. Gen. Thomas G. **Clark.**

CONFIRMATIONS: To be Major General: Tony D. **Bauernfeind,** William T. **Cooley,** Stephen L. **Davis,** Patrick J. **Doherty,** James A. **Jacobson,** David A. **Krumm,** Jeffrey A. **Kruse,** Michael A. **Minihan,** Shaun Q. **Morris,** Thomas E. **Murphy,** David S. **Nahom,** Stephen W. **Oliver Jr.,** John M. **Pletcher,** Scott L. **Pleus,** John T. **Rauch Jr.,** Brian S. **Robinson,** Ricky N. **Rupp,** Dirk D. **Smith,** Kirk W. **Smith,** Paul W. **Tibbets IV,** Andrew J. **Toth,** Mark E. **Weatherington.**

To be Brigadier General: Dagvin R. M. **Anderson,** Jason R. **Armagost,** Craig R. **Baker,** Gentry W. **Boswell,** Richard H. **Boutwell,** Ryan L. **Britton,** Brian R. **Bruckbauer,** Lance R. **Brunch,** Todd D. **Canterbury,** Case A. **Cunningham,** Evan C. **Dertien,** Michael L. **Downs,** Troy E. **Dunn,** Derek C. **France,** David M. **Gaedecke,** Philip A. **Garrant,** Anthony W. **Genatempo,** Kristen E. **Goodwin,** Christopher J. **Ireland,** David R. **Iverson,** Joel D. **Jackson,** Ronald E. **Jolly Sr.,** Michael G. **Koscheski,** David J. **Kumashiro,** John D. **Lamontagne,** Leah G. **Lauderback,** Charles B. **McDaniel,** John C. **Millard,** Albert G. **Miller,** John J. **Nichols,** Robert G. **Novotny,** Lansing R. **Pilch,** Donna D. **Shipton,** Jeremy T. **Sloane,** Phillip A. **Stewart,** David H. **Tabor.**

NOMINATIONS:
To be Major General: Mark D. **Camerer,** Sean L. **Murphy.**

CHANGES: Brig. Gen. Mark A. **Baird,** from Vice Cmdr., SMC, AFSPC, Los Angeles AFB, Calif., to Dir., Space Prgms., Office of the Asst. SECAF, Acq., Pentagon … Brig. Gen. Andrew A. **Croft,** from Dir., Plans, Prgms., Rqmts., & Assessments, AETC, JBSA-Randolph, Texas, to Dep. Commanding General-Air, Combined Jt. Forces Land Component Command-Iraq, Southwest Asia … Maj. Gen. Timothy G. **Fay,** from Dir., Ops., Strat. Deterrence & Nuclear Integration, USAFE, Ramstein AB, Germany, to Vice Cmdr., USAFE, Ramstein AB, Germany … Maj. Gen. James B. **Hecker,** from Cmdr., 19th AF, AETC, JBSA-Randolph, Texas, to Cmdr., 9th Air & Space Expeditionary Task Force-Afghanistan, CENTCOM, Kabul, Afghanistan … Maj. Gen. John M. **Hicks,** from C/S, SOCOM, MacDill AFB, Fla., to Cmdr., SOCOM-Africa, SOCOM, Stuttgart, Germany … Brig. Gen. Matthew C. **Isler,** from Dep. Commanding General-Air, Combined Jt. Force Land Component Command-Iraq, Southwest Asia, to Asst. Dep. Cmdr., 9th Air Expeditionary Task Force, ACC, Shaw AFB, S.C. … Brig. Gen. Mark K. **Johnson,** from Cmdr., Oklahoma City ALC, AFMC, Tinker AFB, Okla., to Dir., Log. Ops., Defense Log. Agency, Fort Belvoir, Va. … Brig. Gen. Walter J. **Lindsley,** from Dir., Log., DCS, Log., Engineering, & Force Dev., USAF, Pentagon, to Dir., Instl., Log., & Mission Spt., AFGSC, Barksdale AFB, La. … Brig. Gen. Chad T. **Manske,** from Dep. Cmdr., Canadian NORAD, Winnipeg, Canada, to Commandant, Natl. War College, NDU, Fort McNair, D.C. … Brig. Gen. Tom D. **Miller,** from Vice Cmdr., AF Sustainment Center, AFMC, Tinker AFB, Okla., to Cmdr., Oklahoma City ALC, AFMC, Tinker AFB, Okla. … Maj. Gen. Michael T. **Plehn,** from C/S, SOCOM, Miami, to Vice Cmdr., AFSOC, Hurlburt Field, Fla. … Maj. Gen. James C. **Slife,** from DCS, United Nations Command & US Forces Korea, Yongsan Army Garrison, Republic of Korea, to C/S, SOCOM, MacDill AFB, Fla. … Maj. Gen. Scott F. **Smith,** from DCS, Ops., Allied Jt. Force Command, NATO, Brunssum, Netherlands, to Dir., Current Ops., DCS, Ops., USAF, Pentagon … Brig. Gen. William A. **Spangenthal,** from Dir., SECAF, USAF, Pentagon, to Dir., Plans, Prgms., Rqmts., & Assessments, AETC, JBSA-Randolph, Texas … Maj. Gen. Jeffrey B. **Taliaferro,** from Cmdr., 9th Air & Space Expeditionary Task Force-Afghanistan, CENTCOM, Kabul, Afghanistan, to Dir., Ops., NORTHCOM, Peterson AFB, Colo. … Maj. Gen. (sel.) Paul W. **Tibbets IV,** from Cmdr., 509th BW, AFGSC, Whiteman AFB, Mo., to Vice Cmdr., AFGSC, Barksdale AFB, La. … Brig. Gen. Andrew J. **Toth,** from Asst. Dep. Cmdr., AFCENT, Shaw AFB, S.C., to Dir., Ops., ACC, JB Langley-Eustis, Va.

CHIEF MASTER SERGEANT RETIREMENT: CMSAF James A. **Cody.**

CMS CHANGES: CMSgt. Benjamin J. **Higginbotham,** from Command Chief, 70th ISR Wg., Fort Meade, Md., to Command Sr. Enlisted Leader, Combined Jt. Task Force-Horn of Africa, Camp Lemonnier, Djibouti … CMSgt. Kaleth O. **Wright** to Chief Master Sergeant of the Air Force, USAF, Pentagon. ✪

By John A. Tirpak, Editorial Director

Zoomie in charge; A long road back; Chinese stealth; Not the one, but the many ....

April 10, 2017

WILSON'S POINTS

Heather A. Wilson, president of the South Dakota School of Mines and Technology and a former New Mexico congresswoman, is likely to be confirmed as the new Secretary of the Air Force, succeeding Deborah Lee James. Her nomination was approved by the Senate Armed Services Committee by a 22-to-five vote on April 5 and referred to the full Senate, where it was expected to pass without further debate, although no vote had been scheduled by press time.

President Trump nominated Wilson on Jan. 23, and she is the only one of his three initial service Secretary nominations to advance to the confirmation process. Vincent Viola and Philip Bilden, his first choices for Army and Navy Secretary, respectively, withdrew from their nominations over issues related to divestment of their financial holdings.

At her March 30 confirmation hearing, Wilson promised to push for a larger Air Force end strength, manage tightly a large bow wave of USAF modernization programs, and remain open to new contracting mechanisms and innovative schemes to develop combat capability quickly and at the lowest possible cost. She argued for repeal of the Budget Control Act (BCA) and its attending military sequester, saying the law is "hurting the Air Force and our ability to defend ourselves."

She tallied the long list of modernization programs the Air Force must carry out in the next decade if it is to reverse the increasing age of its equipment, now standing at an average age of 27 years for aircraft. SASC Chairman Sen. John McCain (R-Ariz.) warned Wilson that if she were to be confirmed, the committee would not be patient with overly rosy reports on the health of acquisition programs and said flatly that if the BCA is not repealed, the Air Force won't be able to afford all the equipment it now plans to buy.

Wilson deflected comments on reported Air Force plans to retire the F-15C/D fleet, saying the service is properly looking at all its what-if options. However, she would be willing to consider a restart of the F-22 production line as a potential offset or competitor to the F-35. Top Air Force leaders have said that while they would like to have more F-22s, increasing the buy rate on the F-35 to replace aging fighters is a higher priority and would yield more overall combat power.

Both McCain and Sen. Richard Blumenthal (D-Conn.) raised an ethics question for Wilson. Almost immediately after leaving her House seat in January 2009, she took consultancy work with Sandia National Laboratories—then managed by Lockheed Martin—but according to a 2013 Department of Energy inspector general report, on an invoice she did not detail the work she performed, and the lab was criticized for keeping sloppy records.

"I did the work. I complied with the contract. ... The review found ... no fault with me, and the DOE auditors never even bothered ... to talk to me," she said.

Wilson told McCain she did the consulting work for 18 months and acknowledged she directed Lockheed's effort to get its Sandia contract renewed without an open competition, but said she did not lobby any members of Congress in this regard. Sandia ultimately reimbursed the government $442,877 paid to Wilson. At Sandia, Oak Ridge, and other nuclear labs, "I helped them, I think, a great deal with respect to strategic planning on nonproliferation and their nonproliferation advisory board with respect to nuclear materials, did numerous program reviews, helped with cyber security," she told McCain. She promised him she would promote open competition on Air Force programs, but only where appropriate.

A-10 AGAIN

Asked by Sen. Lindsey O. Graham (R-S.C.) whether the A-10 is the ideal platform for fighting ISIS and "other asymmetrical threats," Wilson answered obliquely that "40,000 munitions have been put on the ISIS target since 2014; 90 percent of them have been delivered by the United States Air Force. It's an air commander who has to decide at the moment what platform he needs to do a particular job in a particular place. Whether that's an F-16, or … [an] F-18, or an A-10 just … depends on the job."

Though she did not address the A-10 retirement question directly, she said that fourth generation aircraft will be "around for a long time" and added, "it's really important to get capabilities from the drawing board to the flight line faster. The cycle of innovation has to be faster." With regard to an ongoing evaluation of the F-35 vs. the F/A-18, however, she said, "I don't see how we can stop modernizing and expect to win a near-peer fight. And I'd rather have that fight be unfair and on our side." She told Sen. Elizabeth Warren (D-Mass.) she would put fresh priority on funding for basic and applied research.

About the Air Force's readiness crisis—with a lack of pilots and maintainers as symptoms—Wilson told McCain, "I think we all know we're not going to get out of this in a single year."

Wilson would be the first graduate of the Air Force Academy and the third woman to hold the service's top position. She graduated from the academy in 1982 and, as a Rhodes scholar, continued her studies in England, receiving a master's and doctorate in international relations from Oxford University by 1985. Oxford published a book by Wilson, titled *International Law and the Use of Force*

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by National Liberation Movements. She served on Active Duty seven years, as a host-country negotiator in the UK and then as a NATO defense planning officer, where she was also involved in arms control negotiations.

After the Air Force, Wilson worked for two years on the National Security staff in the George H. W. Bush White House, as director for Defense Policy and Arms Control. Afterward, in 1991, she founded Keystone International, Inc., in New Mexico, promoting scientific business development in the US and Russia.

Wilson served in the cabinet of New Mexico Gov. Gary Johnson from 1995 to 1998, as secretary for the New Mexico Children, Youth, and Families Department, a state agency overseeing the juvenile justice system and child welfare.

She quit her post to run for Congress from New Mexico's 1st District in 1998, winning a special election. She became the first woman veteran to serve in Congress, and after winning the general election later that year, served in the House for five more terms. Wilson served on the committees on Armed Services, Intelligence, and Energy and Commerce and chaired the Intelligence subcommittee on technical and tactical intelligence.

Wilson made two unsuccessful bids for the Senate from New Mexico, in 2008 and 2012. She took up the South Dakota School of Mines and Technology job in 2013.

DRAGON RACES

One of the Air Force's persistent nightmares came true in March when China, with little fanfare, declared its first stealth fighter operational. The prospect of USAF potentially confronting another air force armed with stealth aircraft, once unthinkable, is now a reality.

The dozen or so J-20 "Mighty Dragons"—announced by Chinese state television as operational on March 9—are more likely than not simply entering a period of operational test and evaluation. Their deployment at Dingxin air base in north-central China probably signals the start of exploring concepts of operation and working out how the Dragon will be integrated with other types of Chinese aircraft. From their initial perch, they pose little immediate threat to US forces in the Pacific region.

That they are there at all, however, is evidence of what former Air Combat Command chief Gen. Herbert J. "Hawk" Carlisle told *Air Force Magazine* in a recent interview: The Chinese are moving "faster than we expected" with regard to modernizing the People's Liberation Army Air Force (PLAAF).

Low-rate production of the J-20 seems to have begun in 2014, and in addition to the dozen aircraft at Dingxin, there are about eight other prototypes in various configurations that continue to be used for missile tests and other evaluations. The J-20, like the stealthy, supercruising American F-22 Raptor, can carry six missiles internally, and both air-to-air and air-to-ground ordnance have been seen in its weapon bays. Although the growth in China's defense spending has slowed in the last two years, the J-20 is said to be a high priority, conferring prestige on the PLAAF and enhancing its conventional deterrent capabilities. The production rate can be expected to increase as Chengdu, the Chinese outfit that builds the J-20, beats down the learning curve, which has been high.

The Pentagon's 2016 Annual Report to Congress about China's military capabilities states that the country sees stealth aircraft as providing an "offensive operational advantage that denies an adversary the time to mobilize and to conduct defensive operations." Observers of the PLAAF say the J-20 seems optimized to make high-speed, stealthy hit-and-run attacks on ships and air bases and to attack critical airborne enablers, such as AWACS and tankers, rather than dogfighting.

SURPRISE, SURPRISE

The J-20 was revealed in 2011, when images of a prototype circulated on the internet. Then-Defense Secretary Robert M. Gates was visiting China at the time, and the revelation was clearly meant to embarrass him. He had famously predicted that Chinese stealth fighters would not even appear until the late 2010s and not enter operational service until the 2020s. Based on that prediction, Gates terminated production of the F-22 at less than half the required inventory—a move USAF leaders have lamented since. The F-22 has proved a prodigy in combat, but the 100 or so deployable aircraft simply aren't enough to cover all the Air Force's air superiority obligations.

Two J-20s made the type's air show premiere at Zhuhai, China, in November 2016, and China-watchers speculated correctly at the time that their appearance indicated operational service was imminent.

The J-20 bears a family resemblance to the F-22 and F-35, and US leaders have said in so many words that this is because of a successful Chinese cyber espionage campaign against the US defense industry since the late 1990s. Carlisle showed a split-screen image of the Chinese J-31 and US F-35 at AFA's Air Warfare Symposium in March, and it was hard to tell the difference between them. The J-20 sports a chin-mounted electro-optical targeting system externally identical to that on the F-35.

Outwardly, the Air Force doesn't express too much concern about the J-20. At a state of the Air Force press briefing last August, USAF Chief of Staff Gen. David L. Goldfein said comparing the F-22 and F-35 against the J-20 and J-31 is "almost an irrelevant comparison" because the US has a decided advantage when it comes to networking its systems to provide an unmatched picture of the battlespace to combat pilots and operational commanders alike. At a February speech at the Center for Strategic and International Studies, Goldfein said, "It's not about what the F-35, or the J-20, or the F-22, or the J-31 can actually do … one-versus-one." While that's an "interesting" discussion, he said, "it's actually not very compelling because we're not going to ever have an F-35 in there by itself, ever. We do 'family of systems.'"

Privately, though, senior USAF leaders say the introduction of a stealthy adversary sharply complicates the air battle. "We've known this was coming a long time, and we've prepared," said one, "but it means we're going to have to do things [differently], and we knew we would have a harder time on the front end" of any potential conflict with China or a Chinese-supplied client. ✪

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By Jennifer Hlad

The tyranny of distance; Singular circumstances; Bolstering security; Supporting Somalia ....

179th Airlift Wing aircraft maintainers from the Ohio Air National Guard prepare a C-130 for the Flintlock 17 exercise.

ENABLERS

The bulk of Flintlock—US Africa Command's premier special operations forces exercise—is based on one-to-one contact between troops on the ground. But about 60 Ohio Air National Guardsmen played a critical role in this year's iteration: transporting people and equipment via air around a training area nearly twice the size of the continental United States.

More than 20 countries and 2,000 people participated in Exercise Flintlock 2017. It included events in Chad, Niger, Burkina Faso, Morocco, Tunisia, Cameroon, and Mauritania.

"We're a force enabler, we're able to bridge the gap between these large geographical locations," said Lt. Col. Jeremy Ford, the director of operations for the 164th Airlift Squadron, 179th Airlift Wing, from Mansfield, Ohio. He served as director of the air operations center for Exercise Flintlock, headquartered in N'Djamena, Chad.

"We're solving the tyranny of distance for this exercise," Ford told *Air Force Magazine.*

The multinational activity is designed to build and strengthen partnerships and build the capacity to help the African nations "protect the civilian population, particularly against cross-border attacks from violent extremist groups," Ford said.

The unit sent two C-130s and some five dozen people to Africa for the exercise, and as the "primary airlift mover" for Flintlock, they transported more than 400 people and 50 tons of cargo over the course of three weeks.

HOT, DUSTY, SANDY

"These conditions, you can't simulate back in the state of Ohio," Ford said. "So being here in Africa with the hot, sandy, dusty conditions, where we've got to work through challenges with a limited amount of resources, … we had to kind of think outside the box and become creative."

Ford said the exercise provided critical operational experience the airmen can use in the future and an opportunity for the unit to hone its skills as a force multiplier for Active Duty troops, particularly special operations forces.

"All these contingency operations we're involved in today, it's not just our Active Duty forces. It's a combination of Active Duty, ANG, and Reserve forces. So when we're able to train together and work together in an environment like this, it makes us more interoperable and it makes a better Total Force package," Ford explained. "That real-world experience is going to pay off in the future for us."

Ford said the airmen "learned a lot from this exercise about what we can expect from our special operations forces if we ever wanted to integrate with them in the future."

Flintlock was also a way to increase interoperability with African partner nations and Western partner nations, he said.

Chadian Brig. Gen. Zakaria Ngobongue noted at the exercise's opening ceremony that the environment "is plagued with insecurity" and said that Flintlock is "a great opportunity for our special forces to benefit from the shared training of participating nations."

"Terrorism, one of the major dangers of the third millennium, threatens the stability of states and security of citizens while fueling violence and hatred," Ngobongue said.

The Air Guardsmen weren't the only USAF personnel involved in the exercise; several Air Force Special Operations Command troops embedded in US Special Operations Command Africa participated, as well. Many were involved in medical training on the ground, Ford said.

"We've done the first-ever Chadian [casualty evacuation] training here in Chad this year, with our AFSOC folks and our Air Guard aircraft," Ford explained.

The event included training on the ground and more in the air, with soldiers playing roles as patients, he said.

GOING AFTER AL-SHABAB

Also in March, President Donald J. Trump approved a plan to provide offensive air strikes for the African Union Mission and efforts to defeat al-Shabab militants in Somalia. The authorization designated Somalia as an "active area of hostilities" for 180 days.

"This authority is consistent with our approach of developing capable Somali security forces and supporting regional partners in their efforts to combat al-Shabab," Pentagon spokesman Navy Capt. Jeff Davis told reporters at the Pentagon.

Davis said the help will increase pressure on the Islamic militant group.

"We stand with the international community in supporting the federal government of Somalia as it strives to improve stability and security in Somalia. The additional support provided by this authority will help deny al-Shabab safe havens from which it could attack US citizens or US interests in the region," Davis stated.

Jennifer Hlad is a freelance journalist based in the Middle East and a former *Air Force Magazine* senior editor.

Richard Bumgardner/US Army

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BOEING

By Megan Scully

All Mattis on Deck

Defense Secretary James N. Mattis has had the unenviable job of presiding over his first budget drill—including the distribution of an additional $54 billion for defense accounts next year—without any of his key civilian lieutenants in place.

Typically, a small army of Pentagon appointees, from the military services to the Office of the Secretary of Defense, weighs in on the annual budget, helping establish policy and priorities for a department that consumes more than $600 billion annually.

But President Donald J. Trump has been slow to name his picks for the Pentagon's most prestigious posts, leaving Mattis as the sole Trump appointee through much of the formation of the Fiscal 2018 budget request.

By early April, Heather A. Wilson, the President's choice for Air Force Secretary, was the only defense nominee officially pending before the Senate. With about a month to go before the anticipated release of budget details, Trump had voiced his intention to nominate several people for other top jobs, including key budget positions like deputy secretary and comptroller.

In mid-March, the administration claimed a topline for defense spending that exceeds budget caps for next year by $54 billion to help improve what the new Commander in Chief considers a depleted military.

Trump has made clear that aircraft, including advanced fighters, and ships are among his top priorities. But the administration won't reveal the individual line items and their justifications until the full budget release later this spring, giving the department time to match the budget to the administration's policies.

With Mattis alone at the Pentagon for the first several months of the administration, the task of drafting the budget falls to those who remain in the department, including Obama administration holdovers like Robert O. Work, who continued in his role as the No. 2 civilian. Many of those officials are budget veterans and perfectly capable of drafting the 2018 proposal, but their priorities may not line up with the new administration's.

Meanwhile, career civilians and military officials are always heavily involved in the budget process but, in the absence of Senate-confirmed appointees, presumably have more sway this year. Like Obama holdovers, however, they do not have a stake in the politics and policies of the new administration.

All of this means that, while the budget will get done, long-term policies may have to wait until next year. The administration's first real crack at using the defense budget to set the national security agenda likely will come in Fiscal 2019, after Trump's picks have settled into the Pentagon.

In the meantime, however, Mattis and his team, once they receive Senate confirmation, will have to sell the request to Congress, a task made all the more difficult because of the additional defense funding requested for next year.

Indeed, the $54 billion plus-up seems to have irked both sides of the aisle before the release of the formal budget request.

Secretary of Defense James Mattis, here with Army Gen. Joseph Votel, head of US Central Command, is alone at the top.

SSgt. Jette Carr/USAF

Defense hawks such as the chairmen of the House and Senate Armed Services Committees don't think it's generous enough and would like to see another $37 billon added to the Pentagon topline next year to pay for the military's stated requirements, such as accelerated purchases of the F-35 strike fighter, and to boost lagging readiness levels.

During Wilson's March confirmation hearing, Senate Armed Services Chairman John McCain (R-Ariz.) warned of a modernization bow wave facing the service, ticking off a number of expensive programs like the F-35, KC-46A tanker, and B-21 bomber.

"There is simply no way all of these important, yet expensive modernization programs will fit into the Air Force budget as constrained by the Budget Control Act," McCain said. "It will be your task to develop and make the case for a path through this tremendous budget crunch."

Democrats—particularly in the Senate, where 60 votes are required to pass any contentious legislation—may pose an even more difficult challenge to the Trump administration's proposed defense boost.

The minority party has opposed previous GOP efforts to raise defense caps without a similar increase in nondefense spending. With deep cuts proposed at the State Department and for domestic programs, Democrats may wield their filibuster power to get more of their priorities funded. The result could be a stalled appropriations process across the federal government.

Senate Appropriations Ranking Member Sen. Patrick Leahy (D-Vt.) stressed during a March hearing that national security doesn't fall only to the Defense Department, arguing that failure to invest in America will make the world less secure.

"While we must ensure that we do not have a 'hollow force,' we must also avoid a 'hollow country,'" he said. "That is precisely what President Trump's budget proposes," Leahy asserted. ✪

Megan Scully is a reporter for *CQ Roll Call*.

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By Robert S. Dudney

Breaking Faith

"Pilots who don't fly, maintainers who don't maintain, air traffic controllers [who] don't control—leave. ... An extended CR [continuing resolution] will also negate the pilot bonuses Congress authorized, which will ... break faith with the force. ... As a service Chief, I have many obligations, but one remains paramount: Every airman we send into harm's way must be properly organized, trained, and equipped, and led to succeed in [his or her] mission. ... This is our moral obligation. A year-long CR makes meeting this obligation extremely difficult."**—Gen. David L. Goldfein, USAF Chief of Staff, House Armed Services Committee, April 5.**

Turnabout

"The traditional warfighting paradigm of ground forces leading the fight supported by air forces has been supplanted by a construct where air forces supported by ground forces is often a much more responsive, effective, efficient, and less costly—in terms of both lives and dollars—manner in which to conduct warfare."**—Retired USAF Lt. Gen. David A. Deptula, prepared statement to Senate Armed Services airland subcommittee, Feb. 9.**

Vlad Vs. the Impaler

"What we need to do is understand Vladimir Putin for what he is—a murderer and a thug."**—Sen. John McCain (R-Ariz.), on the nature of the president of Russia, The Hill, Feb 9.**

Top of the Pack

"I am the first one that would like to see ... nobody have nukes, but we're never going to fall behind any country, even if it's a friendly country. We're never going to fall behind on nuclear power. ... It would be wonderful, a dream would be that no country would have nukes, but if countries are going to have nukes, we're going to be at the top of the pack."**—President Donald J. Trump, interview with Reuters, Feb. 23.**

Hard Truth

"No longer can the American taxpayer carry a disproportionate share of the defense of Western values. Americans cannot care more for your children's future security than you do."**—Secretary of Defense James N. Mattis, address to NATO defense ministers in Brussels, Feb. 15.**

Naval Confusion

"We went from [a policy of] 'Let's not talk about gay people' to complex conversations of gender identity and bathrooms. We leapfrogged 10 years of social growth in the Navy, and people from leadership all the way down to the deck plates did not know what to make of it."**—Retired Navy Capt. Rick Hoffman, *Navy Times,* Feb. 4.**

Abracadabra ... Not

"So much of what [USAF] does is assumed capability, and the way I describe it is it's like a light switch. ... I actually don't know how lights work, ... but here's what I know. I know that when I walk into this room, I flip that switch and those lights come on. ... Much of what we do as an Air Force has become a light switch. 'I don't know how I got three bars on my GPS phone. It ... just happens. It's magic.' No, it ain't magic. It's 31 satellites being flown by airmen at Schriever Air Force Base right now. ... So here's my concern: [If] we don't put the resources against some of these key mission sets that the entire joint team relies on, those lights aren't going to come on."**—Gen. David L. Goldfein, USAF Chief of Staff, remarks at Center for Strategic and International Studies, Feb. 23.**

The Warbot Cometh

"The winner of the next conflict will not likely be determined primarily by the state of their technologies, but by how well a nation's military thinkers conceptualize future warfare in an integrated manner and then apply robotic systems, or warbots. ... 'Warbots' can be defined as robotic combat systems that can detect, identify, and apply lethal force to enemy combatants within prescribed parameters and without immediate human intervention. ... Most militaries continue to look at warbots as support weapons ... because it is easier to keep humans in the loop. ... Yet warbots offer tremendous potential advantages as primary combatants. They are simply more capable, cheaper, and offer less risk to humans than manned equivalents in many, if not most, combat situations."**—US Army Col. Brian M. Michelson, senior fellow at Atlantic Council, writing in The Bridge, Feb. 28.**

Gag Those Terrorists

"If you can't talk, you can't fight. It's that simple. Our job is to create massive confusion in the Daesh [a pejorative Arabic nickname for ISIS] network. We are attacking their ability to command and control their forces and preventing them from executing against our Iraqi allies."**—Lt. Col. Josh Koslov, commander of an EC-130H Compass Call electronic warfare squadron, quoted in airforcetimes.com, Feb. 6.**

Message to Beijing

"Our long-standing policy on the Senkaku Islands stands. The US will continue to recognize Japanese administration of the islands and, as such, Article 5 [collective defense] of the US-Japan Security Treaty applies."**—Secretary of Defense James N. Mattis, joint press conference with Japanese Defense Minister Tomomi Inada, Feb. 4. The Senkakus are claimed by both Japan and China.**

Hope for the Hollow

"The important thing to me is this [the Trump administration's proposed increase in DOD spending] is a clear statement of recognition that we are heading towards a hollow force. There's not just a readiness crisis. There's enormous modernization challenges, and you have trouble maintaining [operational] tempo. That's the textbook definition of a force that's heading to hollow."**—James Jay Carafano, Heritage Foundation national security specialist, quoted in defensenews.com, Feb. 27.**

Keep the Politics Out

"The oath we take, and we retake every time we are promoted, is to support and defend the Constitution of the United States against all enemies, foreign and domestic. By design, we don't pledge support to any particular party or any particular leader. We're an apolitical military."**—Gen. David L. Goldfein, USAF Chief of Staff, remarks to reporters in Washington, D. C., Feb. 7.**

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SCREENSHOT

04.15.2017

F-35 Lighting IIs from Hill AFB, Utah, land at RAF Lakenheath, UK, for an overseas training deployment.

TSgt. Matthew Plew/USAF

By Wilson Brissett, Senior Editor

A 318th Special Operations Squadron U-28A aircraft at Cannon Air Force Base, N.M., in 2013.

■ Three Airmen Killed in Cannon U-28 Crash

Three airmen died March 14 when their U-28A aircraft crashed during a training flight near Cannon AFB, N.M.

Capt. Andrew Becker, 33, was a pilot for the 318th Special Operations Squadron at Cannon. He was from Novi, Mich. Capt. Kenneth Dalga, 29, was a combat systems officer for the 318th SOS, from Goldsboro, N.C. First Lt. Frederick Dellecker, 26, was a copilot assigned to the 318th SOS. He was from Daytona Beach, Fla.

The airmen were flying a routine training sortie when the aircraft went down at about 6:50 p.m. near Clovis Municipal Airport, said 27th Special Operations Wing Commander Col. Benjamin R. Maitre. The Air Force has launched an investigation into the crash.

Becker

Dalga

Dellecker

"Cannon Air Force Base [is] a tight-knit installation and wing-focused on getting the mission done, and obviously any time an incident like this occurs, it hits us hard," Maitre said.

■ Mountain Home Airman Killed in Southwest Asia

SSgt. Alexandria Mae Morrow, 25, of Dansville, N.Y., died March 22 while deployed to Southwest Asia for Operation Inherent Resolve. Morrow was part of the 366th Aircraft Maintenance Squadron at Mountain Home AFB, Idaho.

Morrow

She died while performing maintenance duties, according to a Pentagon statement. Mountain Home, on its Facebook page, said Morrow sustained a fatal injury while "executing her duties as a weapons loader" and that "those who knew her valued her love of life and art, her leadership, her skills, and her passion."

■ Security Forces Airman Dies in Syria

SSgt. Austin Bieren, 25, of Umatilla, Ore., died March 28 in northern Syria of reported natural causes. He was assigned to the 21st Space Wing at Peterson AFB, Colo., and was deployed in support of combat operations, according to a Defense Department statement.

Bieren

Bieren, a security forces airman, was the second US service member to die in Syria during Operation Inherent Resolve. In November, Navy explosive ordnance disposal technician Senior Chief Petty Officer Scott Cooper Dayton was killed in a combat incident.

SrA. Xavier Lockley/USAF

■ **The Air Force's Low Aircraft Availability Rates**

Across nearly all of its combat and mobility aircraft, the Air Force is failing to meet aircraft availability standards, according to data the service recently provided to Congress.

"The Air Force has a challenge in aircraft availability, and we are trying to shore that up," Col. Michael Lawrence, chief of the maintenance division in the logistics directorate, told *Air Force Magazine*.

Aircraft availability measures what percent of an entire aircraft fleet is ready to perform its primary mission and, unlike more commonly cited mission capable rates, includes aircraft undergoing major repairs or overhauls. It offers "a mechanism to understand the relative health of any fleet," he said. The data show that in the fourth quarter of 2016, 16 of the 17 USAF aircraft fleets included in the survey had availability rates below the standard that indicates a fleet in good health. Additionally, only six of the 17 aircraft types had availability rates within five percentage points of the standard, considered by maintainers as an acceptable deviation from the norm.

While warning that "every weapons system has its own story," Lawrence said three main factors contribute to the servicewide low rates of aircraft availability. Some of the lowest rates during that time period were among platforms undergoing service life extension programs, like the B-1 and B-2.

Here, "there is a need to prepare for a near-peer adversary," Lawrence said. "It's painful to take these aircraft off the front lines, but we know we've got to do it."

The F-22A Raptor also suffered a low availability rate, at 46 percent. Lawrence said this was primarily caused by work on the aircraft's stealthy low observable platform surfaces.

An F-15E takes off from RAF Lakenheath, UK, in February.

Second, as the average age of the Air Force inventory increases, "the amount of time we have to spend working on those aircraft tends to increase," leaving them in the depots longer.

Third, "the maintenance manpower shortfall" has had an impact on aircraft availability. The data were provided to the House Armed Services readiness subcommittee ahead of a March 22 hearing on the current state of the Air Force.

	Models	Total Aircraft Inventory	Aircraft Availability (AA) Standard	3-Month AA Avg (Oct-Dec 16)	10-yr AA Avg (FY 06-16)
Combat Air Forces	A-10C	283	72%	62%	62%
	B-1B	62	55%	40%	41%
	B-2A	20	58%	39%	38%
	B-52H	75	61%	59%	59%
	CV-22B	50	71%	65%	51%
	F-15C	212	63%	56%	62%
	F-15D	24	63%	60%	61%
	F-15E	218	66%	69%	65%
	F-16C	791	66%	65%	67%
	F-16D	156	66%	54%	65%
	F-22A	182	72%	46%	56%
Mobility Air Forces	C-17A	222	79%	72%	72%
	C-130H	217	64%	63%	62%
	C-130J	107	72%	69%	74%
	KC-10A	59	78%	64%	70%
	KC-135R	344	80%	66%	68%
	KC-135T	54	80%	61%	69%

TSgt. Matthew Plew/USAF; Staff chart

An E-8C JSTARS assigned to the 116th Air Control Wing at Robins AFB, Ga., was damaged by contractors in 2015-16.

■ Maintenance Error Causes $7.35 Million in Damage

Contract maintainers left drain holes covered during depot maintenance of an E-8C JSTARS between March 2015 and July 2016. This let water accumulate and caused about $7.35 million in damage to the aircraft, according to an Air Force Materiel Command investigation.

The E-8C, assigned to the 116th Air Control Wing at Robins AFB, Ga., was in depot maintenance at a Northrop Grumman facility in Lake Charles, La. During the maintenance, contractor personnel covered three holes in the radome on the belly of the aircraft. Water from washings and rain collected in the radome, damaging the antenna and other electrical components, including 240 circuit cards, according to AFMC.

The AFMC Accident Investigation Board determined the contract personnel did not ensure the drain holes were uncovered during an inspection after a washing and during four preflight inspections. "Northrop maintenance quality assurance inspectors were required to ensure all drain holes were free from obstructions after being washed, but failed to do so," the report states. "The accumulated water, and subsequent cycling of the antenna, which produced an electrical current, damaged the antenna's electrical components."

The Air Force has not determined if Northrop Grumman will incur a financial penalty for the incident; however, the maintenance contract lets the service evaluate if the contractor's performance merits the payment of an award fee, according to AFMC.

■ Holmes Takes Command of ACC

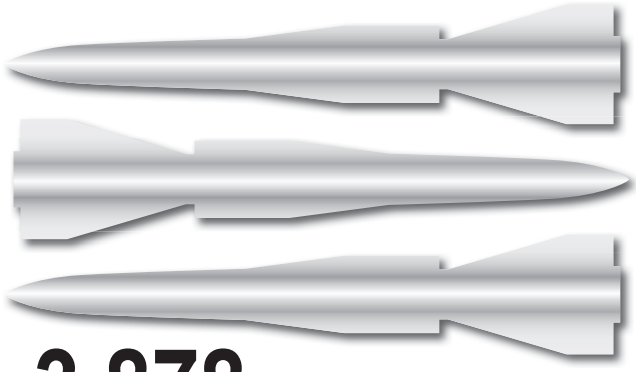
Holmes

Gen. James M. "Mike" Holmes assumed control of Air Combat Command from Gen. Herbert J. "Hawk" Carlisle on March 10 during a ceremony at JB Langley-Eustis, Va. Holmes previously served as USAF deputy chief of staff for strategic plans and requirements at the Pentagon. Carlisle, who had led the command since 2014, retired after 39 years in uniform.

"There has never been a more important time to serve in uniform, and you truly represent the greatest treasure in our nation's arsenal," Chief of Staff Gen. David L. Goldfein told the audience of ACC airmen during the ceremony. Carlisle said, "I have absolute, complete confidence in Mike Holmes and Sarah, that they are the right team to lead this command in the future and to greater heights."

After assuming command, Holmes told the ACC airmen, "We now face new and revised challenges from both great and regional powers who threaten the survival of our American experiment." He went on to say the ability of the nation to fend off these threats "certainly depends on the capabilities you bring as part of a joint team."

By the Numbers



3,878

The number of weapons released by US and coalition forces in the month of March for Operation Inherent Resolve—a new high for the operation that is now more than two years old.

Source: US Air Forces Central Command Airpower Summary, March 2017.

TSgt. John Lasky/USAF; staff illustration

An Air Force C-17 delivers the first two Terminal High Altitude Area Defense (THAAD) launchers to Osan AB, South Korea, in March.

■ THAAD Deployment Begins in South Korea

A C-17 delivered the first elements of a Terminal High Altitude Area Defense system to Osan AB, South Korea, in early March.

"The timely deployment of the THAAD system by US Pacific Command and the Secretary of Defense gives my command great confidence in the support we will receive when we ask for reinforcement or advanced capabilities," the US Forces Korea commander, Army Gen. Vincent K. Brooks, said in a news release.

The deployment came the same day North Korea launched four ballistic missiles into the Sea of Japan. Defense Secretary James N. Mattis and Japanese Minister of Defense Tomomi Inada agreed "that these launches are an unacceptable and irresponsible act" that undermines stability in the region, according to a Pentagon statement.

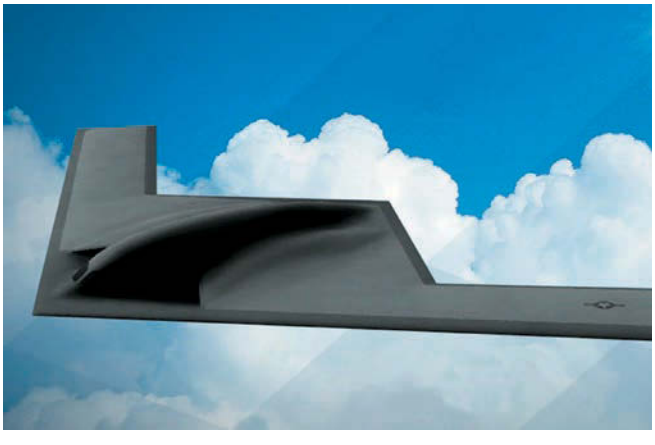
North Korean leader Kim Jong Un has already fired some 120 ballistic missiles in his five years of reign—that's a significant increase from his father, Kim Jong Il, who fired just 34 ballistic missiles over the course of 17 years, Pacific Air Forces boss Gen. Terrence J. O'Shaughnessy told reporters at AFA's Air Warfare Symposium in Orlando, Fla.

US and Polish C-130 Hercules aircraft prepare to fly a four-ship formation at Powidz AB, Poland, in March.

■ Air Force To Increase Rotational Presence in Europe

The Air Force will increase its rotational presence in Europe thanks to a significant boost in European Reassurance Initiative funding in the Fiscal 2017 budget, US Air Forces in Europe Commander Gen. Tod D. Wolters said at AFA's Air Warfare Symposium. The increased number of theater security packages will be "equivalent to what you see with the introduction of the brigade combat team" in Europe, he said.

In November 2016, the Army announced plans to deploy 5,700 troops from two brigades to Europe for Operation Atlantic Resolve, which provides reassurance to NATO allies in response to Russian aggression in the region. Wolters said he's also "very excited about the insertion" of four multinational battlegroups in Estonia, Latvia, Lithuania, and Poland on a rotational basis.



MSgt. Jeremy Larlee/US Forces Korea; SSgt. Alonzo Chapman/ANG; USAF illustration

■ It's Official: USAF Needs a Minimum of 100 B-21s

The Air Force's requirement for the B-21 Raider bomber, initially stated as "80 to 100" airplanes, is now officially at least 100 aircraft, the Air Force said. Written testimony presented to the House Armed Services Committee by Vice Chief of Staff Gen. Stephen W. Wilson indicated that 100 is now the minimum number of B-21s required.

Through a spokesman, the Air Force confirmed the number, saying the change happened "in spring 2016" at the request of Air Force Global Strike Command. At that time, USAF established 100 "as the floor—not the ceiling" for the B-21 fleet size, he said. AFGSC "requires a minimum of 100 B-21 Raider aircraft, with a mix of legacy bombers, to meet future COCOM [combatant commander] requirements," the spokesman said.

He said that AFGSC chief Gen. Robin Rand told AFA's Mitchell Institute in July last year that 100 aircraft, and "not one single one below that," was his "best military advice" on the B-21 fleet size.

"I can't imagine how I would deal with the missions I have, with fewer bombers than we have in today's inventory," Rand said in his Mitchell remarks. Because of the B-21's secrecy, it was not explained then that Rand's advice had become official policy.

The War on Terrorism

US Central Command Operations: Freedom's Sentinel and Inherent Resolve

■ Casualties

As of April 18, a total of 35 Americans had died in Operation Freedom's Sentinel in Afghanistan, and 39 Americans had died in Operation Inherent Resolve in Iraq and Syria.

The total includes 71 troops and three Department of Defense civilians. Of these deaths, 31 were killed in action with the enemy while 43 died in noncombat incidents.

There have been 165 troops wounded in action during OFS and 34 troops in OIR.

■ Civilian Deaths in Mosul Air Strike Investigated

US Central Command is investigating a March 17 strike in Mosul that reportedly killed more than 100 civilians. The strike in Mosul's al-Jadida neighborhood hit a building where more than 100 people were hiding. Iraqi security forces requested the strike, which targeted ISIS fighters and equipment, Combined Joint Task Force-Operation Inherent Resolve said.

CENTCOM chief Army Gen. Joseph L. Votel said in a statement that the death of the civilians is a tragedy, and "we are investigating the incident to determine exactly what happened and will continue to take extraordinary measures to avoid harming civilians." The fight in Mosul is difficult because ISIS fighters are operating among civilians.

■ Death of Top Al Qaeda, Taliban Leaders Confirmed

A Febuary air strike killed Mullah Abdul Salam, the Taliban's commander for the province of Kunduz. The Taliban said a remotely piloted aircraft killed Salam, along with four of his top associates.

"Mullah Salam and the Taliban fighters under him murdered and terrorized the people of Kunduz for too long," said Army Gen. John W. Nicholson Jr., commander of US forces in Afghanistan, according to Voice of America.

The Department of Defense also confirmed that a March 19 US air strike in Paktika province, Afghanistan, killed high-ranking al Qaeda leader Qari Yasin. A native of Pakistan, Yasin helped plan a September 2008 bombing of the Marriott Hotel in Islamabad that killed dozens, including USAF Maj. Rodolfo I. Rodriguez and Navy 3rd Class Petty Officer Matthew J. O'Bryant. Yasin was also implicated in a 2009 attack on a bus carrying the Sri Lankan cricket team in Lahore.

"The death of Qari Yasin is evidence that terrorists who defame Islam and deliberately target innocent people will not escape justice," said Secretary of Defense James N. Mattis, in a DOD press release.

■ Three US Soldiers Injured in Insider Attack

Three US soldiers stationed at Camp Antonik, in the Washer district of Helmand province, were wounded there when an Afghan soldier opened fire on them March 19. Coalition forces on base responded and killed the shooter, according to US Forces Afghanistan.

The shooting was the first insider attack on US forces in Afghanistan this year.

By **Gideon Grudo,** Digital Platforms Editor

What Is the Intelligence Community?

President Donald Trump's new administration has been at odds with the Intelligence Community (IC) from the onset, to put it mildly.

In mid-February, news outlets announced that the White House planned a broad review of American intelligence agencies.

The news came the same day Trump blamed the Intelligence Community for leaks resulting in his National Security Advisor Michael T. Flynn's resignation.

The next day, the FBI released 398 pages of documents connected to a 1973 Justice Department lawsuit against Trump that alleged housing discrimination by his real estate company in New York City.

Tensions between the President and the IC have been high since *before* the election, so what exactly is the Intelligence Community?

TWO PARTS OF THE DNI'S BUDGET

1. The national intelligence program consists of all Intelligence Community programs, projects, and activities that primarily support more than one department or agency or provide a service of common concern for the IC.

2. The military intelligence program comprises intelligence programs, projects, and activities that primarily support military operations or address a unique Department of Defense requirement.

Simply put, the IC is a group of 16 intelligence agencies or departments, like the FBI and NSA, and the overseer of them all is the Office of the Director of National Intelligence. The ODNI, created by 2004 legislation, exists to integrate efforts, make operations efficient, and communicate succinctly with the White House.

Trump chose former Republican Sen. Dan Coats of Indiana to be his Director of National Intelligence, and the Senate confirmed him in mid-March.

The DNI's budget is broken into two parts. A DNI spokesperson told *Air Force Magazine* the office doesn't disclose details about its budget or how it's allocated among the intel community, nor how many employees each component has.

For 2016, DNI requested $53.9 billion for its national intelligence program, or the part of the budget addressing the Intelligence Community. It received $53 billion.

Below, we break out each of the Intelligence Community members alphabetically.

INTELLIGENCE COMMUNITY MEMBERS	AROUND SINCE	HEADED BY
Office of the Director of National Intelligence	**2004**	**Dan Coats**
Air Force Intelligence, Surveillance, and Reconnaissance	1948	Lt. Gen. VeraLinn "Dash" Jamieson, USAF
Army Intelligence	1885	Lt. Gen. Robert P. Ashley Jr., USA
Central Intelligence Agency	1947	Michael R. Pompeo
Coast Guard Intelligence	2001	Rear Adm. Robert P. Hayes
Defense Intelligence Agency	1961	Lt. Gen. Vincent R. Stewart, USMC
Department of Energy's Office of Intelligence and Counterintelligence	2006	Steven K. Black
Department of Homeland Security's Office of Intelligence and Analysis	2005	Patricia F. S. Cogswell
Department of State's Bureau of Intelligence and Research	1947	Daniel B. Smith
Department of Treasury's Office of Intelligence and Analysis	2004	Daniel McGlynn (acting)
Drug Enforcement Administration's Office of National Security Intelligence	2006	Doug Poole
Federal Bureau of Investigation's Intelligence Branch	2014	Joshua D. Skule
Marine Corps Intelligence	1939	Brig. Gen. William H. Seely III, USMC
National Geospatial-Intelligence Agency	2003	Robert Cardillo
National Reconnaissance Office	1961	Betty J. Sapp
National Security Agency/Central Security Service	1952	Adm. Michael S. Rogers
Naval Intelligence	1882	Vice Adm. Jan Tighe

Life at Bagram

As the number of US military forces in country declines, much still stays the same.

By Brian W. Everstine, Pentagon Editor

In January, the number of US military personnel inside Afghanistan decreased to about 8,500 focused on both Operation Resolute Support, the continuing commitment to training, advising, and assisting the Afghan forces, and Operation Freedom's Sentinel, the military mission to target the Taliban, al Qaeda, and now ISIS in the country. The majority of these forces are at Bagram, home of the Air Force's 455th Air Expeditionary Wing. US, NATO, and Afghan aircraft line the two, 9,800-plus foot long airstrips and 32 acres of ramp space.

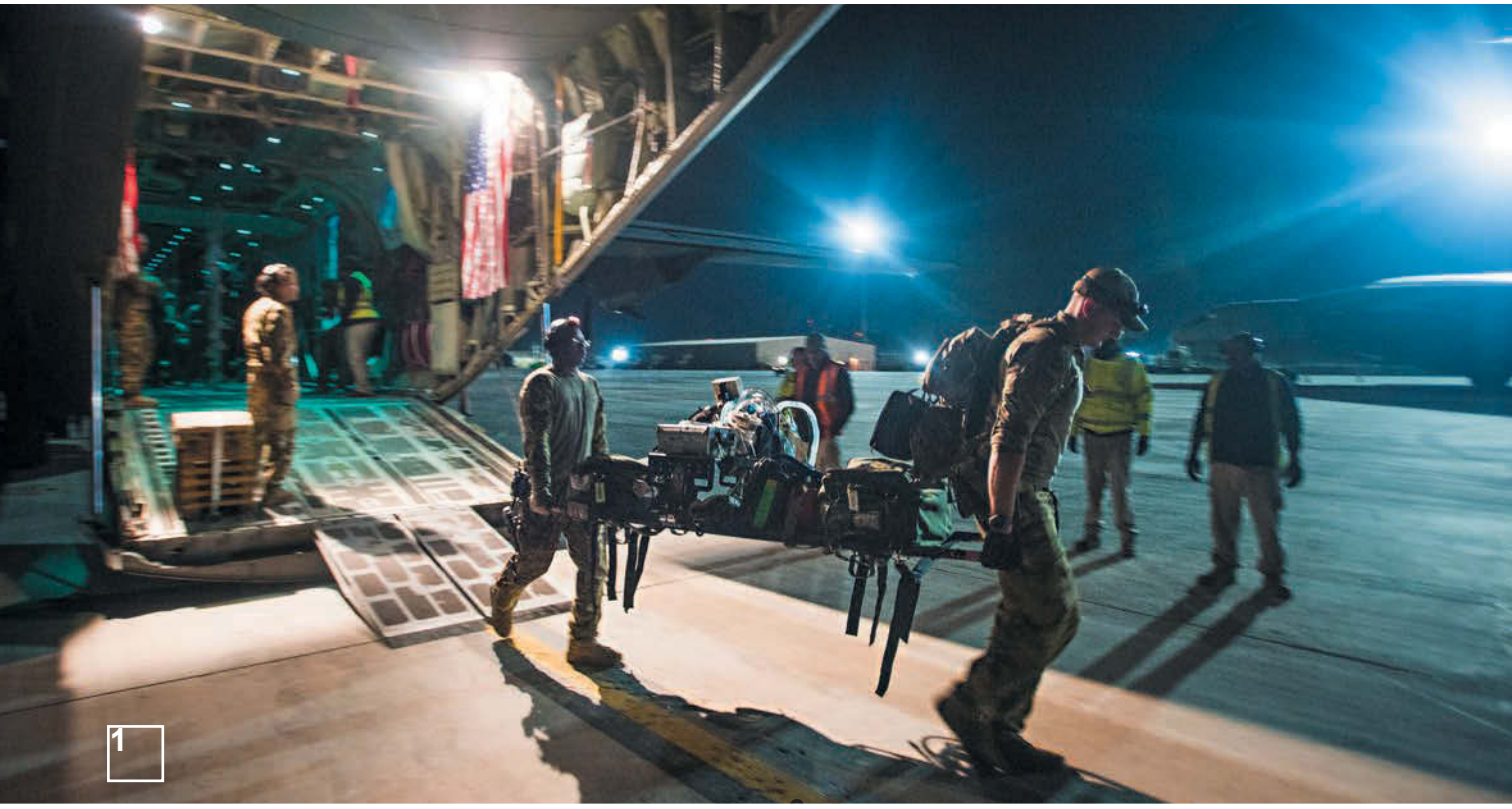
The wing includes about 2,000 airmen, flying and maintaining dozens of aircraft that make their way through the fight in Afghanistan.

That number has dropped in recent years, however. Bagram houses only one dedicated fighter squadron for the operations. In January, that unit was the 79th Expeditionary Fighter Squadron deployed from Shaw AFB, S.C. The F-16s of the 79th stay on call, able to fly anywhere in the country within one hour to conduct close air support.

"Even though there is only one person in the airplane, we always fly as a team," Major Joseph, the squadron's director of operations, said in a news release. (The Air Force doesn't provide the last names of deployed combat pilots.) This gives the pilot "access to countless resources."

These combat aircraft have been increasingly busy in Afghanistan, as fights against the Taliban and ISIS have increased.

A 79th Expeditionary Fighter Squadron F-16 is prepared for a mission on Jan. 13, 2017, at Bagram Airfield, Afghanistan. For thousands of airmen, Bagram is, at least for now, home.



Previous pages: SSgt. Katherine Spessa/USAF. These pages: SSgt. Katherine Spessa/USAF (1-2) (4-5); Sr.A. Justyn M. Freeman (3,6)

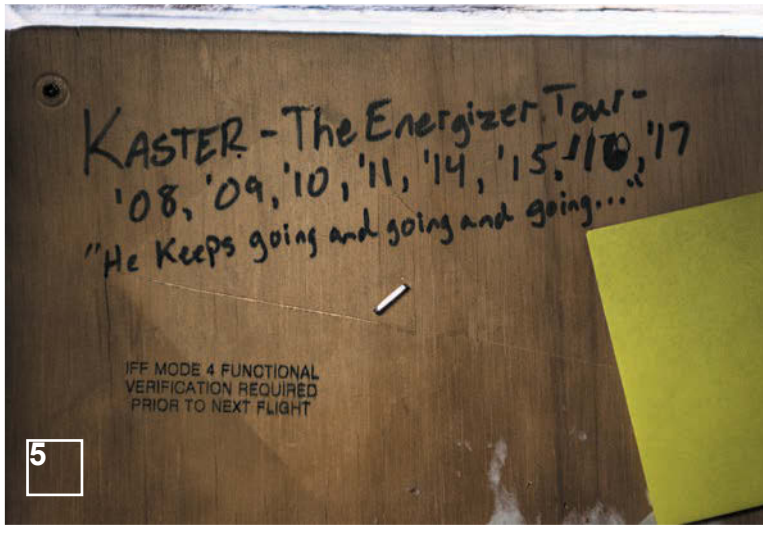
In February, US aircraft dropped 200 bombs in Afghanistan. This is the highest since October 2016—and the second highest since September 2014. This uptick came after the Obama administration in 2015 gave US forces increased authority to go after ISIS, and USAF took on that mission without boosting the number of deployed aircraft.

The combat effort has continued from Bagram even as the amount of tanker support at the base has dropped. As of early 2017, the Air Force no longer deploys tankers to the base full time and instead flies support missions from outside the country, said Maj. Gen. Jay B. Silveria, deputy commander of US Air Forces Central Command.

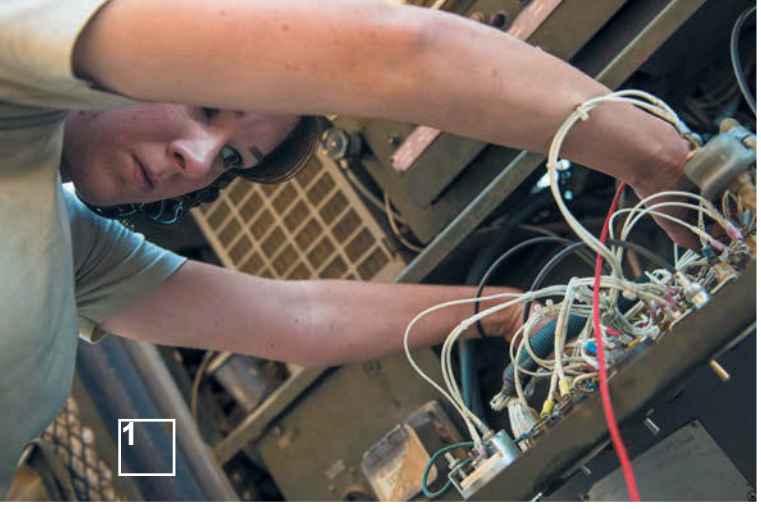
The Air Force keeps rescue aircraft, including HH-60G Pave Hawks, and aircrews deployed to Bagram on alert for personnel recovery missions. A flow of mobility aircraft and intelligence, surveillance, and reconnaissance aircraft rotate through Bagram's massive apron.

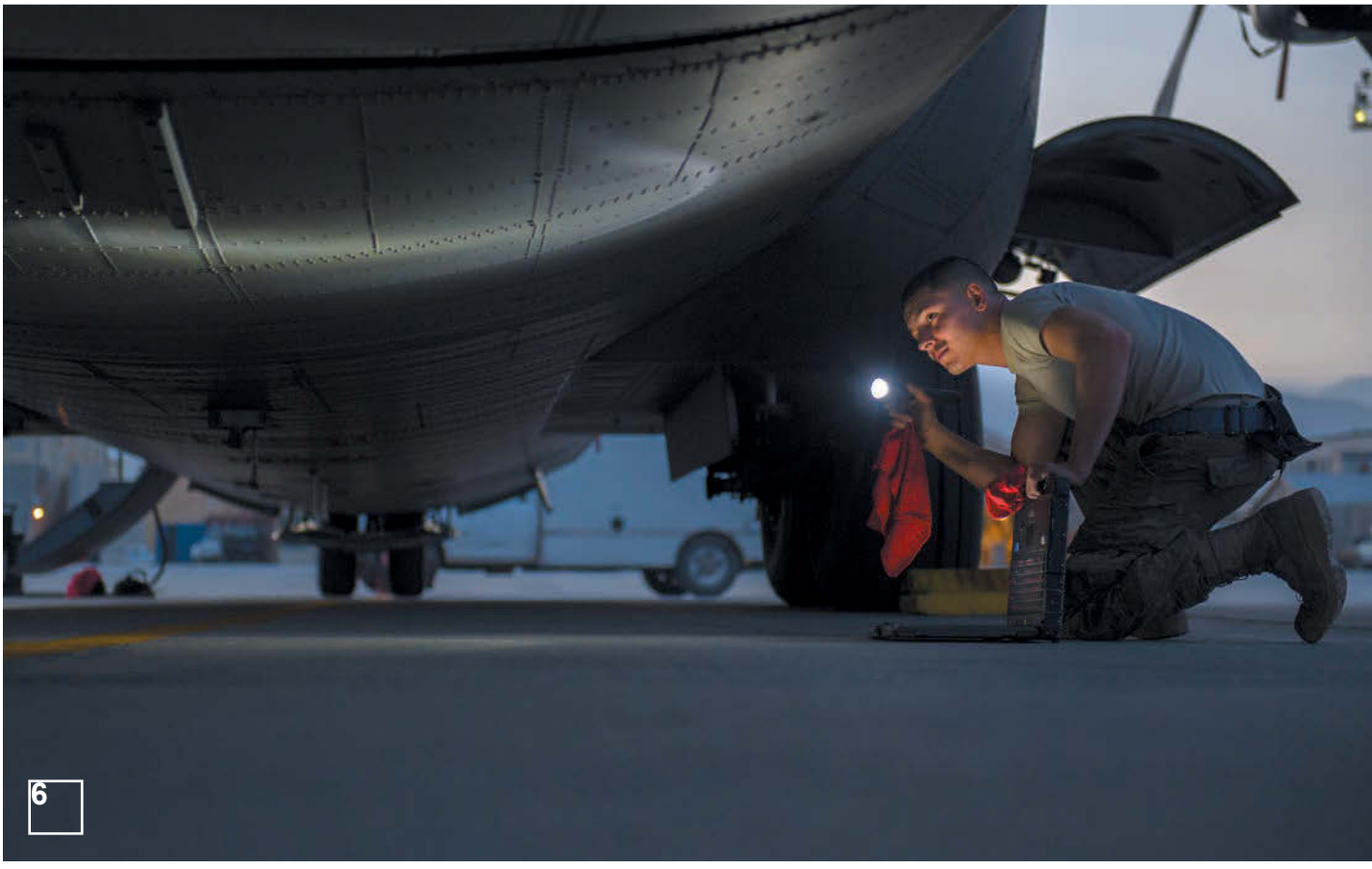
The Air Force's longest deployed unit in Afghanistan passed 15 years in country in January. The 41st Electronic Combat Squadron and the 755th Aircraft Maintenance Squadron of Davis-Monthan AFB, Ariz., have been continuously deployed with their EC-130H Compass Call aircraft since Operation Enduring Freedom began and have been at Bagram since 2004. The Compass Call disrupts enemy command and control by "jamming" electronics. The 41st has flown more than 39,000 hours during 6,800 combat sorties in Afghanistan.

The renewed threat from the Taliban means that as of March, some 15-and-a-half years since combat began, "we are at a stalemate," US Central Command chief Army Gen. Joseph L. Votel told lawmakers in late March. "But stalemates have a tendency to decline over time."



/1/ Members of the 455th Expeditionary Aeromedical Evacuation Squadron transport medical equipment while moving an injured Afghan National Army soldier from Kandahar Airfield to the Craig Joint Theater Hospital at Bagram Airfield on Feb. 22. /2/ TSgt. Miguel Castano, left, SrA. Adam Parizo, and A1C Abram Burkhart repair a section of Bagram's runway on Feb. 1. Constant aircraft traffic wears down the concrete of the base's two huge airstrips. /3/ SrA. Shannon Wilson, a crew chief with the 455th EAMXS, inspects a C-130J Super Hercules for damage on June 4, 2016. /4/ TSgt. Tony Rivera, a crew chief, in the cockpit of a EC-130H Compass Call. Members of his unit have 146 deployments among them. /5/ TSgt. Bob Kaster, a technician for EC-130Hs, displays deployment dates on his office door. /6/ SSgt. Jacob Skjei, 455th Expeditionary Civil Engineer Squadron, smooths out a concrete footer.



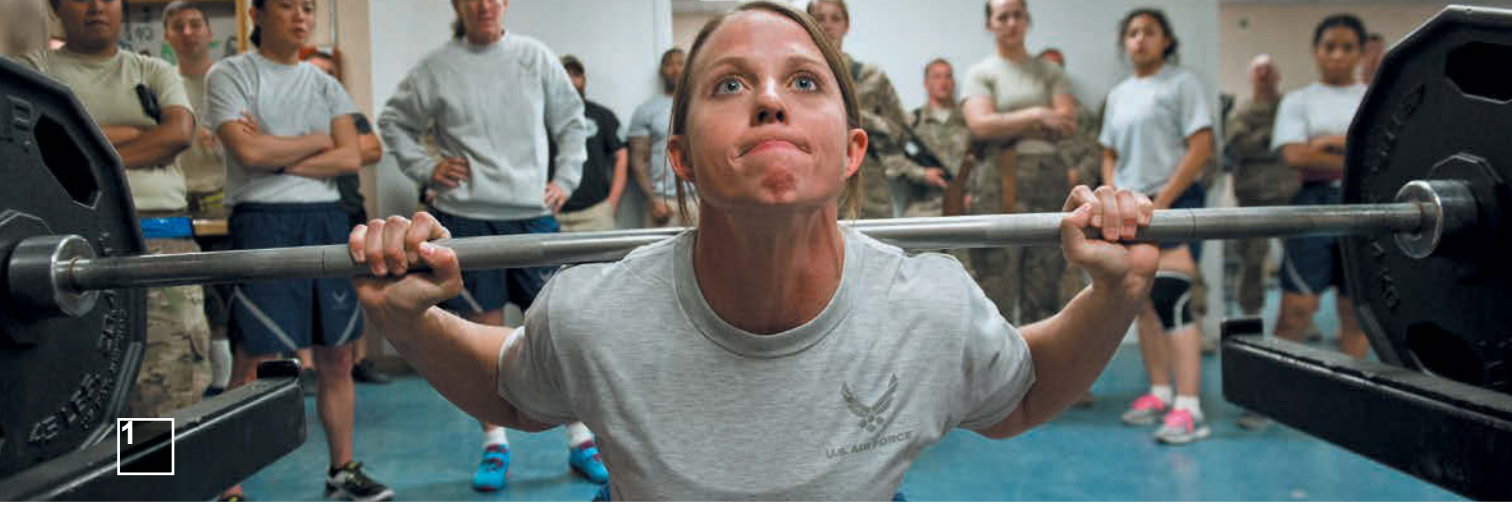


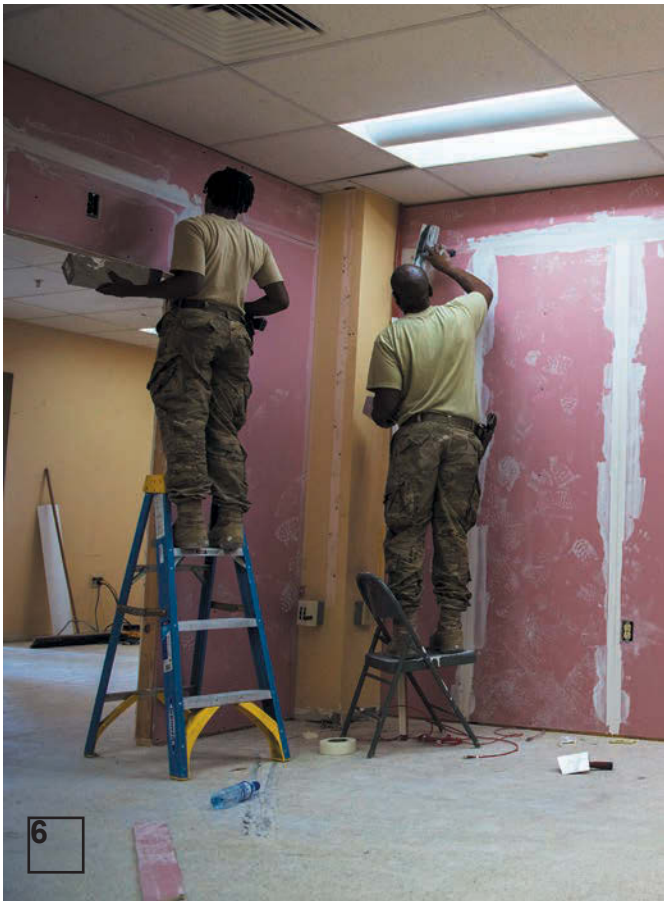
SrA. Justyn M. Freeman/USAF (1,7); SSgt. Katherine Spessa/USAF (2-3, 5); Capt. Korey Fratini/USAF: TSgt. Robert Cloys/USAF

NATO as of early 2017 has a 13,000-member force deployed as part of the International Security Assistance Force for the Resolute Support mission, with its hub at Bagram. The number in Afghanistan peaked at 130,000 in 2011. Those at Bagram not focused on counterterrorism work with the Afghan force to build its capability, and for the US Air Force that involves helping to stand up and assist in the operation of Afghanistan's small but busy fleet.

The Afghan air force has 12 A-29 Super Tucanos, four delivered early this year. The pilots and maintainers are trained in the US at Moody AFB, Ga., and have recently been flying

/1/ SSgt. Amy Teston, 455th EAMXS aerospace ground equipment journeyman, completes a generator voltage check on Sept. 22, 2016. /2/ SrA. Domynic Panto, Kaster, and A1C Mitchell Dillon, play a video game Jan.12 at Bagram. /3/ Capt. Amanda Montague, 774th Expeditionary Airlift Squadron pilot, performs a preflight inspection of her aircraft. /4/ A bugler with the US Forces Afghanistan Band plays taps during a 2016 remembrance ceremony for victims of a Jalalabad Airfield C-130J Super Hercules crash in 2015. /5/ Personnel with the 455th EAMXS Compass Call maintenance unit have a snowball fight as they clear snow under the aircraft. The unit ensured the EC-130 was clear to return to the mission after the base received several inches of snow in February. /6/ SrA. Alec Flores, a crew chief, conducts an inspection of a C-130J Super Hercules in 2016. /7/ SrA. Michael Montalyo, from the 455th Expeditionary Logistics Readiness Squadron Traffic Management Office, checks shipment tags in the cargo yard at Bagram in 2016.





Capt. Korey Fratini/USAF; SSgt. Katherine Spessa/USAF; TSgt. Nicholas Rau/USAF; SrA. Justyn M. Freeman/USAF (4-7)

more combat operations. The Afghan air force also flies US-made MD-530 attack helicopters, C-130 cargo aircraft, and Mi-17 cargo helicopters, among others. All need US support and training to maintain combat capability. While the Afghan forces have a limited training pipeline and have struggled to identify enough candidates, they have been effective in combat.

As of summer 2016, the Super Tucanos have flown two to four combat missions every week. They are "rapidly gaining capability" with help from US trainers and advisors, US Army Gen. John W. Nicholson Jr., commander of the Resolute Support mission, said in a December press briefing.

"It's important to remember that five years ago, when we started building the Afghan security forces, we had about 140,000 US and coalition troops in the country," Nicholson said. "We are now down to less than one-tenth of that. Today it's the Afghan security forces who are responsible for securing their own country, with the assistance of our advisory and [counterterrorism] effort."

The US military's footprint inside Afghanistan has dwindled from its peak during the almost 16-year war, but for the thousands of troops that remain inside the walls of Bagram Airfield, Afghanistan is their temporary home and the misson endures.

/1/ MSgt. Lindsey Glover, 455th EAMXS, pumps iron during a 2016 powerlifting competition. /2/ TSgt. Joe Collett strums a Christmas tune on Dec. 25, 2016. The mission at Bagram did not take a holiday break, but service members took a moment to speak with their families or spend some down time with their units. /3/ Dan Johnson, a contractor with the 455th Expeditionary Mission Support Group, completes a batch of "Dead Elvis" cookies—peanut butter Oreos topped with bacon and chocolate. /4/ SSgt. Tony Tran, 455th Expeditionary Communications Squadron, prepares packages so mail orderlies can pick them up for their units. /5/ Airmen from the 455th EAES are framed and ready for their group photo during a 2016 carnival block party. /6/ A1C Taylor Davis and SSgt. Donald Scott seal drywall joints during a base construction project. /7/ SrA. Michael Van Deusen, 455th Expeditionary Security Forces Squadron, leaves his mine-resistant ambush-protected (MRAP) vehicle during a patrol of Bagram Airfield in 2016.

USAF ALMANAC 2017

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 Brendan McGarry and 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.

Don Stewart illustration

The Air Force in Facts & Figures

2017 USAF Almanac

Air Force Chief of Staff Gen. David Goldfein (left) listens as fire control officer Maj. Travis Tucker explains an AC-130U's weapons.

SrA. Jeff Parkinson/USAF

Structure of the Force

There is considerable variation in how the major commands and subordinate units of the Air Force are organized. This overview describes the Air Force's primary organizational structures.

■ **DEPARTMENT OF DEFENSE (DOD)** A Cabinet agency headed by the Secretary of Defense. It comprises three military departments—Air Force, Army, and Navy—each with a civilian Secretary.

■ **JOINT CHIEFS OF STAFF** 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.

Current Air Force Leaders

■ **SECRETARY OF THE AIR FORCE**
Lisa S. Disbrow (acting): Jan. 20, 2017

■ **AIR FORCE CHIEF OF STAFF**
Gen. David L. Goldfein: July 1, 2016

■ **CHIEF MASTER SERGEANT OF THE AIR FORCE**
CMSAF Kaleth O. Wright: Feb. 17, 2017

■ **DEPARTMENT OF THE AIR FORCE** Headed by the Secretary of the Air Force. Supporting the SECAF are the Secretariat Staff and the Chief of Staff of the Air Force, who oversees the Air Staff, among other duties. The heads of the major commands report to the CSAF.

■ **MAJOR COMMAND** Most Air Force units fall under a majcom, having 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.

■ **WING** The predominant command entity within USAF. The typical Air Force base is built around a wing.

■ **GROUP** Four groups make up a standard wing, covering 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.

■ **SQUADRON** The basic organizational building block of the Air Force. Squadrons generally work under one of the four groups to provide either mission or functional support.

■ **FLIGHTS** Several flights may exist within squadrons.

■ **FOAs, DRUs, AUXILIARY** The Air Force organization also includes field operating agencies (FOAs), carrying out specialized activities; direct reporting units (DRUs), performing specific missions not covered by majcoms; and an auxiliary.

USAF TOTAL FORCE

(As of Sept. 30, 2016)

	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	Estimate FY16	Estimate FY17
Air Force Active Duty										
Officers	64,805	65,496	66,201	65,487	64,932	64,806	62,349	61,004	60,961	62,000
Enlisted	258,092	263,351	263,437	263,542	263,964	261,976	250,104	246,322	252,762	251,000
Cadets	4,482	4,561	4,558	4,341	4,022	3,912	3,879	4,031	4,160	4,000
Total Air Force Active Duty	**327,379**	**333,408**	**334,196**	**333,370**	**332,918**	**330,694**	**316,332**	**311,357**	**317,883**	**317,000**
Civilian Personnel										
Direct Hire (excluding technicians)	124,698	123,106	134,183	145,407	142,047	141,496	129,120	129,985	134,146	133,693
Air National Guard Technicians	22,353	22,391	22,657	22,139	22,859	22,568	22,225	23,448	22,290	22,453
Air Force Reserve Command Technicians	8,857	9,147	10,068	9,397	10,366	9,277	10,429	8,501	9,904	10,151
Total Direct Hire	**155,908**	**154,644**	**166,908**	**176,943**	**175,272**	**173,341**	**161,774**	**161,934**	**166,340**	**166,297**
Indirect Hire	6,515	6,346	6,564	6,776	6,714	6,501	4,823	4,090	4,679	4,490
Total Civilian Personnel	**162,423**	**160,990**	**173,472**	**183,719**	**181,986**	**179,842**	**166,597**	**166,024**	**171,019**	**170,787**
Air National Guard										
Selected Reserve Officers	14,115	14,326	14,389	14,418	14,598	14,731	15,024	15,084	14,593	14,610
Selected Reserve Enlisted	93,564	94,870	93,287	91,267	90,791	90,977	91,356	90,644	90,907	91,090
Total ANG	**107,679**	**109,196**	**107,676**	**105,685**	**105,389**	**105,708**	**106,380**	**105,728**	**105,500**	**105,700**
Air Force Reserve Command										
Selected Reserve Officers	15,169	14,753	14,560	14,535	14,303	14,060	13,817	13,937	14,896	14,370
Selected Reserve Enlisted	52,396	53,233	55,559	56,786	57,125	56,853	55,967	54,557	54,304	54,630
Total AFRC Selected Reserve	**67,565**	**67,986**	**70,119**	**71,321**	**71,428**	**70,913**	**69,784**	**68,494**	**69,200**	**69,000**
Individual Ready Reserve Officers	13,633	12,833	11,692	11,692	11,222	11,222	11,222	7,302	7,492	7,492
IRR Enlisted	35,668	30,349	28,863	28,863	24,271	24,271	24,271	29,449	29,359	29,359
Total AFRC IRR	**49,301**	**43,182**	**40,555**	**40,555**	**35,493**	**35,493**	**35,493**	**36,751**	**36,851**	**36,851**
Total AFRC	**116,866**	**111,168**	**110,674**	**111,876**	**106,921**	**106,406**	**105,277**	**105,245**	**106,051**	**105,851**
Total Ready Reserve	**224,545**	**220,364**	**218,350**	**217,561**	**212,310**	**212,114**	**211,657**	**210,973**	**211,551**	**211,550**

ARMED FORCES MANPOWER TRENDS, END STRENGTH (IN THOUSANDS)

(As of Sept. 30, 2016)

	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	Estimate FY16	Estimate FY17
Active Duty Military										
Air Force	327	333	334	333	333	331	316	311	317	317
Army	544	553	566	566	550	532	508	491	475	460
Marine Corps	199	203	202	201	198	196	188	184	182	182
Navy	332	329	328	325	318	324	326	328	327	323
Total	**1,402**	**1,418**	**1,430**	**1,425**	**1,399**	**1,383**	**1,338**	**1,314**	**1,301**	**1,282**
Guard and Reserve (selected reserve)										
Air National Guard	108	109	108	107	105	106	106	106	106	106
Air Force Reserve	68	68	70	71	71	71	70	68	69	69
Army National Guard	360	358	362	358	358	358	354	350	342	335
Army Reserve	197	205	205	205	201	198	195	199	198	195
Marine Corps Reserve	38	39	39	40	40	40	40	39	39	39
Naval Reserve	68	67	65	66	65	62	59	57	57	58
Total	**839**	**846**	**849**	**847**	**840**	**835**	**824**	**819**	**811**	**802**
Direct-hire Civilian (full-time equivalents)										
Air Force	156	155	167	177	175	173	162	162	166	166
Army	230	247	260	269	250	242	195	194	190	185
Navy/Marine Corps	178	186	195	201	201	197	182	186	191	192
Defense Agencies	108	115	120	125	133	127	185	183	191	190
Total	**672**	**703**	**742**	**772**	**759**	**739**	**724**	**725**	**738**	**733**

First Lt. Andrej Pulver of the 56th Rescue Squadron, RAF Lakenheath, UK, performs a preflight check. More than 27,000 airmen are stationed in Europe.

ACTIVE DUTY AIRMEN BY RANK

(As of Sept. 30, 2016)

Officers	Men	Women	Total
General	11	2	13
Lieutenant General	35	5	40
Major General	82	9	91
Brigadier General	146	7	153
Colonel	2,858	462	3,320
Lieutenant Colonel	8,112	1,473	9,585
Major	10,376	2,526	12,902
Captain	16,443	4,809	21,252
First Lieutenant	5,192	1,709	6,901
Second Lieutenant	5,147	1,557	6,704
Total	**48,402**	**12,559**	**60,961**
Enlisted			
Chief Master Sergeant	2,151	364	2,515
Senior Master Sergeant	3,967	1,028	4,995
Master Sergeant	19,519	4,965	24,484
Technical Sergeant	32,148	7,529	39,677
Staff Sergeant	48,381	11,014	59,395
Senior Airman	48,834	10,716	59,550
Airman First Class	34,912	8,940	43,852
Airman First Class	5,572	1,449	7,021
Airman Basic	8,992	2,281	11,273
Total	**204,476**	**48,286**	**252,762**
Cadets	**3,113**	**1,047**	**4,160**
Total Personnel	**255,991**	**61,892**	**317,883**

NUMBER AND PERCENTAGE OF ACTIVE DUTY AIRMEN BY GENDER

(As of Sept. 30, 2016)

	1950	1960	1970	1980	1990	2000	2010	2016
Officers								
Male	55,474	126,014	125,136	89,156	86,714	57,204	53,838	48,402
Percentage	97.3%	97.2%	96.4%	91.3%	86.7%	82.9%	81.3%	79.4%
Female	1,532	3,675	4,667	8,493	13,331	11,819	12,363	12,559
Percentage	2.7%	2.8%	3.6%	8.7%	13.3%	17.1%	18.7%	20.6%
Total Officers	**57,006**	**129,689**	**129,803**	**97,649**	**100,045**	**69,023**	**66,201**	**60,961**
Enlisted								
Male	350,489	679,412	652,559	399,517	374,385	231,620	212,491	204,476
Percentage	98.9%	99.2%	98.6%	86.8%	86.0%	80.8%	80.7%	80.9%
Female	3,782	5,651	8,987	60,803	60,803	55,011	50,946	48,286
Percentage	1.1%	0.8%	1.4%	13.2%	14.0%	19.2%	19.3%	19.1%
Total Enlisted	**354,271**	**685,063**	**661,546**	**460,320**	**435,188**	**286,631**	**263,437**	**252,762**
Cadets								
Male	0	1,949	4,144	3,907	3,817	3,617	3,592	3,113
Percentage	0.0%	100.0%	100.0%	88.6%	87.3%	84.6%	78.8%	74.8%
Female	0	0	0	504	553	658	966	1,047
Percentage	0.0%	0.0%	0.0%	11.4%	12.7%	15.4%	21.2%	25.2%
Total Cadets	**0**	**1,949**	**4,144**	**4,411**	**4,370**	**4,275**	**4,558**	**4,160**

ACTIVE DUTY AIRMEN BY REGION

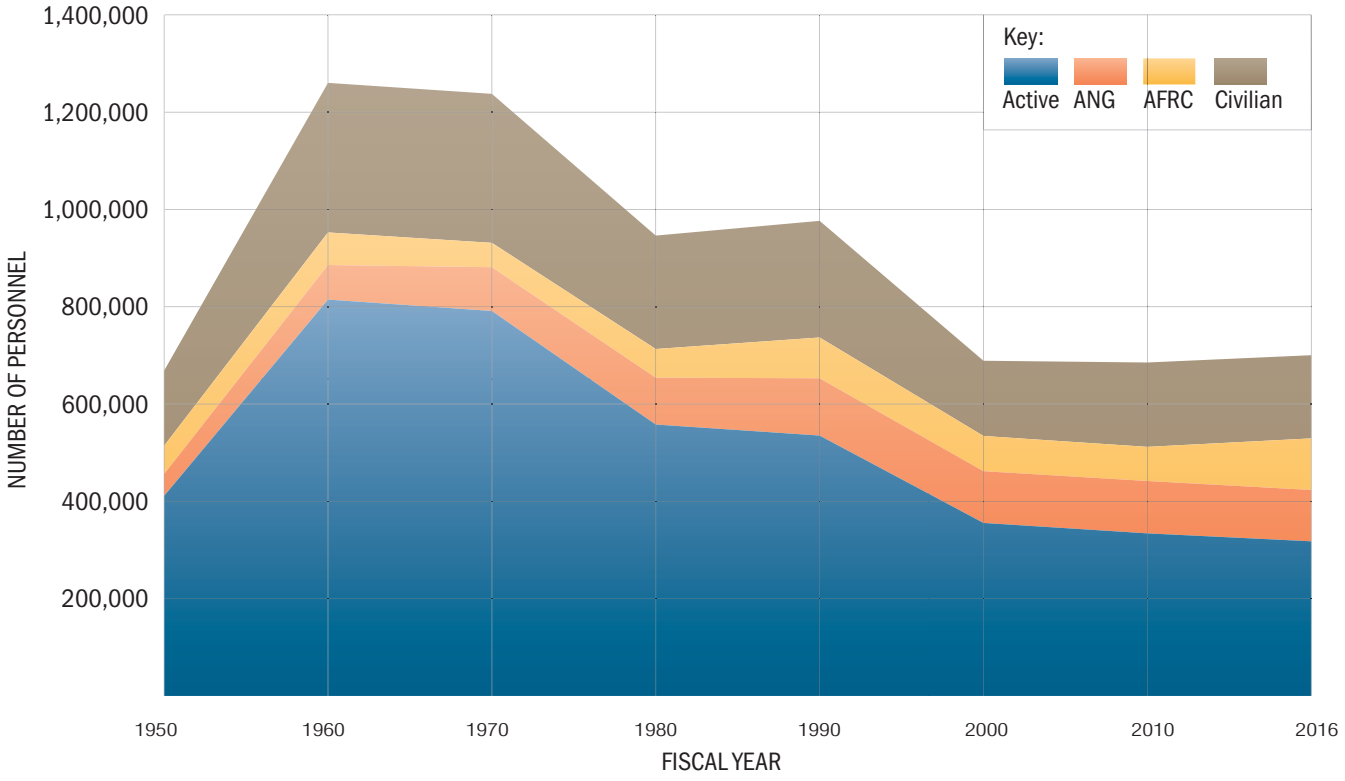
(As of Sept. 30, 2016)

REGIONS	1950	1960	1970	1980	1990	2000	2010	2016
US and its Territories	342,437	633,327	565,098	445,886	418,027	291,260	277,123	254,565
Europe	24,531	104,899	72,937	76,788	69,296	32,901	30,963	27,105
East Asia, Pacific	36,412	50,679	139,666	32,263	33,558	22,030	12,649	19,629
Africa, Mideast, S. Asia	1,491	11,160	608	674	376	8,972	891	7,901
Western Hemisphere	6,266	14,106	5,348	2,211	2,356	345	339	308
Other	140	581	7,692	147	11,620	146	12,231	8,375
Total	**411,277**	**814,752**	**791,349**	**557,969**	**535,233**	**355,654**	**334,196**	**317,883**

These are permanently assigned airmen. Those deployed for operations in Afghanistan, Syria, and Iraq are included in US (transients) and Other totals.

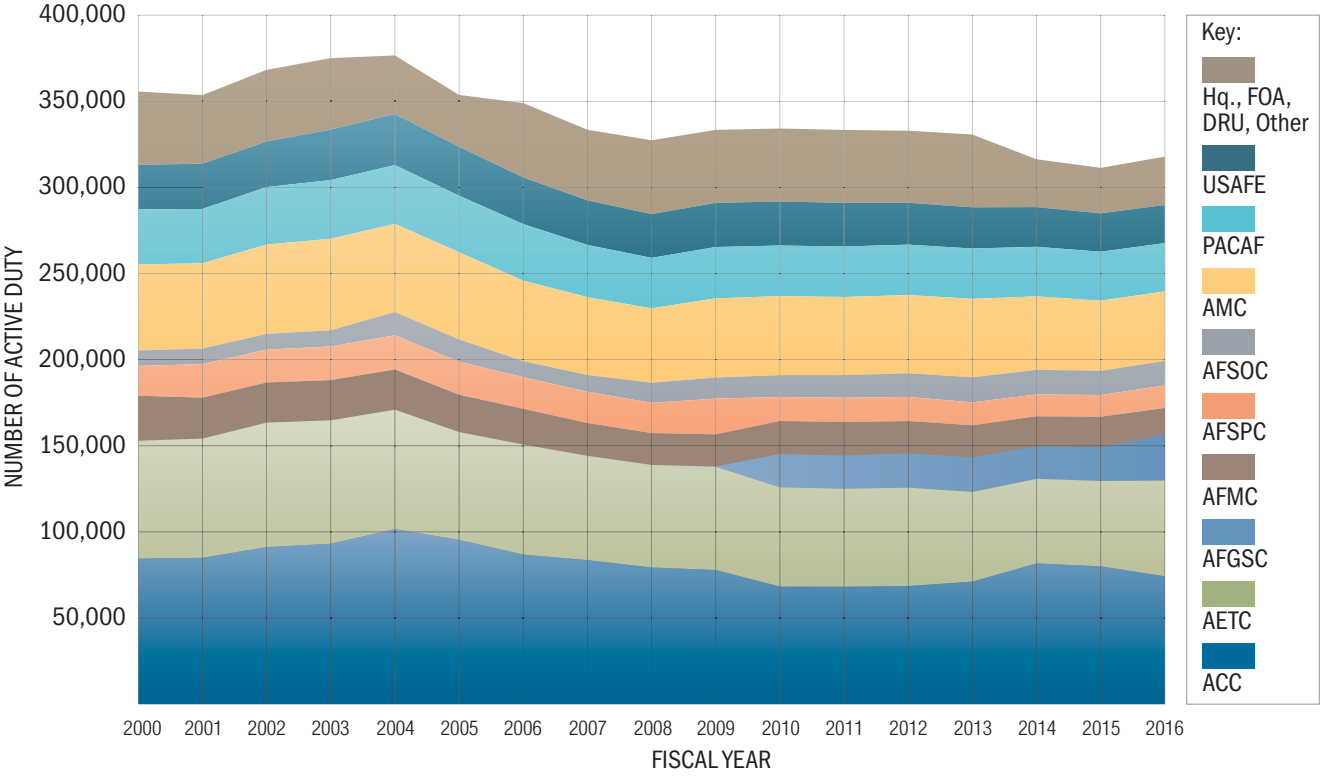
SSgt. Emerson Nuñez/USAF

TOTAL FORCE OVER TIME



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



Data as of Sept. 30.

Crew chief SrA. Peter Espinoza, deployed from Osan AB, South Korea, goes through an A-10 checklist at Clark AB, Philippines. About 28,000 military personnel are assigned to PACAF.

PERSONNEL STRENGTH BY COMMANDS, FOAs, & DRUs

(As of Sept. 30, 2016)

	MILITARY	CIVILIAN	TOTAL
Active Duty Major Commands			
Air Combat Command	74,240	10,610	84,850
Air Education and Training Command	55,577	14,412	69,989
Air Force Global Strike Command	26,677	3,969	30,646
Air Force Materiel Command	15,475	61,941	77,416
Air Force Space Command	13,064	6,880	19,944
Air Force Special Operations Command	14,223	1,732	15,955
Air Mobility Command	40,403	8,191	48,594
Pacific Air Forces	28,003	3,296	31,299
US Air Forces in Europe	22,143	1,662	23,805
Total Major Commands	**289,805**	**112,693**	**402,498**
Field Operating Agencies (FOAs)			
Air Force Agency for Modeling and Simulation	7	13	20
Air Force Audit Agency	0	589	589
Air Force Cost Analysis Agency	12	73	85
Air Force Flight Standards Agency	113	57	170
Air Force Historical Research Agency	0	37	37
Air Force Inspection Agency	90	25	115
Air Force Legal Operations Agency	566	242	808
Air Force Manpower Analysis Agency	117	130	247
Air Force Medical Operations Agency	165	194	359
Air Force Medical Support Agency	190	83	273
Air Force Mortuary Affairs Operations	19	29	48
Air Force Office of Special Investigations	1,487	841	2,328
Air Force Operations Group	39	3	42
Air Force Personnel Center	646	1,412	2,058
Air Force Public Affairs Agency	220	37	257
Air Force Review Boards Agency	14	77	91
Air Force Safety Center	41	64	105
Air National Guard Readiness Center	48	816	864
Total FOAs	**3,774**	**4,722**	**8,496**
Direct Reporting Units (DRUs)			
Air Force District of Washington	3,576	981	4,557
Air Force Operational Test and Evaluation Center	340	237	577
US Air Force Academy	1,984	1,309	3,293
Total DRUs	**5,900**	**2,527**	**8,427**
Other			
Hq. USAF	1,718	2,068	3,786
Other	12,526	44,330	56,856
Cadets	4,160	0	4,160
Total Other	**18,404**	**46,398**	**64,802**
Total Strength	**317,883**	**166,340***	**484,223**

*Civilian total strength excludes 4,679 indirect hires.

ACTIVE DUTY PERSONNEL STRENGTH

(As of Sept. 30, 2016)

YEAR	NUMBER	YEAR	NUMBER
1907	3	1963	869,431
1908	13	1964	856,798
1909	27	1965	824,662
1910	11	1966	887,353
1911	23	1967	897,494
1912	51	1968	904,850
1913	114	1969	862,353
1914	122	1970	791,349
1915	208	1971	755,300
1916	311	1972	725,838
1917	1,218	1973	691,182
1918	195,023	1974	643,970
1919	25,603	1975	612,751
1920	9,050	1976	585,416
1921	11,649	1977	570,695
1922	9,642	1978	569,712
1923	9,441	1979	559,455
1924	10,547	1980	557,969
1925	9,670	1981	570,302
1926	9,674	1982	582,845
1927	10,078	1983	592,044
1928	10,549	1984	597,125
1929	12,131	1985	601,515
1930	13,531	1986	608,199
1931	14,780	1987	607,035
1932	15,028	1988	576,446
1933	15,099	1989	570,880
1934	15,861	1990	535,233
1935	16,247	1991	510,432
1936	17,233	1992	470,315
1937	19,147	1993	444,351
1938	21,089	1994	426,327
1939	23,455	1995	400,409
1940	51,165	1996	389,001
1941	152,125	1997	377,385
1942	764,415	1998	367,470
1943	2,197,114	1999	360,590
1944	2,372,292	2000	355,654
1945	2,282,259	2001	353,571
1946	455,515	2002	368,251
1947	305,827	2003	375,062
1948	387,730	2004	376,616
1949	419,347	2005	353,696
1950	411,277	2006	348,953
1951	788,381	2007	333,495
1952	983,261	2008	327,379
1953	977,593	2009	333,408
1954	947,918	2010	334,196
1955	959,946	2011	333,370
1956	909,958	2012	332,918
1957	919,835	2013	330,694
1958	871,156	2014	316,332
1959	840,435	2015	311,357
1960	814,752	2016	317,883
1961	821,151	2017	317,000
1962	884,025		

2017 number is an estimate.

Capt. Susan Harrington/USAF

MONTHLY MILITARY BASIC RATES OF PAY

(Effective Jan. 1, 2017)

	YEARS OF SERVICE														
	Pay Grade	< 2	2	3	4	6	8	10	12	14	16	18	20	22	24	26
COMMISSIONED OFFICERS	O-10[a]												$15,583	$15,583	$15,583	$15,583
	O-9[a]												14,352	14,559	14,858	15,379
	O-8[a]	10,155	10,488	10,709	10,770	11,046	11,506	11,613	12,050	12,175	12,552	13,097	13,599	13,934	13,934	13,934
	O-7[a]	8,438	8,830	9,011	9,156	9,417	9,675	9,973	10,270	10,569	11,506	12,297	12,297	12,297	12,297	12,360
	O-6[a]	6,399	7,030	7,491	7,491	7,520	7,842	7,885	7,885	8,333	9,125	9,590	10,055	10,319	10,587	11,106
	O-5	5,334	6,009	6,425	6,503	6,763	6,918	7,260	7,511	7,834	8,330	8,565	8,798	9,063	9,063	9,063
	O-4	4,603	5,328	5,684	5,762	6,092	6,446	6,887	7,230	7,469	7,606	7,685	7,685	7,685	7,685	7,685
	O-3	4,047	4,587	4,951	5,398	5,657	5,941	6,124	6,426	6,584	6,584	6,584	6,584	6,584	6,584	6,584
	O-2	3,497	3,982	4,586	4,741	4,839	4,839	4,839	4,839	4,839	4,839	4,839	4,839	4,839	4,839	4,839
	O-1	3,035	3,159	3,819	3,819	3,819	3,819	3,819	3,819	3,819	3,819	3,819	3,819	3,819	3,819	3,819
	O-3E[b]				5,398	5,657	5,941	6,124	6,426	6,681	6,827	7,026	7,026	7,026	7,026	7,026
	O-2E[b]				4,741	4,839	4,993	5,253	5,454	5,604	5,604	5,604	5,604	5,604	5,604	5,604
	O-1E[b]				3,819	4,078	4,229	4,382	4,534	4,741	4,741	4,741	4,741	4,741	4,741	4,741
ENLISTED MEMBERS	E-9[c]							5,053	5,167	5,312	5,481	5,653	5,927	6,159	6,403	6,776
	E-8						4,136	4,319	4,432	4,568	4,715	4,980	5,115	5,344	5,471	5,783
	E-7	2,875	3,138	3,258	3,417	3,542	3,755	3,875	4,089	4,267	4,388	4,517	4,567	4,735	4,825	5,168
	E-6	2,487	2,737	2,857	2,975	3,097	3,373	3,480	3,688	3,752	3,798	3,852	3,852	3,852	3,852	3,852
	E-5	2,278	2,432	2,549	2,669	2,857	3,053	3,214	3,233	3,233	3,233	3,233	3,233	3,233	3,233	3,233
	E-4	2,089	2,196	2,315	2,432	2,536	2,536	2,536	2,536	2,536	2,536	2,536	2,536	2,536	2,536	2,536
	E-3	1,886	2,004	2,126	2,126	2,126	2,126	2,126	2,126	2,126	2,126	2,126	2,126	2,126	2,126	2,126
	E-2	1,793	1,793	1,793	1,793	1,793	1,793	1,793	1,793	1,793	1,793	1,793	1,793	1,793	1,793	1,793
	E-1	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600

Amounts have been rounded to the nearest dollar.
[a]Basic pay for pay grades O-7 through O-10 is limited to $15,583.20. Basic pay for O-6 and below is limited to $12,641.70.
[b]Applicable to O-1 to O-3 with at least four years and one day of Active Duty or more than 1,460 points as an enlisted member.
[c]Basic pay for the Chief Master Sergeant of the Air Force is $8,165.

At a flight safety briefing at Al Udeid AB, Qatar, 1st Lt. Bridget Henry, a critical care nurse, dons a helmet. The Air Force had an Active Duty end strength of 317,883 in 2016.

SrA. Miles Wilson/USAF

AVIATION CAREER INCENTIVE PAY

(Effective Jan. 1, 2017)

Monthly Rate	Years of Service as an Aviation Officer
$125	Two or fewer
156	More than two
188	More than three
206	More than four
650	More than six
840	More than 14
585	More than 22
495	More than 23
385	More than 24
250	More than 25

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

CAREER ENLISTED FLIER INCENTIVE PAY

(Effective Jan. 1, 2017)

Monthly Rate	Years of Aviation Service as an Enlisted Member
$150	Four or fewer
225	More than four
350	More than eight
400	More than 14

HAZARDOUS DUTY PAY

(Effective Jan. 1, 2017)

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

ANNUAL PAY FOR FEDERAL CIVILIANS

(Effective Jan. 1, 2017)

GENERAL SCHEDULE										
Grade	**Step 1**	**Step 2**	**Step 3**	**Step 4**	**Step 5**	**Step 6**	**Step 7**	**Step 8**	**Step 9**	**Step 10**
GS-1	$18,526	$19,146	$19,762	$20,375	$20,991	$21,351	$21,960	$22,575	$22,599	$23,171
GS-2	20,829	21,325	22,015	22,599	22,853	23,525	24,197	24,869	25,541	26,213
GS-3	22,727	23,485	24,243	25,001	25,759	26,517	27,275	28,033	28,791	29,549
GS-4	25,514	26,364	27,214	28,064	28,914	29,764	30,614	31,464	32,314	33,164
GS-5	28,545	29,497	30,449	31,401	32,353	33,305	34,257	35,209	36,161	37,113
GS-6	31,819	32,880	33,941	35,002	36,063	37,124	38,185	39,246	40,307	41,368
GS-7	35,359	36,538	37,717	38,896	40,075	41,254	42,433	43,612	44,791	45,970
GS-8	39,159	40,464	41,769	43,074	44,379	45,684	46,989	48,294	49,599	50,904
GS-9	43,251	44,693	46,135	47,577	49,019	50,461	51,903	53,345	54,787	56,229
GS-10	47,630	49,218	50,806	52,394	53,982	55,570	57,158	58,746	60,334	61,922
GS-11	52,329	54,073	55,817	57,561	59,305	61,049	62,793	64,537	66,281	68,025
GS-12	62,722	64,813	66,904	68,995	71,086	73,177	75,268	77,359	79,450	81,541
GS-13	74,584	77,070	79,556	82,042	84,528	87,014	89,500	91,986	94,472	96,958
GS-14	88,136	91,074	94,012	96,950	99,888	102,826	105,764	108,702	111,640	114,578
GS-15	103,672	107,128	110,584	114,040	117,496	120,952	124,408	127,864	131,320	134,776

SENIOR EXECUTIVE SERVICE

(Effective Jan. 1, 2017)

SES Pay System Structure	Minimum	Maximum
Certified SES performance appraisal system	$124,405	$187,000
Noncertified SES performance appraisal system	$124,406	$172,100

The pay scale does not include locality pay.

HOUSING ALLOWANCE

(Effective Jan. 1, 2017)

Pay Grade	Without Dependents	With Dependents
O-10	$1,655	$2,036
O-9	1,655	2,036
O-8	1,655	2,036
O-7	1,655	2,036
O-6	1,518	1,833
O-5	1,462	1,767
O-4	1,354	1,558
O-3	1,086	1,289
O-2	860	1,100
O-1	739	984
O-3E	1,172	1,385
O-2E	997	1,250
O-1E	867	1,155
E-9	$1,003	1,323
E-8	922	1,220
E-7	850	1,133
E-6	785	1,046
E-5	706	942
E-4	614	818
E-3	571	761
E-2	545	725
E-1	545	725

The Basic Allowance for Housing Reserve Component/Transit (BAH RC/T) is a nonlocality housing allowance for members in particular circumstances, such as reservists on Active Duty for 30 or fewer days or an Active Duty member in transit from overseas.

Airmen play football during the 445th Airlift Wing's Family Day at Wright-Patterson AFB, Ohio, in 2016.

SUBSISTENCE ALLOWANCE

(Effective Jan. 1, 2017)

Officers	Enlisted Members
$254/month	$368/month

The allowance did not increase in 2017 for the first time in years because average food costs in the US remained flat.

TSgt. Patrick O'Reilly/USAF

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Budgets

Some $5 billion was budgeted in 2017 for the F-35A Lightning II.

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

Another difference concerns the value of money. When funding is in **current** or then-year dollars, it is not adjusted for inflation. 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 taken into account 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** establishes or continues a federal program or agency and sets forth guidelines to which it must adhere. **Appropriation** enables federal agencies to spend money for specific purposes.

About the FY18 Budget

President Donald Trump in March released a Fiscal 2018 budget blueprint of $639 billion for the Defense Department, including $574 billion for the base budget and $65 billion for Overseas Contingency Operations. However, as of mid-April, the Pentagon hadn't released its official budget request for the fiscal year beginning Oct. 1. As a result, this year's edition of the almanac uses figures from last year's defense budget (adjusted for inflation), except where the Pentagon's supplemental 2017 budget request provides more current data.

Acronyms and Abbreviations

AEHF	Advanced Extremely High Frequency
AGS	Alliance Ground Surveillance
AMRAAM	Advanced Medium-Range Air-to-Air Missile
AWACS	Airborne Warning and Control System
BM	battle management
C3	command, control, and communications
DCGS	Distributed Common Ground System
DSRP	Defense Space Reconnaissance Program
EELV	Evolved Expendable Launch Vehicle
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
Milcon	Military construction
MilSatComm	Military Satellite Communications
NAOC	National Airborne Operations Center
O&M	operation and maintenance
PAR	Presidential Aircraft Replacement
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

Budget Sources

Congressional Budget Office
cbo.gov
- Topics>>Budget

Defense Department Comptroller
comptroller.defense.gov
- Budget materials by fiscal year
- Links to budget pages for each service

Office of Management and Budget
whitehouse.gov/omb
- Budget
- Links to past budgets, including appendices and historical tables (via GPO)

SSgt. Madelyn Brown/USAF

AIR FORCE BUDGET—A 10-YEAR PERSPECTIVE

(Budget authority in millions of current and constant FY18 dollars; excludes war funding)

CURRENT DOLLARS	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17
Military Personnel	$30,677	$31,847	$33,614	$34,235	$35,131	$34,704	$35,103	$33,617	$33,892	$34,697
O&M	40,957	44,353	42,267	45,820	47,007	42,550	43,196	44,596	44,111	50,189
Procurement	35,136	35,938	35,830	36,277	36,020	30,341	31,259	33,914	41,003	41,736
RDT&E	26,261	26,305	27,700	26,982	26,113	22,766	23,655	23,568	24,476	28,954
Military Construction	2,507	2,591	2,317	1,416	1,468	482	1,291	1,045	1,649	2,181
Family Housing	1,001	990	569	591	490	520	465	328	492	336
Revolving Funds	60	61	64	67	65	45	150	67	63	64
Total	**$136,600**	**$142,086**	**$142,360**	**$145,386**	**$146,295**	**$131,408**	**$135,120**	**$137,134**	**$145,685**	**$158,156**

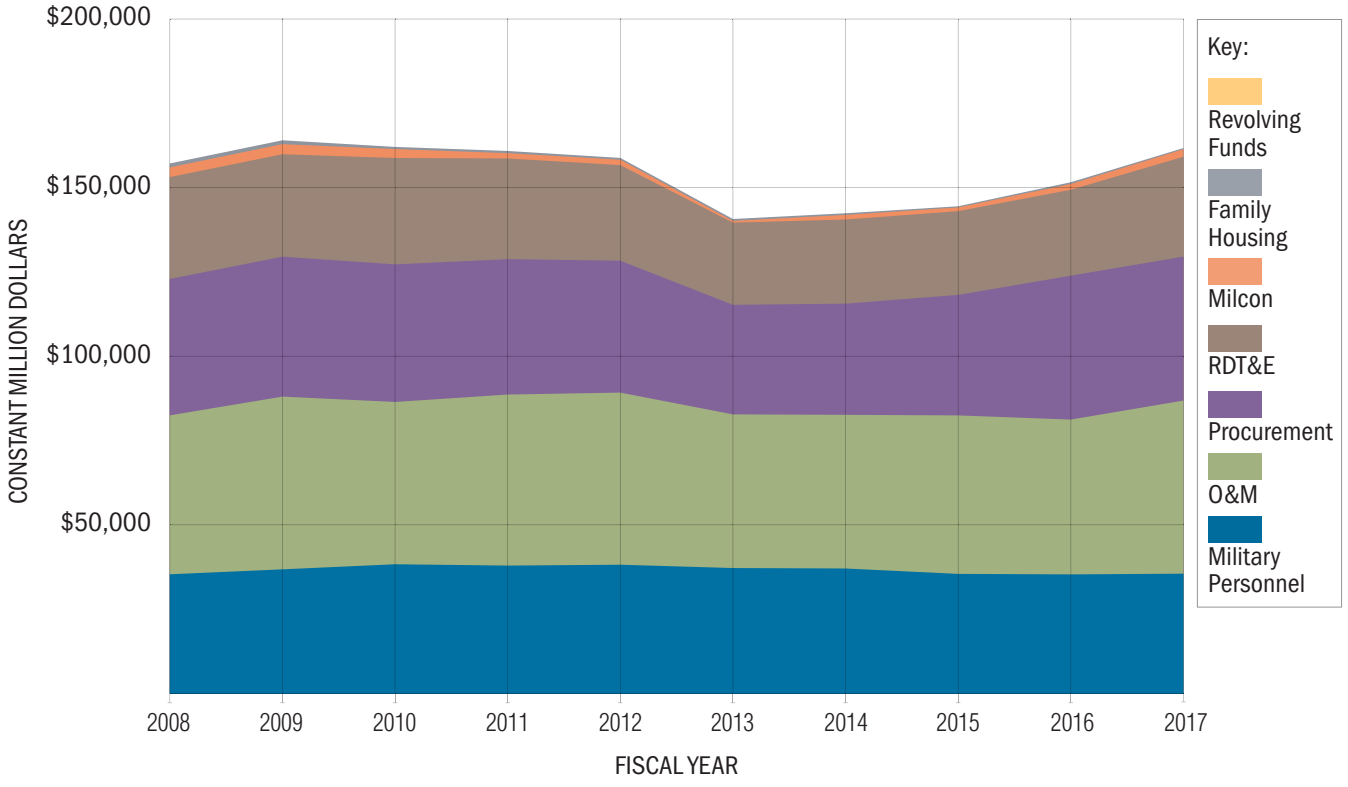
CONSTANT DOLLARS	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17
Military Personnel	$35,309	$36,783	$38,286	$37,898	$38,152	$37,168	$37,034	$35,432	$35,282	$35,495
O&M	47,142	51,228	48,142	50,723	51,050	45,571	45,572	47,004	45,920	51,343
Procurement	40,442	41,508	40,810	40,159	39,118	32,495	32,978	35,745	42,684	42,696
RDT&E	30,226	30,382	31,550	29,869	28,359	24,382	24,956	24,841	25,480	29,620
Military Construction	2,886	2,993	2,639	1,568	1,594	516	1,362	1,101	1,717	2,231
Family Housing	1,152	1,143	648	654	532	557	491	346	512	344
Revolving Funds	69	70	73	74	71	48	158	71	66	65
Total	**$157,227**	**$164,109**	**$162,148**	**$160,942**	**$158,876**	**$140,738**	**$142,552**	**$144,539**	**$151,658**	**$161,794**

PERCENTAGE CHANGE	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17
Military Personnel	-1.6%	4.2%	4.1%	-1.0%	0.7%	-2.6%	-0.4%	-4.3%	-0.4%	0.6%
O&M	2.8%	8.7%	-6.0%	5.4%	0.6%	-10.7%	0.0%	3.1%	-2.3%	11.8%
Procurement	8.0%	2.6%	-1.7%	-1.6%	-2.6%	-16.9%	1.5%	8.4%	19.4%	0.0%
RDT&E	4.4%	0.5%	3.8%	-5.3%	-5.1%	-14.0%	2.4%	-0.5%	2.6%	16.3%
Military Construction	6.2%	3.7%	-11.8%	-40.6%	1.7%	-67.6%	163.8%	-19.1%	55.9%	30.0%
Family Housing	-49.0%	-0.8%	-43.3%	1.0%	-18.7%	4.7%	-11.9%	-29.5%	48.2%	-32.9%
Revolving Funds	32.0%	2.0%	3.5%	1.8%	-4.8%	-31.7%	228.4%	-55.4%	-7.1%	-0.2%
Total	**2.7%**	**4.4%**	**-1.2%**	**-0.7%**	**-1.3%**	**-11.4%**	**1.3%**	**1.4%**	**4.9%**	**6.7%**

Numbers do not add due to rounding.

10-YEAR SPENDING TREND BY CATEGORY

(Budget authority in millions of constant FY18 dollars)



DEFENSE BUDGET AUTHORITY

(In billions)

	Actual	Enacted	Planned				
	2015	2016	2017	2018	2019	2020	2021
No War Costs, Current Dollars	$497.3	$521.7	$549.6	$556.7	$564.8	$570.4	$585.2
No War Costs, Constant FY18 Dollars	524.2	543.1	562.2	556.7	551.8	543.6	543.7
With War Costs, Current Dollars	560.4	580.3	619.2	626.4*	634.5*	640.1*	654.9*
With War Costs, Constant FY18 Dollars	590.7	604.1	633.4	626.4*	619.9*	610.0*	608.4*

*Includes placeholder value of $69.7 billion in war funding.

SERVICE AND AGENCY SHARES OF BASE DOD BUDGET

(Budget authority in billions of constant FY18 dollars)

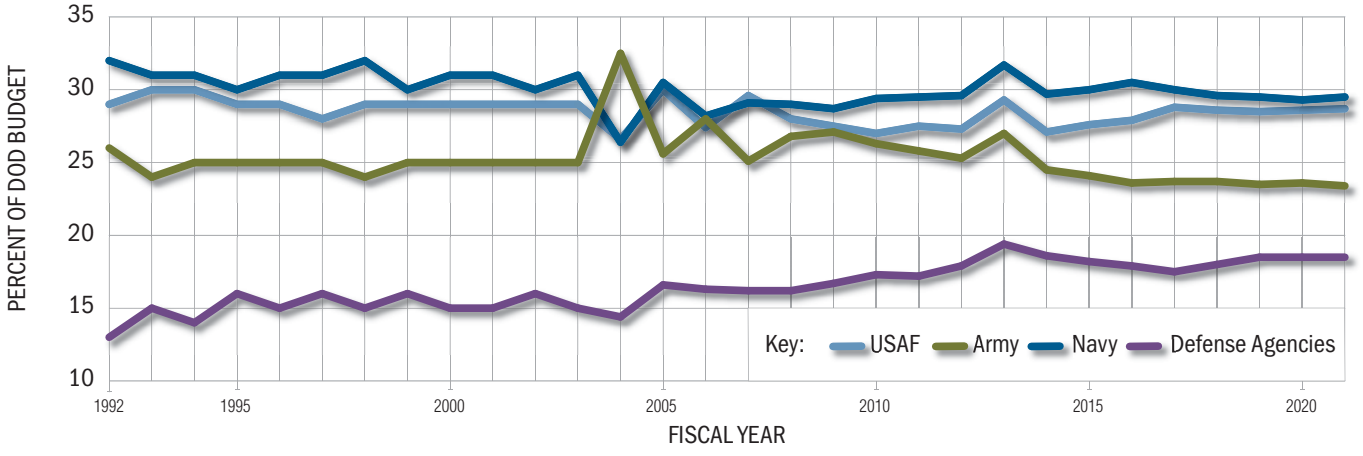
			Planned				
	2015	2016	2017	2018	2019	2020	2021
Constant Dollars							
Air Force	$144.5	$151.7	$161.8	$159.2	$157.3	$155.4	$155.8
Army	126.5	128.3	133.3	132.1	129.8	128.1	127.1
Navy/Marine Corps	157.5	165.9	168.5	165.0	162.7	159.3	160.2
Defense Agencies	95.6	97.2	98.6	100.4	102.1	100.7	100.7
Total	**$524.2**	**$543.1**	**$562.2**	**$556.7**	**$551.8**	**$543.6**	**$543.7**
Percentages							
Air Force	27.6%	27.9%	28.8%	28.6%	28.5%	28.6%	28.7%
Army	24.1%	23.6%	23.7%	23.7%	23.5%	23.6%	23.4%
Navy/Marine Corps	30.0%	30.5%	30.0%	29.6%	29.5%	29.3%	29.5%
Defense Agencies	18.2%	17.9%	17.5%	18.0%	18.5%	18.5%	18.5%

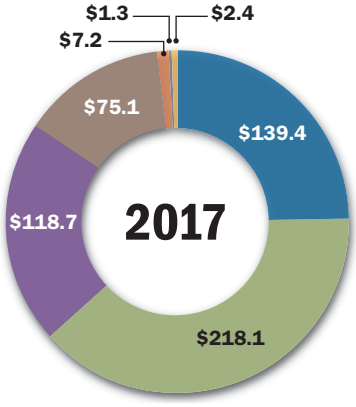
USAF shares above include non-Blue funding. Outyears estimates based on FY18 shares.

USAF's Blue-only Share			
Dollars	$113.2	$121.9	$120.4
Percentages	21.6%	22.4%	21.4%

The Air Force budget includes Blue dollars, money for USAF programs, and non-Blue dollars, money (such as some intelligence- and space-related funding) USAF does not manage but that simply passes through Air Force accounts.

SERVICE AND AGENCY PERCENTAGE OF BASE DOD BUDGET





CUTTING THE PIE: WHO GETS WHAT

(Budget authority in billions of constant FY18 dollars)

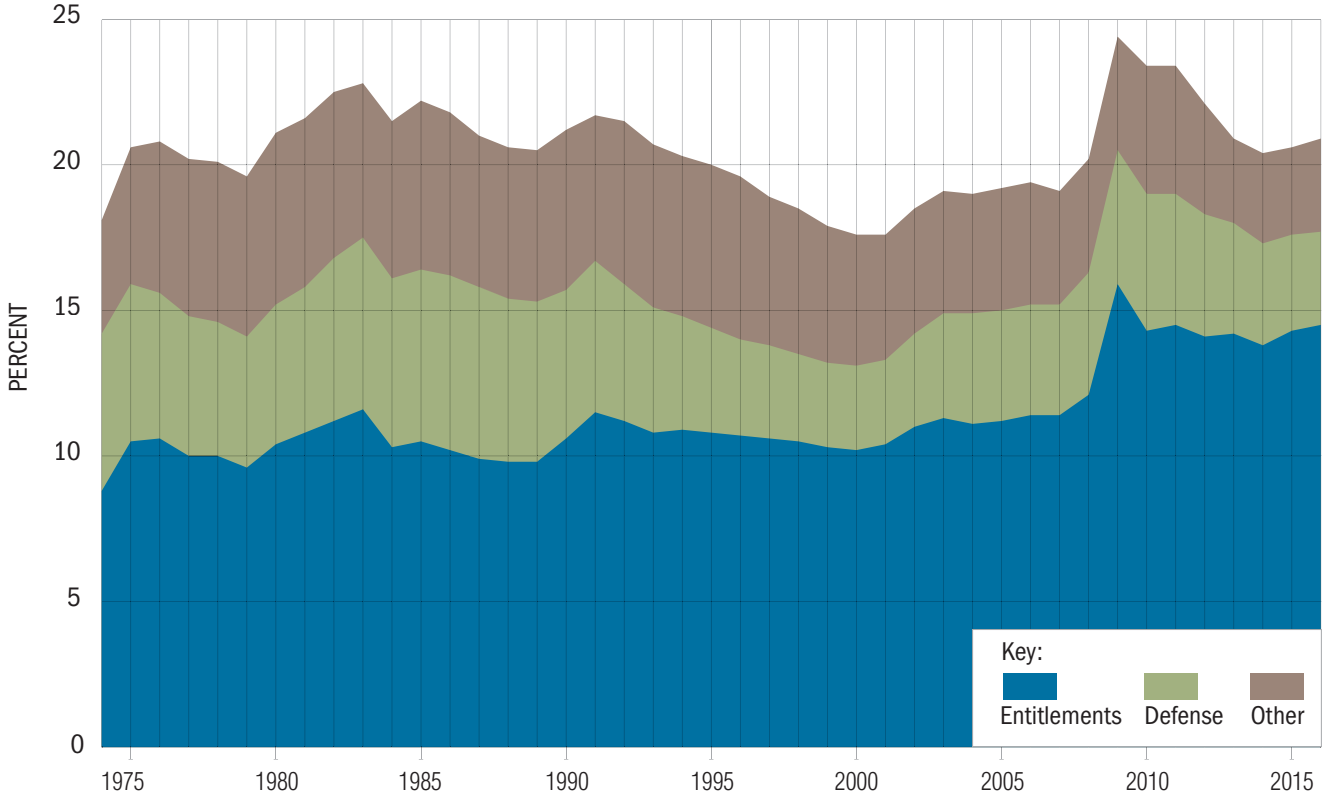
	2015	2016	2017	2018	2019	2020	2021
Military Personnel	$142.2	$140.8	$139.4	$137.9	$136.9	$136.7	$136.3
O&M	206.9	205.6	218.1	219.0	219.7	218.5	217.0
Procurement	99.0	115.2	118.7	115.3	113.4	113.0	115.4
RDT&E	66.9	71.6	75.1	75.2	73.3	67.9	66.9
Military Construction	5.7	7.2	7.2	7.9	6.9	5.9	6.6
Family Housing	1.2	1.4	1.3	1.4	1.5	1.3	1.4
Revolving Funds	2.3	1.2	2.4	0.1	0.1	0.1	0.2
Total	**$524.2**	**$543.1**	**$562.2**	**$556.7**	**$551.8**	**$543.6**	**$543.7**

FEDERAL BUDGET OUTLAY CATEGORIES AS PERCENTAGE OF GDP

YEAR	TOTAL OUTLAYS	DEFICIT/ SURPLUS	ENTITLEMENTS	DEFENSE
1974	18.1	-0.5	8.8	5.4
1975	20.6	-3.4	10.5	5.4
1976	20.8	-3.9	10.6	5.0
1977	20.2	-2.5	10.0	4.8
1978	20.1	-2.4	10.0	4.6
1979	19.6	-1.5	9.6	4.5
1980	21.1	-2.6	10.4	4.8
1981	21.6	-2.4	10.8	5.0
1982	22.5	-3.6	11.2	5.6
1983	22.8	-5.9	11.6	5.9
1984	21.5	-4.7	10.3	5.8
1985	22.2	-5.2	10.5	5.9
1986	21.8	-5.2	10.2	6.0
1987	21.0	-3.5	9.9	5.9
1988	20.6	-3.7	9.8	5.6
1989	20.5	-3.7	9.8	5.5
1990	21.2	-4.7	10.6	5.1
1991	21.7	-5.3	11.5	5.2
1992	21.5	-5.3	11.2	4.7
1993	20.7	-4.4	10.8	4.3
1994	20.3	-3.6	10.9	3.9
1995	20.0	-3.0	10.8	3.6
1996	19.6	-2.2	10.7	3.3
1997	18.9	-1.2	10.6	3.2
1998	18.5	-0.3	10.5	3.0
1999	17.9	-0.0	10.3	2.9
2000	17.6	**+0.9**	10.2	2.9
2001	17.6	-0.3	10.4	2.9
2002	18.5	-2.9	11.0	3.2
2003	19.1	-4.8	11.3	3.6
2004	19.0	-4.7	11.1	3.8
2005	19.2	-3.8	11.2	3.8
2006	19.4	-3.2	11.4	3.8
2007	19.1	-2.4	11.4	3.8
2008	20.2	-4.4	12.1	4.2
2009	24.4	-10.8	15.9	4.6
2010	23.4	-9.3	14.3	4.7
2011	23.4	-8.9	14.5	4.5
2012	22.1	-7.2	14.1	4.2
2013	20.9	-4.4	14.2	3.8
2014	20.4	-3.0	13.8	3.5
2015	20.6	-2.6	14.3	3.3
2016	20.9	-3.4	14.5	3.2

This data is based on figures from the the White House Office of Management and Budget.

FEDERAL BUDGET OUTLAY CATEGORIES AS PERCENTAGE OF GDP



Source: "The Budget and Economic Outlook: 2017 to 2027," Congressional Budget Office, January 2017.

Above: B-52s average 55 years old and had $78 million budgeted for RDT&E in 2017. Right: KC-46A tankers, such as this one refueling an F-16, are still in testing and had a $262 million RDT&E budget for 2017.

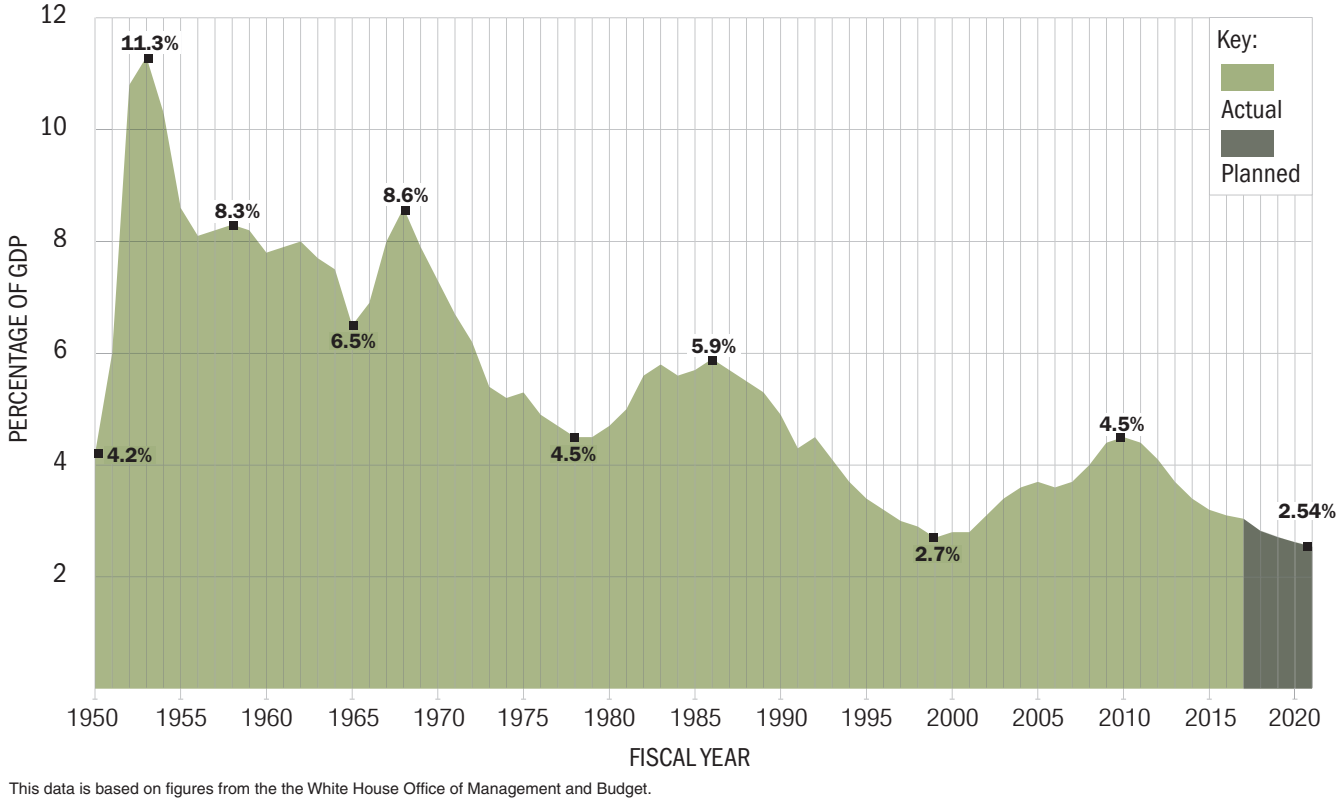
DEFENSE OUTLAYS

(In billions)

	2015	2016	Planned 2017	2018	2019	2020	2021
Current Dollars	$562.5	$576.3	$586.8	$568.6	$569.9	$575.3	$582.0
Constant FY18 Dollars	$592.9	$599.9	$600.3	$568.6	$556.8	$548.3	$540.7

This data is based on figures from the the White House Office of Management and Budget.

DEFENSE OUTLAYS AS A SHARE OF GROSS DOMESTIC PRODUCT



This data is based on figures from the the White House Office of Management and Budget.

SSgt. Benjamin Gonsier/USAF; Paul Weatherman/Boeing

MAJOR USAF PROGRAMS RDT&E

(Current million dollars)

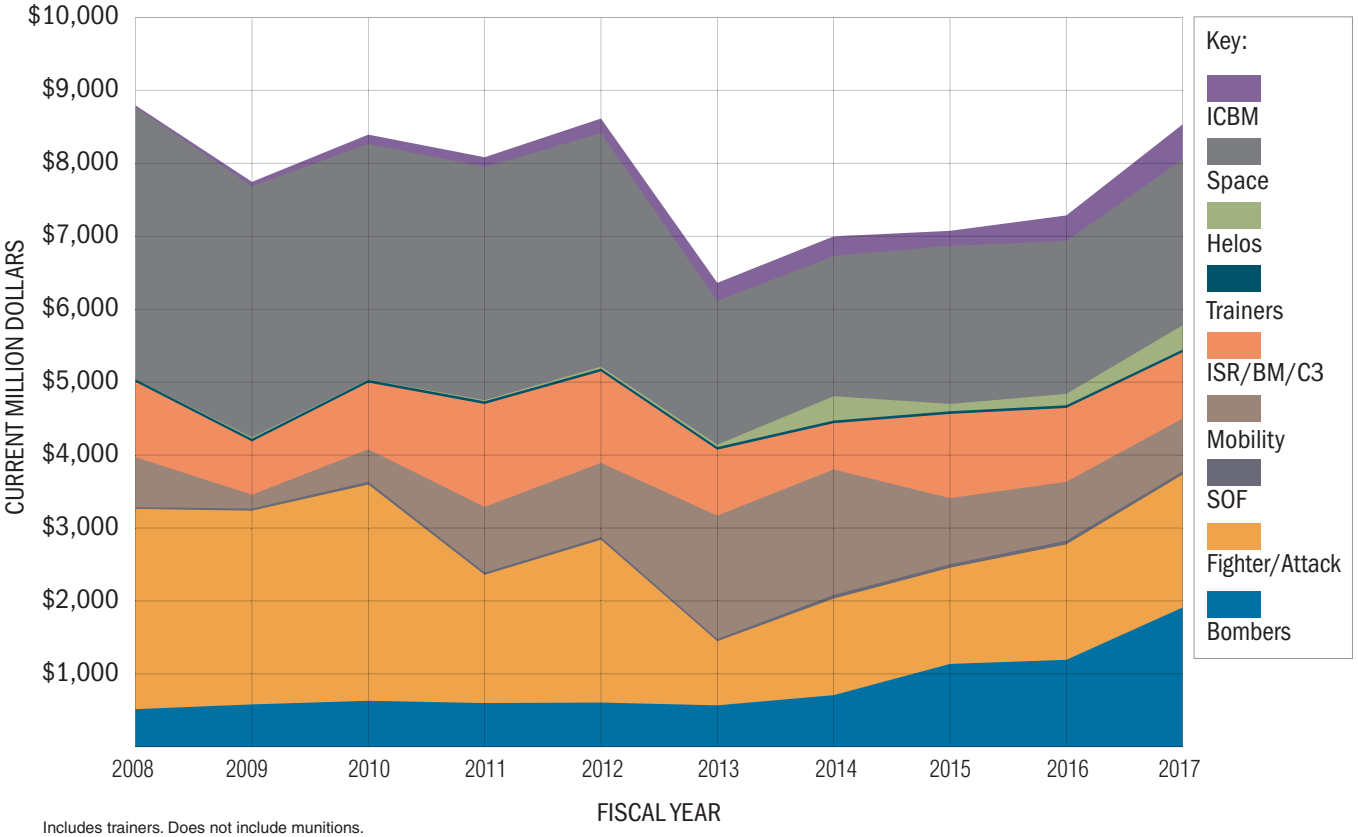
MAJOR USAF PROGRAMS PROCUREMENT

(Current million dollars)

	PROGRAM	Enacted 2016	2017	2018	Enacted 2016	2017	2018
BOMBER	B-1B Lancer	$2.2	$5.8	$17.9	$114.1	$116.3	$97.8
	B-2A Spirit	380.1	468.1	487.3	38.8	43.5	38.7
	B-21 Raider	736.2	1,358.3	2,167.5	0.0	0.0	0.0
	B-52H Stratofortress	74.5	78.3	140.3	150.8	137.1	133.3
FIGHTER/ ATTACK	A-10C Thunderbolt II	16.2	14.9	13.4	0.0	25.1	0.0
	F-15C/D/E Eagle/Strike Eagle	386.7	613.4	410.8	602.2	108.7	539.8
	F-16C/D Fighting Falcon	166.3	132.8	235.9	19.1	112.5	170.7
	F-22A Raptor	372.2	457.9	423.0	117.0	211.5	185.9
	F-35A Lightning II	640.9	603.5	486.8	5,790.2	4,982.2	5,765.9
HELO	HH-60G/U Pave Hawk	156.1	319.3	453.5	67.1	91.4	75.9
	UH-1N Iroquois	0.0	14.1	19.7	2.5	18.3	171.4
ICBM	Minuteman III	349.0	481.4	437.9	50.3	85.8	104.1
ISR/BM/C3	Air & Space Ops Center	68.7	66.5	17.8	24.8	46.1	53.2
	Airborne Recon Systems	60.1	3.8	3.4	0.0	0.0	0.0
	Airborne Sigint Enterprise	112.8	90.8	128.6	0.0	0.0	0.0
	DCGS	51.0	42.0	52.7	177.0	170.0	165.9
	E-3B/C/G Sentry (AWACS)	131.8	86.6	121.1	191.1	312.8	258.3
	E-4B NAOC	76.8	30.9	20.6	19.9	53.3	32.8
	E-8C STARS	44.3	128.0	414.0	18.0	6.2	10.7
	EC-130H/J Compass Call/Commando Solo	14.2	13.7	14.0	97.0	130.3	102.0
	Endurance UAV	5.0	0.0	0.0	0.0	0.0	0.0
	MQ-1B Predator	0.0	0.0	0.0	3.2	0.0	0.0
	MQ-9A Reaper	122.7	151.4	164.0	816.5	829.5	453.1
	NATO AGS	138.4	38.9	0.0	0.0	0.0	0.0
	RC-135S/U/V/W	0.0	0.0	0.0	165.7	211.4	201.2
	RQ-4B Global Hawk	188.1	256.3	321.8	79.9	45.1	113.9
	U-2S Dragon Lady	34.5	37.2	6.9	22.1	36.1	26.6
MOBILITY	C-5A/B/C/M Galaxy	22.9	66.1	46.7	2.6	24.2	39.9
	C-17A Globemaster III	48.8	12.4	71.6	58.8	45.1	109.9
	C-130H Hercules	34.0	15.6	90.7	136.7	9.2	76.1
	C-130J Super Hercules	25.0	16.8	18.3	921.3	308.1	154.7
	KC-10A Extender	1.8	0.0	0.0	5.6	4.6	3.5
	KC-46A Pegasus	592.4	261.7	21.2	2,350.6	2,884.6	3,043.4
	PAR	82.4	351.2	625.6	0.0	0.0	0.0
MUNITION	AGM-158A JASSM	9.8	30.0	20.3	425.6	431.6	440.5
	AIM-9X Sidewinder	43.4	52.9	44.8	198.2	127.4	114.2
	AIM-120 AMRAAM	46.2	62.5	61.1	380.0	350.1	445.5
	GBU-31/32/38 JDAM	0.0	9.9	14.9	534.0	707.1	204.0
	GBU-39 SDB	29.1	54.8	47.4	135.1	275.5	93.0
	AGM-114 Hellfire	0.0	0.0	0.0	697.7	179.1	34.8
SOF	AC-130H/J/U/W	0.0	0.0	0.0	0.0	0.0	0.0
	CV-22B Osprey	27.8	16.7	17.5	126.5	63.4	65.9
	HC/MC-130H/J/P	10.8	14.0	27.5	1,352.7	980.3	690.7
	Tactical Air Control Party Modifications	12.4	11.8	10.6	0.0	0.0	0.0
SPACE	AEHF	228.1	259.1	237.8	327.4	645.6	56.9
	Counterspace Systems	24.1	34.8	40.8	43.1	27.0	22.7
	Cyberspace	117.4	232.6	306.3	98.5	146.9	226.2
	DSRP	0.0	0.0	0.0	128.7	0.0	0.0
	EELV	227.8	296.6	296.7	1,250.9	1,506.4	1,426.6
	GPS	671.4	813.3	599.2	178.4	49.4	763.7
	Joint Space Ops Center	80.7	72.9	62.8	0.0	0.0	0.0
	MilSatCom	71.9	50.8	24.5	35.5	41.8	33.0
	SBIRS	291.5	182.0	444.2	542.7	362.5	933.2
	Space Control Technology	4.1	7.5	7.8	0.0	0.0	0.0
	Space Fence	240.7	168.4	50.2	0.0	0.0	0.0
	Space Situation Awareness	61.6	82.7	119.9	0.0	0.0	0.0
	Spacelift Range System	25.8	30.4	29.8	103.3	123.1	123.6
	Wideband Global SATCOM	52.2	41.6	14.4	74.5	86.3	90.7
	GRAND TOTAL	**$7,412.8**	**$8,743.2**	**$9,919.3**	**$18,675.6**	**$17,152.6**	**$17,893.9**

10 YEARS OF RDT&E FUNDING FOR USAF MAJOR PROGRAMS BY CATEGORY

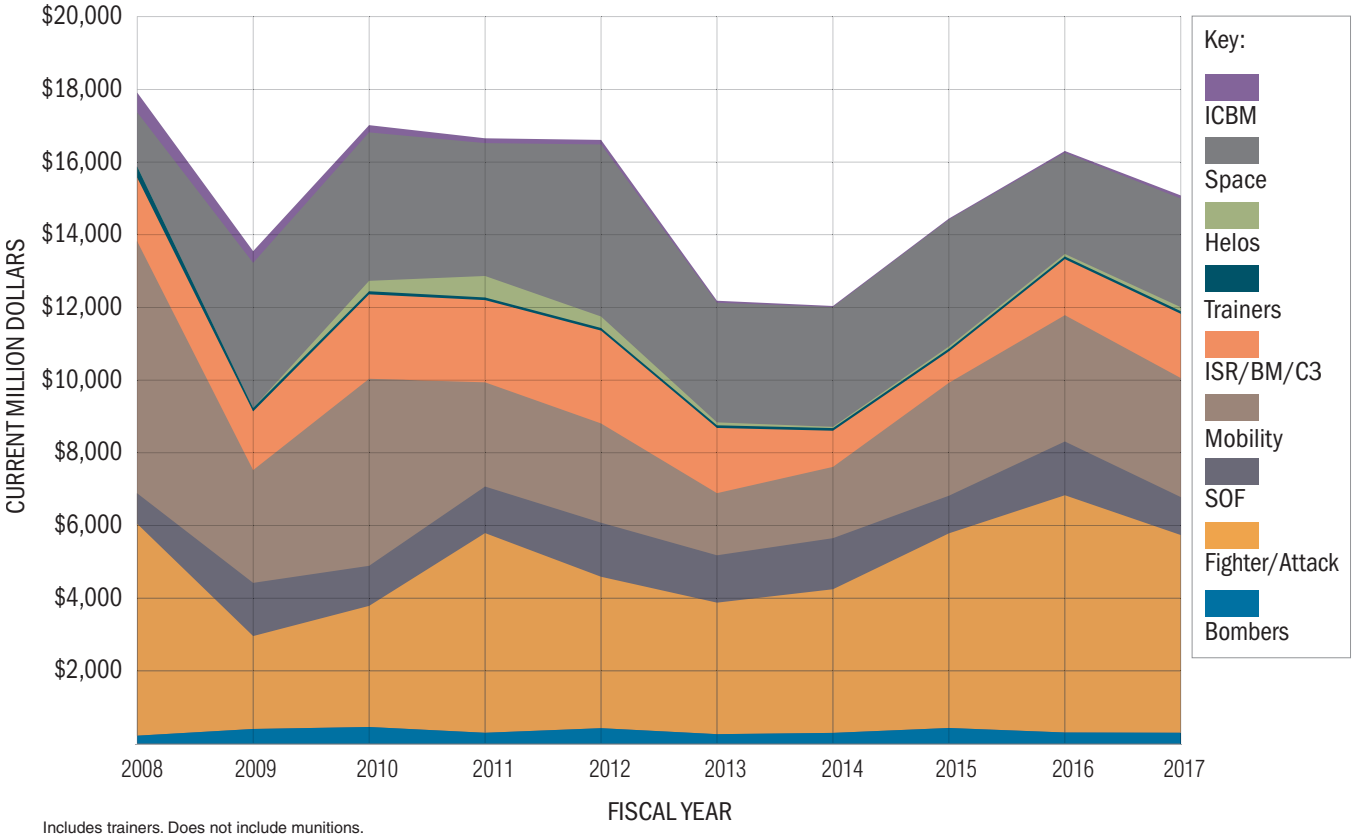
(Current million dollars)



Includes trainers. Does not include munitions.

10 YEARS OF PROCUREMENT FUNDING FOR USAF MAJOR PROGRAMS BY CATEGORY

(Current million dollars)



Includes trainers. Does not include munitions.

AIRCRAFT TOTAL ACTIVE INVENTORY (TAI)

(As of Sept. 30, 2016)

	ACTIVE	ANG	AFRC	TOTAL FORCE
Bomber				
B-1B Lancer	62	0	0	62
B-2A Spirit	20	0	0	20
B-52H Stratofortress	58	0	18	76
Total	**140**	**0**	**18**	**158**
Fighter/Attack				
A-10C Thunderbolt II	143	85	55	283
F-15C Eagle	89	123	0	212
F-15D Eagle	9	15	0	24
F-15E Strike Eagle	220	0	0	220
F-16C Fighting Falcon	450	289	54	793
F-16D Fighting Falcon	109	45	2	156
F-22A Raptor	166	20	0	186
F-35A Lightning II	96	0	0	96
Total	**1,282**	**577**	**111**	**1,970**
Special Operations Forces				
AC-130J Ghostrider	3	0	0	3
AC-130U Spooky	16	0	0	16
AC-130W Stinger II	12	0	0	12
CV-22B Osprey	49	0	0	49
MC-130H Combat Talon II	17	0	0	17
MC-130J Commando II	35	0	0	35
MC-130P Combat Shadow	0	4	0	4
Total	**132**	**4**	**0**	**136**
ISR/BM/C3				
E-3B Sentry (AWACS)	16	0	0	16
E-3C Sentry (AWACS)	4	0	0	4
E-3G Sentry (AWACS)	11	0	0	11
E-4B NAOC	4	0	0	4
E-8C JSTARS	0	16	0	16
E-9A Widget	2	0	0	2
E-11A BACN	4	0	0	4
EC-130H Compass Call	14	0	0	14
EC-130J Commando Solo	0	7	0	7
MC-12W Liberty	4	0	0	4
MQ-1B Predator	96	33	0	129
MQ-9A Reaper	181	14	0	195
NC-135W (test bed)	1	0	0	1
OC-135B Open Skies	2	0	0	2
RC-26B Condor	0	11	0	11
RC-135S Cobra Ball	3	0	0	3
RC-135U Combat Sent	2	0	0	2
RC-135V Rivet Joint	8	0	0	8
RC-135W Rivet Joint	12	0	0	12
RQ-4B Global Hawk	33	0	0	33
TC-135W (trainer)	3	0	0	3
TE-8A	0	1	0	1
TU-2S (trainer)	5	0	0	5
U-2S Dragon Lady	27	0	0	27
WC-130H Hercules	0	7	0	7
WC-130J Hercules	0	0	10	10
WC-135C Constant Phoenix	1	0	0	1
WC-135W Constant Phoenix	1	0	0	1
Total	**434**	**89**	**10**	**533**

	ACTIVE	ANG	AFRC	TOTAL FORCE
Tanker				
HC-130J Combat King II	19	0	0	19
HC-130N King	2	6	0	8
HC-130P King	0	3	2	5
KC-10A Extender	59	0	0	59
KC-135R Stratotanker	126	148	70	344
KC-135T Stratotanker	30	24	0	54
Total	**236**	**181**	**72**	**489**
Transport				
C-5A Galaxy	0	0	5	5
C-5B Galaxy	0	0	4	4
C-5C Galaxy	1	0	0	1
C-5M Super Galaxy	35	0	3	38
C-12C Huron	16	0	0	16
C-12D Huron	6	0	0	6
C-12F Huron	3	0	0	3
C-12J Huron	4	0	0	4
C-17A Globemaster III	170	34	18	222
C-20B Gulfstream	3	0	0	3
C-20H Gulfstream	2	0	0	2
C-21A Learjet	25	2	0	27
C-32A Air Force Two	4	0	0	4
C-32B Air Force Two	0	2	0	2
C-37A Gulfstream V	9	0	0	9
C-37B Gulfstream V	3	0	0	3
C-40B Clipper	4	0	0	4
C-40C Clipper	0	3	4	7
C-130H Hercules	16	145	57	218
C-130J Hercules	81	16	10	107
LC-130H Hercules	0	10	0	10
VC-25A Air Force One	2	0	0	2
Total	**384**	**212**	**101**	**697**
Helicopter				
HH-60G Pave Hawk	66	17	15	98
HH-60U Pave Hawk	3	0	0	3
TH-1H Iroquois	28	0	0	28
UH-1N Iroquois	63	0	0	63
Total	**160**	**17**	**15**	**192**
Trainer				
T-1A Jayhawk	178	0	0	178
T-6A Texan II	444	0	0	444
T-38A Talon	53	0	0	53
(A)T-38B Talon	6	0	0	6
T-38C	445	0	0	445
T-41D Mescalero	4	0	0	4
T-51A	3	0	0	3
T-53A	24	0	0	24
UV-18B Twin Otter	3	0	0	3
Gliders	34	0	0	34
Total	**1,194**	**0**	**0**	**1,194**
GRAND TOTAL	**3,962**	**1,080**	**327**	**5,369**

Total active inventory (TAI): aircraft assigned to operating forces for mission, training, test, or maintenance. Includes primary, backup, and attrition reserve aircraft. For other aircraft acronyms, see Gallery of Weapons.

TOTAL NUMBER OF AIRCRAFT IN SERVICE OVER TIME

(As of Sept. 30, 2016)

TYPE OF AIRCRAFT—ACTIVE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16
Bomber	173	153	154	150	144	144	141	141	140	140
Fighter/Attack	1,552	1,496	1,468	1,256	1,287	1,289	1,287	1,273	1,312	1,282
Special Ops Forces	100	94	89	98	105	117	122	124	144	132
ISR/BM/C3	266	292	320	362	381	413	394	444	437	434
Tanker	277	262	260	263	247	246	243	244	239	236
Transport	454	449	452	458	429	425	413	410	381	384
Helicopter	160	170	159	160	151	170	138	137	157	160
Trainer	1,111	1,074	1,114	1,000	1,190	1,213	1,189	1,195	1,187	1,194
Total Active Duty	**4,093**	**3,990**	**4,016**	**3,747**	**3,934**	**4,017**	**3,927**	**3,968**	**3,997**	**3,962**
TYPE OF AIRCRAFT—ANG										
Bomber	0	0	0	0	0	0	0	0	0	0
Fighter/Attack	746	687	664	614	639	635	630	585	611	577
Special Ops Forces	4	4	4	4	4	4	4	4	4	4
ISR/BM/C3	28	45	45	80	80	87	86	88	91	89
Tanker	235	215	182	179	189	189	187	185	184	181
Transport	258	244	241	240	242	232	223	207	207	212
Helicopter	18	18	17	17	17	17	17	17	17	17
Total ANG	**1,289**	**1,213**	**1,153**	**1,134**	**1,171**	**1,164**	**1,147**	**1,086**	**1,114**	**1,080**
TYPE OF AIRCRAFT—AFRC										
Bomber	9	9	9	9	18	18	18	18	18	18
Fighter/Attack	104	103	108	97	100	101	95	104	111	111
Special Ops Forces	14	14	14	10	10	5	4	0	0	0
ISR/BM/C3	17	11	11	14	12	11	11	10	10	10
Tanker	85	69	69	69	72	72	71	68	68	72
Transport	152	149	149	149	152	148	147	145	139	101
Helicopter	15	15	15	15	15	15	15	15	15	15
Total AFRC	**396**	**370**	**375**	**363**	**379**	**370**	**361**	**360**	**361**	**327**
TOTAL FORCE	**5,778**	**5,573**	**5,544**	**5,244**	**5,484**	**5,551**	**5,435**	**5,414**	**5,472**	**5,369**

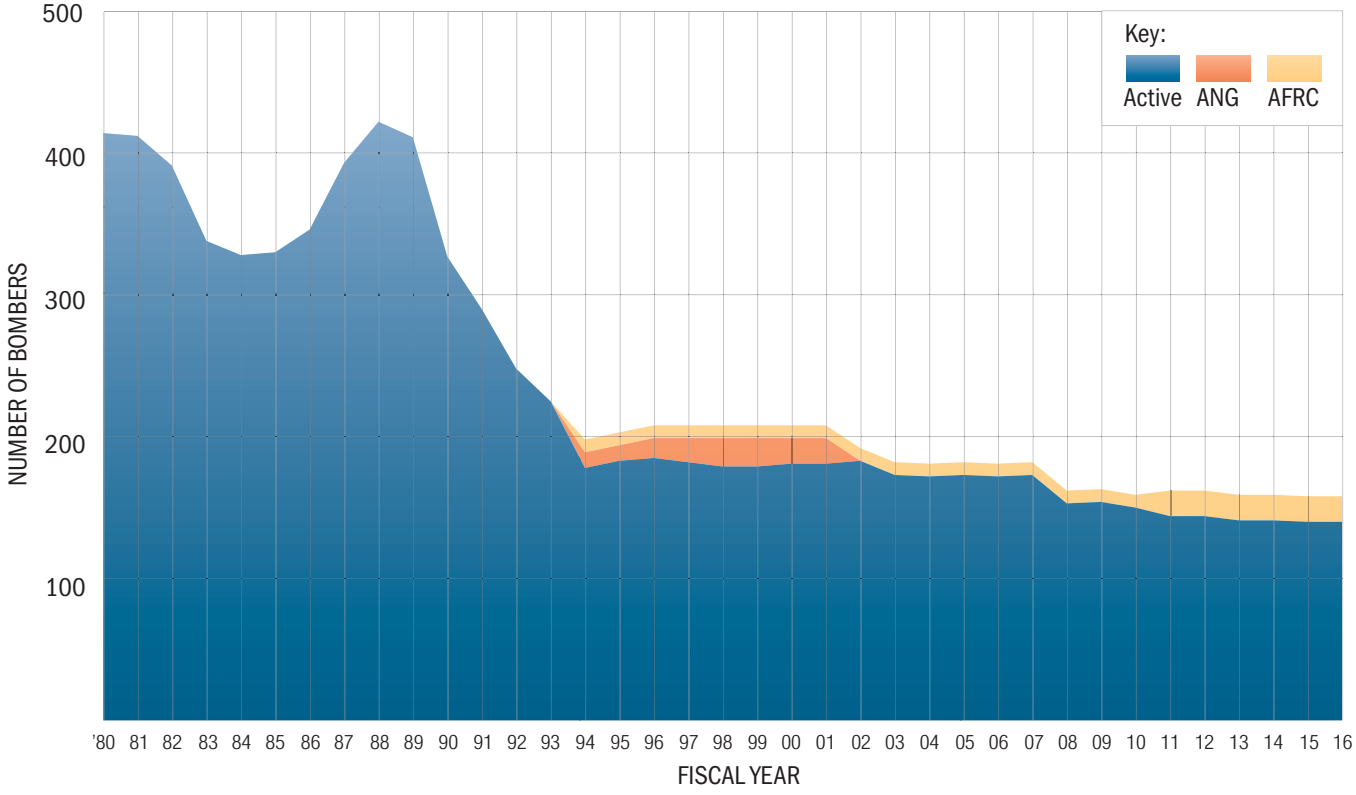
ICBMs AND SPACECRAFT IN SERVICE OVER TIME

(As of Sept. 30, 2016)

TYPE OF SYSTEM	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16
Minuteman III	450	450	450	450	450	450	450	450	450	406
Total ICBMs	**450**	**450**	**450**	**450**	**450**	**450**	**450**	**450**	**450**	**406**
AEHF	0	0	0	1	1	2	2	3	3	3
ATRR	0	0	0	0	0	1	1	0	0	0
DMSP	6	6	6	6	6	4	4	6	6	6
DSCS	9	9	9	8	8	8	8	7	6	6
DSP (classified)										
GPS	30	30	30	36	34	30	31	38	41	37
GSSAP	0	0	0	0	0	0	0	2	2	4
Milstar	5	5	5	5	5	5	5	5	5	5
SBIRS (classified)										
SBSS	0	0	0	1	1	1	1	1	1	1
WGS	0	0	2	3	3	3	4	6	7	7
Total Satellites	**50**	**50**	**54**	**62**	**60**	**56**	**58**	**68**	**69**	**69**

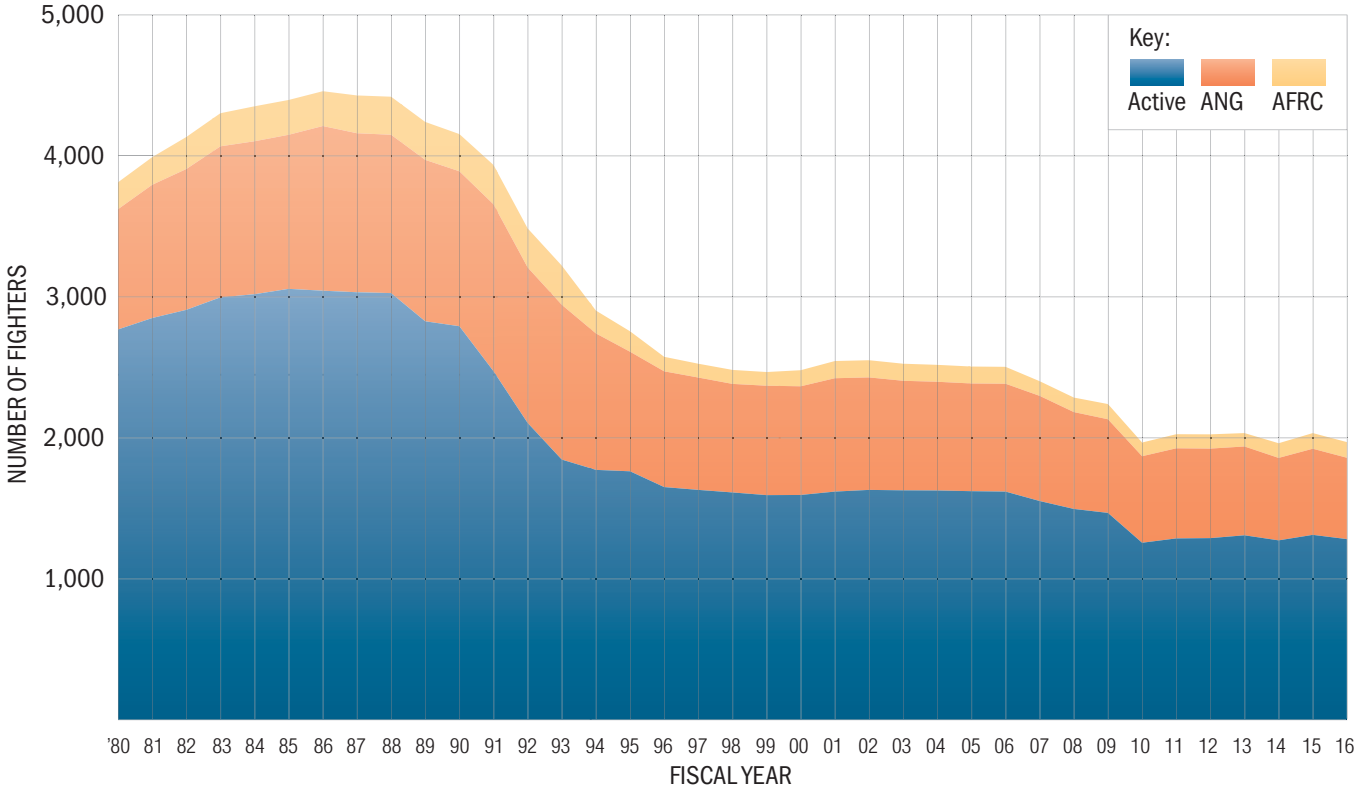
AEHF: Advanced Extremely High Frequency; **ATRR:** Advanced Technology Risk Reduction; **DMSP:** Defense Meteorological Satellite Program; **DSCS:** Defense Satellite Communications System; **DSP:** Defense Support Program; **GPS:** Global Positioning System; **GSSAP:** Geosynchronous Space Situational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

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.

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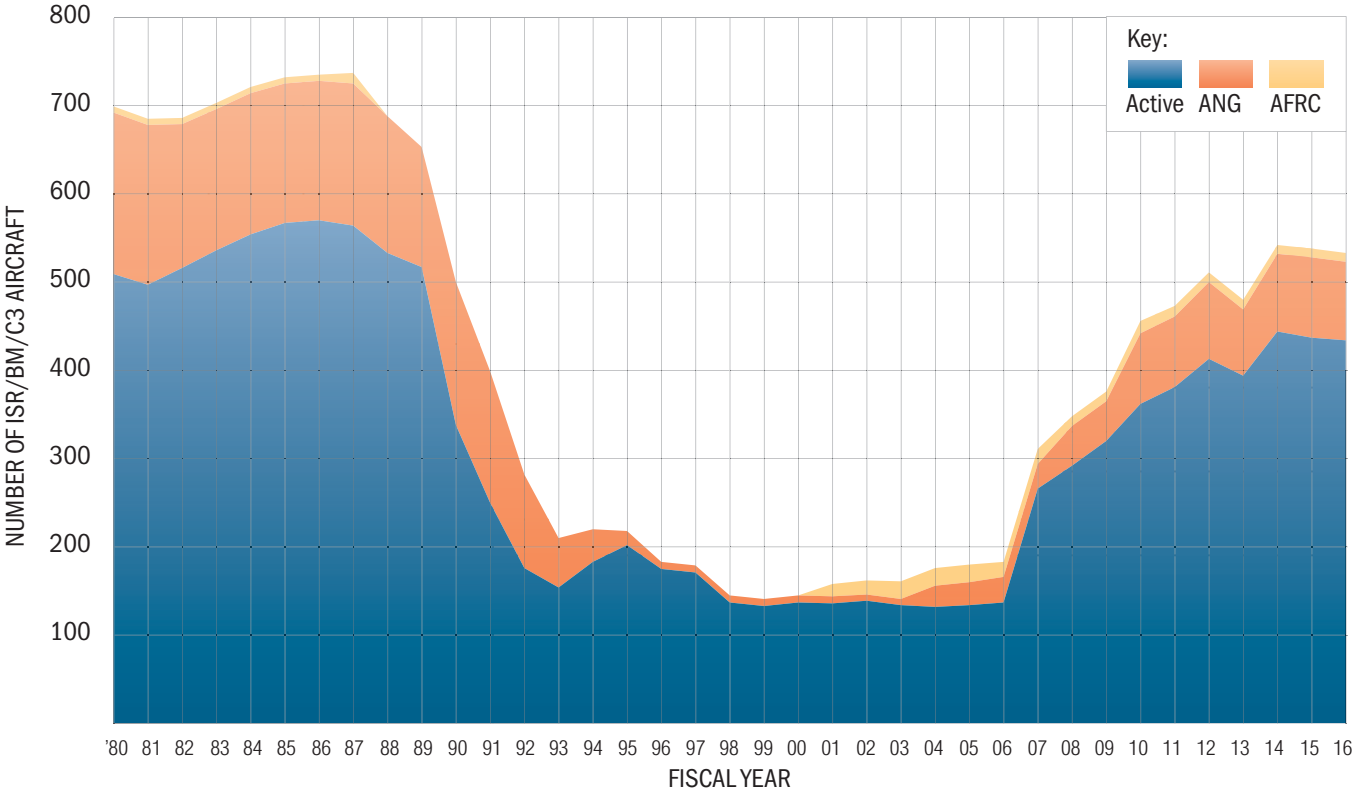
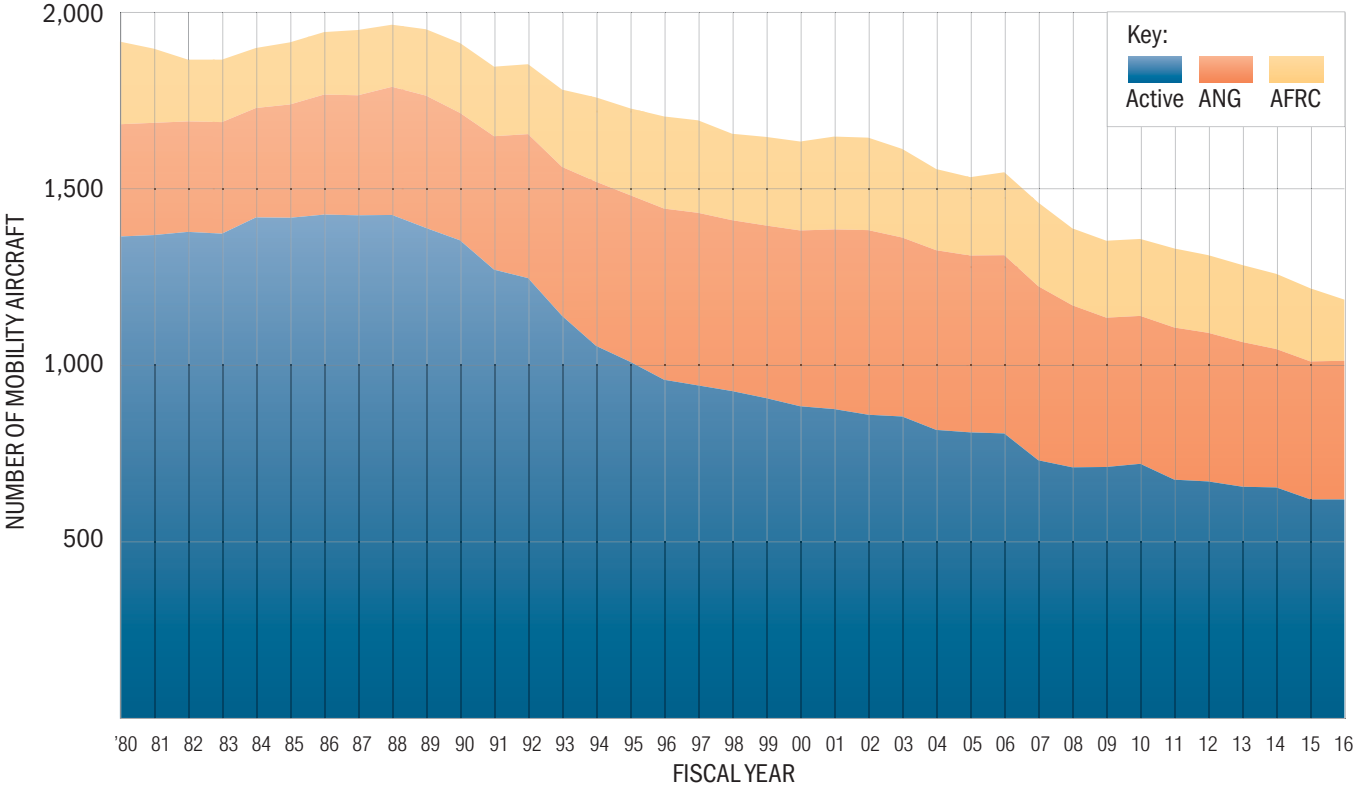
ISR/BM/C3 AIRCRAFT OVER TIME



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, 2016)

	TOTAL FORCE TAI	AVERAGE AGE
Bomber		
B-1B Lancer	62	29.1
B-2A Spirit	20	22.2
B-52H Stratofortress	76	54.8
Total	**158**	**40.6**
Fighter/Attack		
A-10C Thunderbolt II	283	35.4
F-15C Eagle	212	32.4
F-15D Eagle	24	32.0
F-15E Strike Eagle	220	24.4
F-16C Fighting Falcon	793	25.7
F-16D Fighting Falcon	156	26.4
F-22A Raptor	186	9.0
F-35A Lightning II	96	2.2
Total	**1,970**	**25.1**
Special Operations Forces		
AC-130J Ghostrider	3	2.0
AC-130U Spooky	16	25.7
AC-130W Stinger II	12	27.3
CV-22B Osprey	49	4.7
MC-130H Combat Talon II	17	28.2
MC-130J Commando II	35	2.7
MC-130P Combat Shadow	4	49.9
Total	**136**	**12.9**
ISR/BM/C3		
E-3B Sentry (AWACS)	16	38.5
E-3C Sentry (AWACS)	4	33.9
E-3G Sentry (AWACS)	11	35.9
E-4B NAOC	4	42.4
TE-8A JSTARS	1	25.7
E-8C JSTARS	16	15.8
E-9A Widget	2	24.0
E-11A BACN	4	4.7
EC-130H Compass Call	14	43.3
EC-130J Commando Solo	7	16.3
MC-12W Liberty	4	14.1
MQ-1B Predator	129	9.3
MQ-9A Reaper	195	4.3
NC-135W (test bed)	1	54.5
OC-135B Open Skies	2	54.4
RC-26B Condor	11	22.4
RC-135S Cobra Ball	3	54.5
RC-135U Combat Sent	2	51.7
RC-135V Rivet Joint	8	51.9
RC-135W Rivet Joint	12	53.7
RQ-4B Global Hawk	33	5.6
TC-135W (trainer)	3	54.3
TU-2S (trainer)	5	32.4
U-2S Dragon Lady	27	33.7
WC-130H Hercules	7	50.7
WC-130J Hercules	10	15.5
WC-135C Constant Phoenix	1	52.3
WC-135W Constant Phoenix	1	54.4
Total	**533**	**15.5**

	TOTAL FORCE TAI	AVERAGE AGE
Tanker		
HC-130J Combat King II	19	2.9
HC-130N King	8	28.6
HC-130P King	5	50.6
KC-10A Extender	59	31.7
KC-135R Stratotanker	344	54.9
KC-135T Stratotanker	54	56.6
Total	**489**	**49.8**
Transport		
C-5A Galaxy	5	44.2
C-5B Galaxy	4	28.3
C-5C Galaxy	1	46.2
C-5M Super Galaxy	38	29.8
C-12C Huron	16	40.2
C-12D Huron	6	32.4
C-12F Huron	3	31.6
C-12J Huron	4	28.7
C-17A Globemaster III	222	13.0
C-20B Gulfstream	3	29.2
C-20H Gulfstream	2	21.6
C-21A Learjet	27	31.4
C-32A Air Force Two	4	18.0
C-32B Air Force Two	2	13.3
C-37A Gulfstream V	9	15.7
C-37B Gulfstream V	3	6.7
C-40B Clipper	4	12.7
C-40C Clipper	7	10.4
C-130H Hercules	218	27.6
C-130J Hercules	107	8.1
LC-130H Hercules	10	31.1
VC-25A Air Force One	2	26.0
Total	**697**	**20.2**
Helicopter		
HH-60G Pave Hawk	98	26.0
HH-60U Pave Hawk	3	5.4
TH-1H Iroquois	28	35.5
UH-1N Iroquois	63	43.7
Total	**192**	**32.9**
Trainer		
T-1A Jayhawk	178	21.9
T-6A Texan II	444	11.0
T-38A Talon	53	49.9
(A)T-38B Talon	6	53.1
T-38C Talon	445	49.2
T-41D Mescalero	4	47.1
T-51A	3	11.2
T-53A	24	4.7
UV-18B Twin Otter	3	32.5
Gliders	34	71.8
Total	**1,194**	**30.6**
GRAND TOTAL	**5,369**	**27**

Average age for category totals and grand total are weighted by quantity of aircraft.

TACTICAL AIRCRAFT FLYING HOURS PER CREW PER MONTH

(As of Sept. 30, 2016)

	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15 Estimate	FY16 Estimate
Active Duty	15.9	14.4	17.0	19.4	17.7	13.5	14.8	13.2	13.2	12.9
ANG	10.0	9.0	9.0	8.5	7.8	7.1	9.6	9.3	10.9	9.6
AFRC	12.5	14.4	14.1	14.9	16.5	15.8	12.3	12.0	12.6	15.8

OPERATIONAL TRAINING RATES

	1990	2000	FY10	FY15	FY16 Estimate	FY17 Estimate
Air Force						
Flying hours per crew per month, fighter/attack aircraft	19.5	17.2	19.4	13.2	12.9	14.1
Army						
Flying hours per tactical crew per month	14.2	12.7	12.0	9.3	11.5	9.5
Navy						
Flying hours per tactical crew per month	23.9	20.9	16.6	14.2	15.4	15.8

USAF Aircraft Tail Codes

F-22s displaying the FF tail code from JB Langley-Eustis, Va.

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

SSgt. J. D. Strong II/USAF

USAF Grades and Insignia

Officer

Second Lieutenant
(O-1)

Brigadier General
(O-7)

First Lieutenant
(O-2)

Major General
(O-8)

Captain
(O-3)

Lieutenant General
(O-9)

Major
(O-4)

General
(O-10)

Lieutenant Colonel
(O-5)

Colonel
(O-6)

Enlisted

Airman Basic
(E-1)
No insignia

Airman
(E-2)

Airman First Class
(E-3)

Senior Airman
(E-4)

Staff Sergeant
(E-5)

Technical Sergeant
(E-6)

Master Sergeant
(E-7)

Senior Master Sergeant
(E-8)

Chief Master Sergeant
(E-9)

Chief Master Sergeant
of the Air Force

First Sergeant

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

Command Chief Master Sergeant

The star device shown here denotes an E-9 who serves in a 9E000 position as a command's 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)

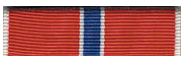

Silver Star


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

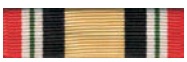

Armed Forces Expeditionary Medal


Vietnam Service Medal


Southwest Asia Service Medal


Kosovo Campaign Medal


Afghanistan Campaign Medal


Iraq Campaign Medal


Inherent Resolve 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


Air Force Special Duty 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

Awards and Decorations, Continued

Philippine Defense Ribbon

Philippine Liberation Ribbon

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 Star

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

Silver and Bronze Stars

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

Bronze Oak Leaf Cluster

For second and subsequent awards.

Silver Oak Leaf Cluster

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

Silver and Bronze OLCs

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

Valor Device

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

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.

Combat Device

For meritorious service under combat conditions.

Remote Device

For remote contribution to a combat operation.

Hourglass Device

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

Arctic Device

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

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.

Nuclear Device

Worn on the Nuclear Deterrence Operations Service Medal to indicate direct support.

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.

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.

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

2017 USAF Almanac

Organization

The Air Force has 10 major commands and two Air Reserve Components. (Air Force Reserve Command is both a majcom and an ARC.)

■ **MAJOR COMMANDS** As significant subdivisions of the Air Force, majcoms conduct a considerable part of the service's mission and are directly subordinate to Headquarters, 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.

Majcoms, 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, mission-centered echelons. These tactical echelons are designed to increase operational effectiveness without the burden of additional support staff functions.

There are two basic organizational schemes for Air Force major commands: unit-oriented organizations and major nonunit organizations. The standard unit-oriented scheme comprises majcom, NAF, wing, group, squadron, and flight levels. Alternatively, a majcom may oversee a center, directorate, division, branch, and section levels, or a combination thereof.

USAF has two types of major commands: lead majcom and component majcom (C-majcom). Some major commands are both lead majcoms and C-majcoms.

■ **COMPONENT MAJCOM** A C-majcom is the USAF component to a unified combatant command. The commander of a C-majcom is the commander of air force forces (COMAFFOR) 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 has a broader staff. (On the following pages, NAFs with "Air Forces" designations, such as Air Forces Southern, are C-NAFs.)

Ten Major Commands

Air Combat Command
Air Education and 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

Two Air Reserve Commands

Air Force Reserve Command
Air National Guard

Personnel data on the following pages are as of Sept. 30, 2016.

ACC

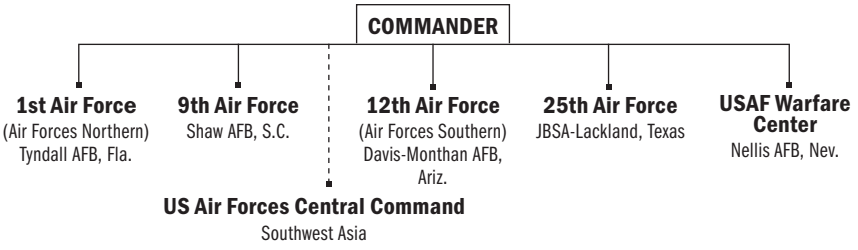
Air Combat Command

Headquarters: JB Langley-Eustis, Va.
Date of current designation: June 1, 1992
Commander: Gen. James M. "Mike" Holmes

Primary Mission

Primary force provider of combat airpower—fighter, conventional bomber, reconnaissance, battle management, and electronic combat aircraft—to combatant commands. Provide command, control, communications, and intelligence (C3I) systems. Conduct global information operations.

ACC Structure



PERSONNEL		
Active Duty	**Civilian**	**Total**
74,240	10,610	**84,850**

EQUIPMENT (TAI)	
Fighter/Attack	646
Helicopter	40
ISR/BM/C3	363
Tanker	16
Trainer	45

WINGS/CENTERS	LOCATION	AIRCRAFT/MISSION/WEAPON
1st Fighter Wing (FW)	JB Langley-Eustis, Va.	F-22, T-38A
4th FW	Seymour Johnson AFB, N.C.	F-15E
9th Reconnaissance Wing	Beale AFB, Calif.	RQ-4, T-38A, U-2
20th FW	Shaw AFB, S.C.	F-16CM
23rd Wing	Moody AFB, Ga.	A-10C, HC-130J, HH-60G
49th Wing	Holloman AFB, N.M.	MQ-9, QF-16
53rd Wing	Eglin AFB, Fla.	A-10C, B-1B, B-52H, E-9A, F-15C/D/E, F-16C/D, F-22A, F-35A, HC-130J, HH-60G, MQ-1, MQ-9, QF-16, RQ-4
55th Wing	Offutt AFB, Neb.	EC-130H, OC-135B, RC-135S/U/V/W, TC-135S/W, WC-135
57th Wing	Nellis AFB, Nev.	A-10C, EC-130, F-15, F-15E, F-16, F-22A, F-35A, HH-60G (23rd Wing), MQ-9
70th Intelligence, Surveillance, and Reconnaissance Wing (ISRW)	Fort Meade, Md.	Cryptologic operations
93rd Air Ground Operations Wing	Moody AFB, Ga.	Battlefield airmen operations, support
99th Air Base Wing (ABW)	Nellis AFB, Nev.	Base support
325th FW	Tyndall AFB, Fla.	F-22A
355th FW	Davis-Monthan AFB, Ariz.	A-10C, EC-130H (55th Wing), F-16CG, HC-130J, HH-60G (23rd Wing)
363rd ISRW	JB Langley-Eustis, Va.	Multi-intelligence analysis, targeting
366th FW	Mountain Home AFB, Idaho	F-15E
388th FW	Hill AFB, Utah	F-16C/D, F-35A
432nd Wing	Creech AFB, Nev.	MQ-1, MQ-9, RQ-170
480th ISRW	JB Langley-Eustis, Va.	DCGS, cyber ISR, CFACC support, Signals intelligence integration
461st Air Control Wing (ACW)	Robins AFB, Ga.	E-8C (AA)
505th Command and Control Wing	Hurlburt Field, Fla.	Command and control operational-level tactics, testing, training
552nd ACW	Tinker AFB, Okla.	E-3B/C/G
557th Weather Wing	Offutt AFB, Neb.	Weather information
601st Air & Space Operations Center	Tyndall AFB, Fla.	Plan and direct air operations
633rd ABW	JB Langley-Eustis, Va.	Joint base facilities support
Air Force Rescue Coordination Center	Tyndall AFB, Fla.	National search and rescue coordination
Air Force Technical Applications Center	Patrick AFB, Fla.	Nuclear treaty monitoring, nuclear event detection

AETC

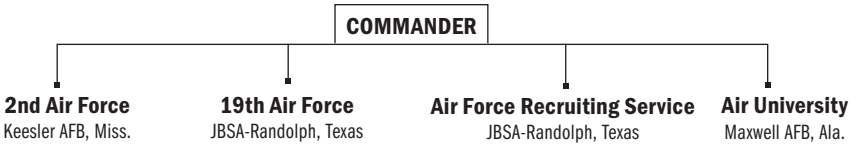
Air Education and Training Command

Headquarters: JBSA-Randolph, Texas
Date of current designation: July 1, 1993
Commander: Lt. Gen. Darryl Roberson

Primary Mission

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

AETC Structure



PERSONNEL		
Active Duty	**Civilian**	**Total**
55,577	14,412	**69,989**

EQUIPMENT (TAI)	
Fighter/Attack	168
Helicopter	50
Special Operations Forces	13
Tanker	23
Trainer	1,112
Transport	29

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
12th Flying Training Wing (FTW)	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 (FW)	Eglin AFB, Fla.	F-35
37th TRW	JBSA-Lackland, Texas	Basic military and technical training
42nd Air Base Wing (ABW)	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-130J/P/N, HH-60G, MC-130H/J/P, UH-1N, TH-1H
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 and Citizen Development	Maxwell AFB, Ala.	Officer training, ROTC and 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

AFGSC

Air Force Global Strike Command

Headquarters: Barksdale AFB, La.
Date of current designation: Aug. 7, 2009
Commander: Gen. Robin Rand

Primary Mission

Organize, train, equip, maintain, and provide ICBM forces and long-range bomber forces to combatant commanders.

AFGSC Structure

COMMANDER

8th Air Force
(Air Forces Strategic/Task Force 204)
Barksdale AFB, La.

20th Air Force
(Air Forces Strategic/Task Force 214)
F. E. Warren AFB, Wyo.

PERSONNEL		
Active Duty	**Civilian**	**Total**
26,677	3,969	**30,646**

EQUIPMENT (TAI)	
Bomber	135
Helicopter	25
ICBM	406
ISR/BM/C3	4
Trainer	14

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
2nd Bomb Wing (BW)	Barksdale AFB, La.	B-52H
5th BW	Minot AFB, N.D.	B-52H
7th BW	Dyess AFB, Texas	B-1
28th BW	Ellsworth AFB, S.D.	B-1
90th Missile Wing (MW)	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
377th Air Base Wing	Kirtland AFB, N.M.	Nuclear operations, expeditionary force training, base support
509th BW	Whiteman AFB, Mo.	B-2, T-38C
595th Command and Control Group	Offutt, Neb.	Command and control, E-4B

Acronyms

AA active associate: ANG/AFRC own aircraft
AATTC Advanced Airlift Tactics Training Center
AEHF Advanced Extremely High Frequency
AOC/G/S air and space operations center/group/squadron
ARB Air Reserve Base
BM battle management
BMEWS Ballistic Missile Early Warning System
C2 command and control
C3 command, control, and communications
CACS command and control squadron (space)
CC combat communications
CFACC combined force air component commander
CIRF centralized intermediate repair facility
CRG contingency response group
CRTC Combat Readiness Training Center
CSDC Consolidated Storage and Deployment Center (medical)
CSO combat systems officer
CW combat weather
DCGS Distributed Common Ground Station
DMSP Defense Meteorological Satellite Program
DSCS Defense Satellite Communications System
DSP Defense Support Program
DTOC Distributed Training Operations Center
EOD explosive ordnance disposal
FTU formal training unit
GA Guardian Angel (pararescuemen, combat rescue officers, and survival, evasion, resistance, and escape specialists)
GEODSS Ground-based Electro-Optical Deep Space Surveillance system
GPS Global Positioning System
GSSAP Geosynchronous Space Situational Awareness Program
ISR intelligence, surveillance, and reconnaissance
JB Joint Base
JBSA Joint Base San Antonio
JMS Joint Space Operations Center (JSpOC) Mission System
JRB Joint Reserve Base
JROTC Junior Reserve Officer Training Corps
MAFFS Modular Airborne Firefighting System
MGS mobile ground station (space)
NAS Naval Air Station
NOSS network operations security squadron
PARCS Perimeter Acquisition Radar Attack Characterization System
RAOC regional air operations center
RCC rescue coordination center
ROTC Reserve Officer Training Corps
SBIRS Space Based Infrared System
SBSS Space Based Surveillance System
SOW Special Operations Wing
SPADOC Space Defense Operations Center
TACP tactical air control party
TAI total active inventory
WGS Wideband Global Satcom

AFMC

Air Force Materiel Command

Headquarters: Wright-Patterson AFB, Ohio
Date of current designation: July 1, 1992
Commander: Gen. Ellen M. Pawlikowski

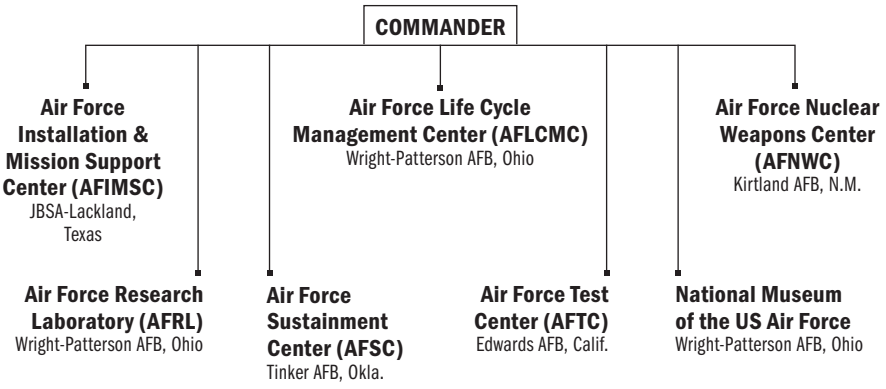
Primary Mission

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

PERSONNEL		
Active Duty	**Civilian**	**Total**
15,475	61,941	**77,416**

EQUIPMENT (TAI)	
Bomber	5
Fighter/Attack	46
Helicopter	5
ISR/BM/C3	22
Tanker	2
Trainer	23
Transport	26

AFMC Structure



	MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
AFIMSC	Air Force Civil Engineer Center	JBSA-Lackland, Texas	Installation support (civil engineering)
	Air Force Financial Management Center of Expertise	Buckley AFB, Colo.	Installation support (financial analysis)
	Air Force Financial Services Center	Ellsworth AFB, S.D.	Installation support (payment processing)
	Air Force Security Forces Center	JBSA-Lackland, Texas	Installation support (security forces programs)
AFLCMC	Air Force Program Executive Officer–Agile Combat Support	Wright-Patterson AFB, Ohio	Systems acquisition
	AFPEO–Armament	Eglin AFB, Fla.	Systems acquisition
	AFPEO–Battle Management	Hanscom AFB, Mass.	Systems acquisition
	AFPEO–Business and Enterprise Systems	Maxwell AFB-Gunter Annex, Ala.	Systems acquisition
	AFPEO–C3I and Networks	Hanscom AFB, Mass.	Systems acquisition
	AFPEO–Fighters and Bombers	Wright-Patterson AFB, Ohio	Systems acquisition
	AFPEO–ISR and Special Operations Forces	Wright-Patterson AFB, Ohio	Systems acquisition
	AFPEO–Mobility	Wright-Patterson AFB, Ohio	Systems acquisition
	AFPEO–Tanker	Wright-Patterson AFB, Ohio	Systems acquisition
	88th Air Base Wing (ABW)	Wright-Patterson AFB, Ohio	Base support
AFNWC	AFPEO–Nuclear Command, Control, and Communications	Hanscom AFB, Mass.	Systems acquisition
	AFPEO–Strategic Systems	Kirtland AFB, N.M.	Systems acquisition
AFRL	Aerospace Systems	Wright-Patterson AFB, Ohio	Research and development (R&D)
	Air Force Office of Scientific Research	Arlington, Va.	Research
	Air Force Strategic Development Planning and Experimentation Office	Wright-Patterson AFB, Ohio	R&D
	Directed Energy	Kirtland AFB, N.M.	R&D
	Information	Rome, N.Y.	R&D
	Materials and Manufacturing	Wright-Patterson AFB, Ohio	R&D
	Munitions	Eglin AFB, Fla.	R&D
	Sensors	Wright-Patterson AFB, Ohio	R&D
	Space Vehicles	Kirtland AFB, N.M.	R&D
	711th Human Performance Wing	Wright-Patterson AFB, Ohio	Human performance evaluation and research
AFSC	Ogden Air Logistics Complex (ALC)	Hill AFB, Utah	Weapons sustainment
	Oklahoma City ALC	Tinker AFB, Okla.	Weapons sustainment
	Warner Robins ALC	Robins AFB, Ga.	Weapons sustainment
	72nd ABW	Tinker AFB, Okla.	Base support
	75th ABW	Hill AFB, Utah	Base and Utah Test and Training Range support
	78th ABW	Robins AFB, Ga.	Base support
	448th Supply Chain Management Wing	Tinker AFB, Okla.	Depot line repairables and consumables
	635th Supply Chain Operations Wing	Scott AFB, Ill.	Global sustainment support
AFTC	Arnold Engineering Development Complex	Arnold AFB, Tenn.	Flight, space, and missile ground testing
	96th Test Wing (TW)	Eglin AFB, Fla.	Aircraft testing and base support
	412th TW	Edwards AFB, Calif.	Aircraft testing and base support

AFRC

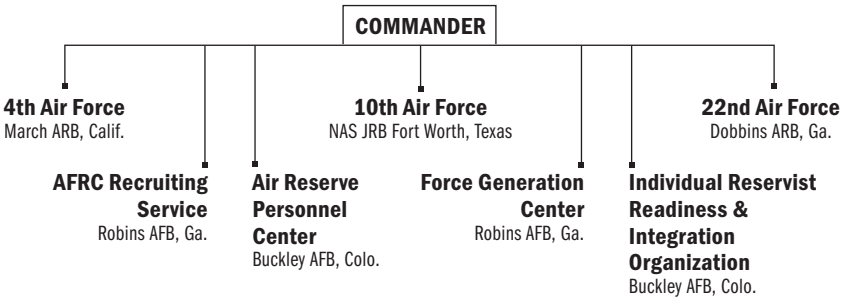
Air Force Reserve Command

Headquarters: Robins AFB, Ga.
Date of current designation: Feb. 17, 1997
Commander: Lt. Gen. Maryanne Miller

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.

AFRC Structure



PERSONNEL			
Total (Selected reserve)	**Active Duty**	**Civilian** (Includes technicians)	**Total**
69,200	392	12,716	**82,308**

EQUIPMENT (TAI)	
Bomber	18
Fighter/Attack	111
Helicopter	15
ISR/BM/C3	10
Tanker	72
Transport	101

WINGS/CENTERS	LOCATION	AIRCRAFT/MISSION/WEAPON
94th Airlift Wing (AW)	Dobbins ARB, Ga.	C-130H
301st Fighter Wing (FW)	NAS JRB Fort Worth, Texas	F-16 and F-22, MQ-1, and MQ-9 (Tyndall AFB, Fla.)
302nd AW	Peterson AFB, Colo.	C-130H (including Modular Airborne Firefighting System)
307th Bomb Wing	Barksdale AFB, La.	B-52H
310th Space Wing	Schriever AFB, Colo.	Space control and operations and warning, information operations
315th AW (classic associate)	JB Charleston, S.C.	C-17
349th Air Mobility Wing (classic associate)	Travis AFB, Calif.	C-5, C-17, KC-10
403rd Wing	Keesler AFB, Miss.	C-130J, WC-130J (Hurricane Hunters)
419th FW (classic associate)	Hill AFB, Utah	F-16, F-35A
433rd AW	JBSA-Lackland, Texas	C-5A/B, formal training unit
434th Air Refueling Wing (ARW)	Grissom ARB, 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 (classic associate)	JB Lewis-McChord, Wash.	C-17
452nd AMW	March ARB, Calif.	C-17, KC-135R
459th ARW	JB Andrews, Md.	KC-135R
482nd FW	Homestead ARB, Fla.	F-16C
507th ARW	Tinker AFB, Okla.	KC-135R
512th AW (classic associate)	Dover AFB, Del.	C-5M, C-17
514th AMW (classic associate)	JB McGuire-Dix-Lakehurst, N.J.	C-17, KC-10
908th AW	Maxwell AFB, Ala.	C-130H
910th AW	Youngstown ARS, Ohio	C-130H
911th AW	Pittsburgh Arpt., Pa.	C-130H
914th AW	Niagara Falls Arpt./ARS, N.Y.	KC-135 (planned)
916th ARW	Seymour Johnson AFB, N.C.	KC-135R
919th Special Operations Wing	Duke Field, Fla.	AC-130U, C-145A, C-146, MQ-9, PC-12, U-28 (classic associate)
920th Rescue Wing	Patrick AFB, Fla.	HC-130N/P, HH-60G
926th Wing (classic associate)	Nellis AFB, Nev.	A-10, F-15C, F-15E, F-16, F-22A, F-35A, HH-60G, MQ-1 and MQ-9 (Creech AFB, Nev.)
927th ARW (classic associate)	MacDill AFB, Fla.	KC-135R
932nd AW	Scott AFB, Ill.	C-40C
934th AW	Minneapolis-St. Paul Arpt., Minn.	C-130H
940th Wing (classic associate)	Beale AFB, Calif.	AOC, DCGS, RQ-4
944th FW (classic associate)	Luke AFB, Ariz.	F-15E (Seymour Johnson AFB, N.C.), F-16

Classic associate: Active Duty unit owns aircraft.

AFSPC

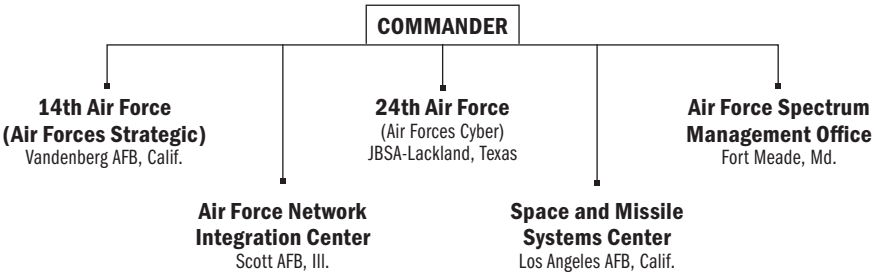
Air Force Space Command

Headquarters: Peterson AFB, Colo.
Date of current designation: Sept. 1, 1982
Commander: Gen. John W. "Jay" Raymond

Primary Mission

Organize, train, equip, maintain, and provide space and cyberspace operations forces. Develop, procure, and test space systems. Sustain national space launch facilities.

AFSPC Structure



PERSONNEL		
Active Duty	**Civilian**	**Total**
13,064	6,880	**19,944**

EQUIPMENT

Air Force Satellite Control Network, BMEWS, Cyber Weapon Systems, GEODSS, JMS, Launch/test ranges, Pave Phased Array Warning System, PARCS, SPADOC, Space surveillance radars

Satellite systems (on orbit):

AEHF	3	GPS	37	SBSS	1
DMSP	6	GSSAP	4	WGS	7
DSCS	6	Milstar	5		
DSP	Classified	SBIRS	Classified		

WINGS/CENTERS	LOCATION	AIRCRAFT/MISSION/WEAPON
21st Space Wing (SW)	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
67th Network Warfare Wing	JBSA-Lackland, Texas	Cyberspace operations
460th SW	Buckley AFB, Colo.	Space surveillance/warning
614th Air & Space Operations Center	Vandenberg AFB, Calif.	Theater and global space operations
624th Operations Center	JBSA-Lackland, Texas	Plan/direct cyber operations
688th Informations Operations Wing	JBSA-Lackland, Texas	Information operations, engineering installation

The 45th Space Wing supported this SpaceX launch on June 15, 2016, at Cape Canaveral AFS, Fla. Courtesy of SpaceX

Unclassified Cyber Weapon Systems include Air Force Intranet Control (AFINC), Cyberspace Security and Control System (CSCS), Air Force Cyberspace Defense (ACD), Cyberspace Defense Analysis (CDA), and Cyberspace Vulnerability Assessment/Hunter (CVA/H).

AFSOC

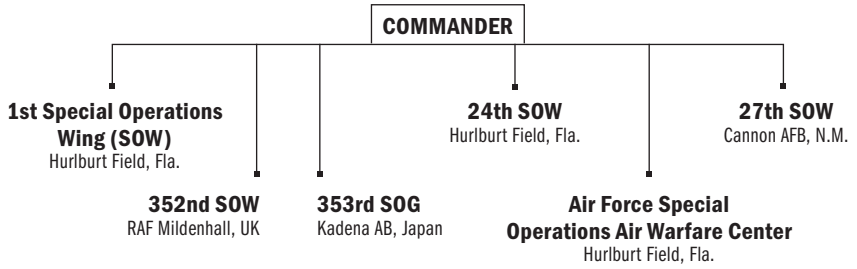
Air Force Special Operations Command

Headquarters: Hurlburt Field, Fla.
Date of current designation: May 22, 1990
Commander: Lt. Gen. Marshall B. "Brad" Webb

Primary Mission

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

AFSOC Structure



PERSONNEL		
Active Duty	**Civilian**	**Total**
14,223	1,732	**15,955**

EQUIPMENT (TAI)	
ISR/BM/C3	36
Special Operations Forces	119

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
1st Special Operations Group (SOG)	Hurlburt Field, Fla.	AC-130U, CV-22, MC-130H/P, U-28A
27th SOG	Cannon AFB, N.M.	AC-130W, C-146A, CV-22B, MC-130J, MQ-1, MQ-9, U-28A
551st SOS	Cannon AFB, N.M.	AC-130H/W, CV-22, MC-130J, MQ-9
720th Special Tactics Group (STG)	Hurlburt Field, Fla.	Special tactics operations
724th STG	Pope Field, N.C.	Special tactics operations
752nd SOG	RAF Mildenhall, UK	CV-22, MC-130J

An AC-130J arrives at Hurlburt Field, Fla.

SrA. Jeff Parkinson/USAF

AMC

Air Mobility Command

Headquarters: Scott AFB, Ill.
Date of current designation: June 1, 1992
Commander: Gen. Carlton D. Everhart II

Primary Mission

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

AMC Structure

COMMANDER

18th Air Force (Air Forces Transportation)
Scott AFB, Ill.

US Air Force Expeditionary Center
JB McGuire-Dix-Lakehurst, N.J.

PERSONNEL		
Active Duty	**Civilian**	**Total**
40,403	8,191	**48,594**

EQUIPMENT (TAI)	
Tanker	164
Transport	266

WINGS/CENTERS	LOCATION	AIRCRAFT/MISSION/WEAPON
6th Air Mobility Wing (AMW)	MacDill AFB, Fla.	C-37, KC-135R
19th Airlift Wing (AW)	Little Rock AFB, Ark.	C-130H/J
22nd Air Refueling Wing (ARW)	McConnell AFB, Kan.	KC-135R
60th AMW	Travis AFB, Calif.	C-5, C-17, KC-10
62nd AW	JB Lewis-McChord, Wash.	C-17
87th Air Base Wing (ABW)	JB McGuire-Dix-Lakehurst, N.J.	Joint base facilities support
89th AW	JB Andrews, Md.	C-20B, C-32A, C-37A/B, C-40B, VC-25A
92nd ARW	Fairchild AFB, Wash.	KC-135R
305th AMW	JB McGuire-Dix-Lakehurst, N.J.	C-17, KC-10
319th ABW	Grand Forks AFB, N.D.	Base support
375th AMW	Scott AFB, Ill.	C-21, C-40 (AA), KC-135R (AA), NC-21
436th AW	Dover AFB, Del.	C-5, C-17
437th AW	JB Charleston, S.C.	C-17A
515th Air Mobility Operations Wing (AMOW)	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
628th ABW	JB Charleston, S.C.	Joint base facilities support

An Army Black Hawk is loaded onto an Air Force C-17 at JB Lewis-McChord, Wash. SrA. Divine Cox/USAF

PACAF

Pacific Air Forces

Headquarters: JB Pearl Harbor-Hickam, Hawaii
Date of current designation: July 1, 1957
Commander: Gen. Terrence J. O'Shaughnessy

Primary Mission

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

PACAF Structure

COMMANDER

- **5th Air Force (Air Forces Japan)** — Yokota AB, Japan
- **7th Air Force (Air Forces Korea)** — Osan AB, South Korea
- **11th Air Force** — JB Elmendorf-Richardson, Alaska

PERSONNEL		
Active Duty	**Civilian**	**Total**
28,003	3,296	**31,299**

EQUIPMENT (TAI)	
Fighter/Attack	262
Helicopter	13
ISR/BM/C3	6
Tanker	15
Transport	38

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

18th Aggressor Squadron F-16s, assigned to Eielson AFB, Alaska. SSgt. Keith James/USAF

USAFE

US Air Forces in Europe

Headquarters: Ramstein AB, Germany
Date of current designation: Aug. 7, 1945
Commander: Gen. Tod D. Wolters

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.

USAFE Structure

COMMANDER

- **3rd Air Force (Air Forces Europe)** — Ramstein AB, Germany
- **Hq. USAFE-AFAFRICA (Air Forces Africa)** — Ramstein AB, Germany

PERSONNEL		
Active Duty	**Civilian**	**Total**
22,143	1,662	**23,805**

EQUIPMENT (TAI)	
Fighter/Attack	157
Helicopter	5
Tanker	16
Transport	25

WINGS/CENTERS	LOCATION	AIRCRAFT/MISSION/WEAPON
31st Fighter Wing (FW)	Aviano AB, Italy	F-16C/D
39th Air Base Wing	Incirlik AB, Turkey	Operational location for deployed US and NATO forces
48th FW	RAF Lakenheath, UK	F-15C/D, F-15E, HH-60G
52nd FW	Spangdahlem AB, Germany	F-16C/D
86th Airlift Wing	Ramstein AB, Germany	C-20H, C-21, C-37A, C-40B, C-130J
100th Air Refueling Wing	RAF Mildenhall, UK	CV-22, KC-135R, MC-130J, RC-135V/W
435th Air Ground Operations Wing	Ramstein AB, Germany	Battlefield airmen support and operations
501st Combat Support Wing	RAF Alconbury, UK	Facilitates support for seven geographically separated units
603rd Air & Space Operations Center	Ramstein AB, Germany	Plan and direct air operations

Airmen from the 100th Air Refueling Wing inspect a KC-135 at RAF Mildenhall, UK. SSgt. Micaiah Anthony/USAF

ANG

Air National Guard

Headquarters: Washington, D.C.
Date of current designation: Sept. 18, 1947
Director: Lt. Gen. L. Scott Rice

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)	**Active Duty**	**Civilian** (Includes technicians)	**Total**
105,500	27	23,597	**129,124**

EQUIPMENT (TAI)			
Fighter/Attack	577	Special Operations Forces	4
Helicopter	17	Tanker	181
ISR/BM/C3	89	Transport	212

WING (STATE)	SYSTEM/MISSION
101st Air Refueling Wing (Maine)	KC-135R, CC, cyber
102nd Intelligence Wing (Mass.)	AOG, CC, DCGS
103rd Airlift Wing (Conn.)	C-130H
104th Fighter Wing (Mass.)	F-15C/D
105th AW (N.Y.)	C-17, cyber
106th Rescue Wing (N.Y.)	HC-130, HH-60G, GA
107th AW (N.Y.)	MQ-9
108th Wing (N.J.)	KC-135R, C-40, intel
109th AW (N.Y.)	C-130H, LC-130
110th Attack Wing (Mich.)	MQ-9, AOG, cyber
111th Attack Wing (Pa.)	MQ-9, AOG, CSDC, cyber
113th Wing (D.C.)	C-40, F-16
114th FW (S.D.)	F-16C
115th FW (Wis.)	F-16
116th Air Control Wing (Ga.)	E-8C
117th ARW (Ala.)	KC-135R, intel
118th Wing (Tenn.)	MQ-9, cyber
119th Wing (N.D.)	MQ-1, ISR
120th AW (Mont.)	C-130H
121st ARW (Ohio)	KC-135R
122nd FW (Ind.)	A-10C
123rd AW (Ky.)	C-130H, CRG, special tactics
124th FW (Idaho)	A-10C, CACS, TACP
125th FW (Fla.)	F-15C
126th ARW (Ill.)	KC-135R
127th Wing (Mich.)	A-10C, KC-135R, special ops weather
128th ARW (Wis.)	KC-135R
129th RQW (Calif.)	MC-130P, HH-60G, GA
130th AW (W.Va.)	C-130H
131st Bomb Wing (Mo.)	B-2 (CA), AOG, CC
132nd Wing (Iowa)	MQ-9, DTOC
133rd AW (Minn.)	C-130H
134th ARW (Tenn.)	KC-135R
136th AW (Texas)	C-130H, CC
137th SOW (Okla.)	MC-12, cyber, TACP
138th FW (Okla.)	F-16, cyber, TACP training
139th AW (Mo.)	C-130H, AATTC (ANG/AFRC)
140th Wing (Colo.)	C-21, F-16, MGS
141st ARW (Wash.)	KC-135R, CC
142nd FW (Ore.)	F-15C, CW, special tactics
143rd AW (R.I.)	C-130J, CC, cyber
144th FW (Calif.)	F-15C
145th AW (N.C.)	C-130H, aeromed, CC, MAFFS, TACP
146th AW (Calif.)	C-130J, MAFFS
147th Reconnaissance Wing (Texas)	MQ-1B, RC-26, TACP
148th FW (Minn.)	F-16C, EOD
149th FW (Texas)	F-16, cyber, intel training
150th SOW (N.M.)	C-26, special ops training (CA)
151st ARW (Utah)	KC-135R, cyber, intel
152nd AW (Nev.)	C-130H, DCGS
153rd AW (Wyo.)	C-130H, MAFFS
154th Wing (Hawaii)	C-17 (CA), F-22, KC-135R
155th ARW (Neb.)	KC-135R
156th AW (Puerto Rico)	C-130E
157th ARW (N.H.)	KC-135R
158th FW (Vt.)	F-16, cyber training
159th FW (La.)	F-15C/D, CC, cyber, intel, TACP
161st ARW (Ariz.)	KC-135R
162nd Wing (Ariz.)	F-16, MQ-1, RC-26B
163rd Attack Wing (Calif.)	MQ-1, FTU
164th AW (Tenn.)	C-17A
165th AW (Ga.)	C-130H, CRTC, TACP, tactical comm
166th AW (Del.)	C-130H, aeromed, cyber
167th AW (W.Va.)	C-17A, aeromed
168th ARW (Alaska)	KC-135R
169th FW (S.C.)	F-16
171st ARW (Pa.)	KC-135R/T
172nd AW (Miss.)	C-17, aeromed
173rd FW (Ore.)	F-15C/D
174th Attack Wing (N.Y.)	MQ-9, AOC, CACS, TACP, FTU
175th Wing (Md.)	A-10C, cyber
176th Wing (Alaska)	C-17 (CA), C-130H, HC-130, HH-60G, GA, RAOC, RCC
177th FW (N.J.)	F-16C, TACP
178th Wing (Ohio)	MQ-1, cyber, ISR, space
179th AW (Ohio)	C-130H
180th FW (Ohio)	F-16C
181st IW (Ind.)	DCGS, TACP
182nd AW (Ill.)	C-130H, CC, TACP
183rd FW (Ill.)	AOG, CIRF, cyber
184th IW (Kan.)	CACS, cyber, DCGS, NOSS, TACP
185th ARW (Iowa)	KC-135R
186th ARW (Miss.)	KC-135R, RC-26, AOG, TACP
187th FW (Ala.)	F-16, RC-26
188th Wing (Ark.)	MQ-9
189th AW (Ark.)	C-130H
190th ARW (Kan.)	KC-135R, CW
192nd FW (Va.)	F-22 (CA), ISR
193rd SOW (Pa.)	EC-130J, AOS, CC, cyber, TACP
194th Regional Support Wing (Wash.)	CC, CW, cyber, ISR, TACP
195th Wing (Calif.)	cyber, intel, space

FOAs, DRUs, and Auxiliary

2017 USAF Almanac

Air Force Agency for Modeling and Simulation

Headquarters: Orlando, Fla.
Date of Current Designation: June 3, 1996
Type: Field Operating Agency (FOA)
Mission: Oversee air, space, and cyberspace modeling and simulation requirements and provide joint interoperability standards within live, virtual, and constructive (LVC) domains.
Total Personnel: 20

Air Force Audit Agency

Headquarters: Pentagon
Date of Current Designation: Dec. 31, 1971
Type: FOA
Mission: Provide independent, objective, and quality internal audit service.
Total Personnel: 589

Air Force Cost Analysis Agency

Headquarters: Arlington, Va.
Date of Current Designation: Aug. 1, 1991
Type: FOA
Mission: Perform independent cost and risk analyses and provide special studies to aid long-range planning.
Total Personnel: 85

Air Force District of Washington

Headquarters: JB Andrews, Md.
Date of Current Designation: July 7, 2005
Type: Direct Reporting Unit (DRU)
Mission: Orchestrate support for National Capital Region activities; train, equip, and provide forces for contingency, homeland, and ceremonial support operations.
Total Personnel: 4,557

Air Force Flight Standards Agency

Headquarters: Oklahoma City
Date of Current Designation: 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: 170

Air Force Historical Research Agency

Headquarters: Maxwell AFB, Ala.
Date of Current Designation: Sept. 1, 1991
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: 37

Air Force Inspection Agency

Headquarters: Kirtland AFB, N.M.
Date of Current Designation: 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 the Secretary of the Air Force's inspection system.
Total Personnel: 115

Air Force Legal Operations Agency

Headquarters: JB Andrews, Md.
Date of Current Designation: 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: 808

Air Force Manpower Analysis Agency

Headquarters: JBSA-Randolph, Texas
Date of Current Designation: June 1, 2015
Type: FOA
Mission: Measure and document Air Force manpower requirements.
Total Personnel: 247

Air Force Medical Operations Agency

Headquarters: JBSA-Lackland, Texas
Date of Current Designation: 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: 359

As of Sept. 30, 2016

Air Force Medical Support Agency

Headquarters: Falls Church, Va.
Date of Current Designation: July 1, 1992
Type: FOA

Mission: Develop surgeon general plans and programs; provide medical expeditionary capabilities and national security strategy; define and execute health care policy.
Total Personnel: 273

Air Force Mortuary Affairs Operations

Headquarters: Dover AFB, Del.
Date of Current Designation: Jan. 6, 2009

Type: FOA
Mission: Ensure respectful handling, dignity, and honor of the fallen; provide care, service, and support to family of the fallen; transfer remains.
Total Personnel: 48

Air Force Office of Special Investigations

Headquarters: Quantico, Va.
Date of Current Designation: Dec. 20, 1971

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: 2,328

Air Force Operational Test and Evaluation Center

Headquarters: Kirtland AFB, N.M.
Date of Current Designation: April 4, 1983

Type: DRU
Mission: Test and evaluate new weapon systems.
Total Personnel: 577

Air Force Operations Group

Headquarters: Pentagon
Date of Current Designation: April 1, 1995
Type: FOA

Mission: Provide 24-hour watch on current operations; train and staff Crisis Action Team; develop weather data for National Command Authority, Joint Chiefs of Staff, National Military Command Center, Army Operations Center, and other federal agencies.
Total Personnel: 42

Air Force Personnel Center

Headquarters: JBSA-Randolph, Texas
Date of Current Designation: 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: 2,058

Air Force Public Affairs Agency

Headquarters: JBSA-Lackland, Texas
Date of Current Designation: Oct. 1, 2008
Type: FOA

Mission: Develop and sustain public affairs products; provide combat camera and graphics support; test emerging technologies; manage public affairs personnel deployments.
Total Personnel: 257

Air Force Review Boards Agency

Headquarters: JB Andrews, Md.
Date of Current Designation: Aug. 1, 1991
Type: FOA

Mission: Manage military and civilian appellate processes; serve as lead agent for DOD Physical Disability Board of Review.
Total Personnel: 91

Air Force Safety Center

Headquarters: Kirtland AFB, N.M.
Date of Current Designation: Jan. 1, 1996
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; direct safety education programs.
Total Personnel: 105

Air National Guard Readiness Center

Headquarters: JB Andrews, Md.
Date of Current Designation: June 1, 1992

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: 864

US Air Force Academy

Headquarters: Colorado Springs, Colo.
Date of Current Designation: April 1, 1954
Type: DRU

Mission: Develop and inspire young men and women to become USAF officers with knowledge, character, and discipline.
Total Personnel: 3,293

Civil Air Patrol

Headquarters: Maxwell AFB, Ala.
Date of Current Designation: Dec. 1, 1941
Type: Auxiliary

Mission: Provide operational capabilities to support search and rescue, disaster relief, a nationwide communications network, and counterdrug and homeland security missions; conduct leadership training, and career and technical education for CAP Cadet Program; promote aerospace education.
Total Volunteers: 56,000

Guide to Installations Worldwide

2017 USAF Almanac

Whiteman AFB, Mo. A1C Michaela R. Slanchik/USAF

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. **Unit/mission:** 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 (AFTC/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. **Unit/mission:** 31st FW (USAFE), 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. **Unit/mission:** 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. **Unit/mission:** 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:** 720-847-9431. **Owning command:** AFSPC. **Unit/mission:** 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:** 45th Space Wing (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:** 701-993-3292. **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:** N/A. **Owning command:** AFSPC. **Unit/mission:** 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 99704. **Nearest city:** Fairbanks. **Phone:** 907-585-6384. **Owning command:** AFSPC. **Unit/mission:** 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:** 702-404-1110. **Owning command:** ACC. **Unit/mission:** 232nd Operations Sq. (ANG), 432nd Wing (ACC), 726th Operations Group (AFRC), RPA operations; 799th ABG (ACC), support. **History:** Built in 1943 as auxiliary landing field to support air-to-air gunnery and other AAF training. Called Indian Springs Arpt. Closed in 1947. Reopened in 1949. Became Indian Springs AFB in 1951. Transferred to Air Research and Development Command in 1952. Redesignated Indian Springs Air Force Auxiliary Field and assigned to Nellis AFB in 1964. 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. **Unit/mission:** 55th ECG (ACC), electronic combat operations; 214th RG (ANG), RPA operations; 309th Aerospace Maintenance and Regeneration Group (AFMC), aerospace vehicle storage, regeneration; 355th FW (ACC), fighter operations; 563rd RQG (ACC), personnel recovery operations; 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 Jr., 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. **Unit/mission:** 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:** 325-696-4820. **Owning command:** AFGSC. **Unit/mission:** 7th BW (AFGSC), bomber operations; 317th AG (AMC), air mobility operations. **History:** Abilene AAB opened Dec. 18, 1942. Inactivated Jan. 31, 1946. Reopened and renamed Dec. 1, 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:** 661-277-1110. **Owning command:** AFMC. **Unit/mission:** 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. **Unit/mission:** 20th SPCS (AFSPC), space surveillance; 33rd FW (AETC), training; 53rd Wing (ACC), OT&E; 96th TW (AFMC), T&E, base support; Air Force Armament Museum (AFMC); AFRL Munitions Directorate (AFMC), R&D; PEO-Weapons/Air Force Life Cycle Management Center Armament Directorate (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:** 907-377-2116. **Owning command:** PACAF. **Unit/mission:** 168th ARW (ANG), air mobility operations; 354th FW (PACAF), 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:** AFGSC. **Unit/mission:** 28th BW (AFGSC), bomber operations; Air Force Financial Services Center (AFMC). **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. **Unit/mission:** 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. **Unit/mission:** 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

Acronyms and 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 and Training Command
AFB	Air Force Base
AFDW	Air Force District of Washington
AFGSC	Air Force Global Strike Command
AFMC	Air Force Materiel Command
AFNWC	Air Force Nuclear Weapons Center
AFRC	Air Force Reserve 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
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
APO AP	Army/Air Force Post Office Pacific
APO AE	Army/Air Force Post Office Europe
AOC	Air and Space Operations Center
AOG	Air and 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
ATKW	Attack Wing
AW	Airlift Wing
BW	Bomb Wing
C2	command and control
C3I	command, control, communications, and intelligence
C4	command, control, communications, and computers
CACS	Command and Control Squadron
CBCS	Combat Communications Squadron
CCG	Combat Communications Group
CCW	Command and Control Wing
CENTCOM	US Central Command
CG	Communications Group
CIRF	Centralized Intermediate Repair Facility
CONUS	continental US
CRG	Contingency Response Group
CRW	Contingency Response Wing
CSAR	combat search and 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

Major Active Duty Air Force Bases in the US

Fort D. A. Russell July 4, 1867. Renamed 1930 for Francis Emory Warren, Wyoming senator and first state governor. Reassigned to USAF in 1947 and received current designation in 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.

Grand Forks AFB, N.D. 58205. **Nearest city:** Grand Forks. **Phone:** 701-747-1110. **Owning command:** AMC. **Unit/mission:** 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. **Unit/mission:** 66th ABG (AFMC), support; PEO-Battle Management, PEO-C3I and 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. **Unit/mission:** 75th ABW (AFMC), support; 388th FW (ACC), fighter, Utah Test and 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. **Unit/mission:** 49th Wing (ACC), RPA training; 54th FG (AETC), fighter operations; 704th 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. **Unit/mission:** 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; 2nd Combat Weather Systems Squadron (ACC), OT&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:** (commercial, from CONUS) 011-90-322-316-1110. **Owning command:** USAFE. **Unit/mission:** 39th ABW (USAFE), 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. **Unit/mission:** 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. **Unit/mission:** 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 Legal Operations Agency (USAF); 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. **Unit/mission:** 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. **Unit/mission:** 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; 715th AMOG (AMC), air mobility operations; Alaskan NORAD Region, operational leadership; Hq. 11th Air Force (PACAF), operational leadership; Hq. Alaskan Command (PACOM), management. **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. **Unit/mission:** 1st FW (ACC), 192nd FW (ANG), fighter operations; 480th ISRW (ACC), ISR operations; 633rd ABW (ACC), support; 363rd ISRW (ACC), ISR operations; 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 Field**

Acronyms and Abbreviations

EOD	explosive ordnance disposal
FG	Fighter Group
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, and 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
OT&E	operational test and evaluation
PACAF	Pacific Air Forces
PACOM	US Pacific Command
PEO	Program Executive Officer
R&D	research and development
RED HORSE	Rapid Engineer Deployable Heavy Operational Repair Squadron, Engineers
RG	Reconnaissance Group
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, and escape
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 and 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, and procedures
TW	Test Wing
USAFE	US Air Forces in Europe
WEG	Weapons Evaluation Group
WF	Weather Flight
WPS	Weapons Squadron

Major Active Duty Air Force Bases Overseas

All bases on this map are USAFE bases.

Atlantic

Pacific

All bases on this map are PACAF bases.

owning command: AMC. **Unit/mission:** 62nd AW (AMC), 446th AW (AFRC), air mobility operations; 627th ABG (AMC), support; Western Air Defense Sector (NORAD/ANG), warning and control. **History:** Fort Lewis established 1917; McChord Field activated July 3, 1940. Formed as joint base under Army lead 2010. Lewis named for Capt. Meriwether Lewis of Lewis and Clark Expedition (1804-05). McChord named for Col. William C. McChord, died in aircraft crash, Aug. 18, 1937.

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

Hurlburt Field, Fla. A1C Joseph Pick/USAF

(AMC), 514th 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 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. **Unit/mission:** 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 component:** Fort Sam Houston, JBSA-Lackland, and JBSA-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 2005 base realignment and closure actions.

JBSA-Lackland, Texas 78236. **Nearest city:** San Antonio. **Phone:** 210-671-2908. **Owning command:** AETC. **Unit/mission:** 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 (AFMC), engineering services; Air Force Installation and Mission Support Center (AFMC), resourcing and combat support; Air Force Medical Operations Agency (USAF); Hq. 24th Air Force (AFSPC), operational leadership; Hq. 25th Air Force (ACC), operational leadership; Hq. Air Force Security Forces Center (AFMC), 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. (See JBSA 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 JBSA-Lackland mailing addresses.)

JBSA-Randolph, Texas 78150. **Nearest city:** San Antonio. **Phone:** 210-652-1110. **Owning command:** AETC. **Unit/mission:** 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 20, 1930. Placed under Joint Base San Antonio installation management umbrella 2009. (See JBSA) Named for Capt. William M. Randolph, died Feb. 17, 1928, on a training mission.

Kadena AB, Japan APO AP 96368. **Nearest city:** Naha. **Phone:** (commercial, from CONUS) 011-81-98-961-1110. **Owning command:** PACAF. **Unit/mission:** 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. **Unit/mission:** 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:** AFGSC. **Unit/mission:** 58th SOW (AETC), 150th SOW (ANG), special operations, CSAR training; 377th ABW (AFGSC), support, nuclear operations; Air Force Inspection Agency (USAF); 705th CTS-DMOC (ACC), virtual training; Air Force OT&E Center (USAF); AFNWC (AFMC), acquisition, sustainment; Air Force Safety Center (USAF), management; AFRL Directed Energy Directorate (AFMC), R&D; PEO-Strategic Systems (AFMC), acquisition; Space Development and Test Directorate (AFSPC), test; AFRL 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. **Unit/mission:** 8th FW (PACAF), fighter operations. **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:** USAFE. **Unit/mission:** 65th ABG, 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 (AETC), 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. **Unit/mission:** 19th AW (AMC), air mobility operations; 913th AG (AFRC), 189th AW (ANG), air mobility operations, training; 314th AW (AETC), training. **History:** base opened Oct. 9, 1955.

Los Angeles AFB, Calif. 90245. **Nearest city:** El Segundo. **Phone:** 310-653-1110. **Owning command:** AFSPC. **Unit/mission:** 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:** 623-856-6011. **Owning command:** AETC. **Unit/mission:** 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 aviator to receive MOH, killed in action Sept. 29, 1918.

MacDill AFB, Fla. 33621. **Nearest city:** Tampa. **Phone:** 813-828-1110. **Owning command:** AMC. **Unit/mission:** 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 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. **Unit/mission:** 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. **Unit/mission:** 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 and 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. **Unit/mission:** 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. 22, 1945), and 2nd Lt. Thomas L. (killed July 10, 1943)—all WWII B-24 pilots.

Misawa AB, Japan Jim Haseltine

Minot AFB, N.D. 58705. **Nearest city:** Minot. **Phone:** 701-723-1110. **Owning command:** AFGSC. **Unit/mission:** 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. **Unit/mission:** 23rd Wing (ACC), fighter, personnel recovery operations; 81st FS (AETC); 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/mission:** 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. **Unit/mission:** 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. **Unit/mission:** 55th Wing (ACC), 595th C2 Group (ACC), 170th Group (ANG), operations (C2, electronic attack, ISR), support, training; 577th Weather Wing (ACC), 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:** 011-82-505-784-1110. **Owning command:** PACAF. **Unit/mission:** 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. **Unit/mission:** 45th SW (AFSPC), space launch operations; 114th SPCS (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 Air Service/Air Corps, 1921-27.

Peterson AFB, Colo. 80914. **Nearest city:** Colorado Springs. **Phone:** 719-556-7321. **Owning command:** AFSPC. **Unit/mission:** 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. **Unit/mission:** 18th ASOG (ACC), combat weather, TACP operations; 21st STS, 24th STS (AFSOC), special tactics operations; 43rd AG (AMC), air mobility operations; USAF Combat Control School (AFSOC), training. **History:** activated 1919. Under 2005 base realignment and closure, 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:** USAFE. **Unit/mission:** 48th FW (USAFE), 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. **Unit/mission:** 95th RS (ACC), reconnaissance operations; 100th ARW (USAFE), air mobility operations; 352nd SOW (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 September 1959, when USAFE took over.

Ramstein AB, Germany APO AE 09094. **Nearest city:** Ramstein. **Phone:** 011-49-6371-47-1110. **Owning command:** USAFE. **Unit/mission:** 86th AW (USAFE), air mobility operations, support (including Kaiserslautern Military Community); 435th AGOW (USAFE), bare base, combat communications, combat weather, TACP operations; 521st AMOW (AMC), air transportation services; 603rd AOC (USAFE), C2 operations; Hq. 3rd AF (USAFE), operational leadership; Hq. USAFE, 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. **Unit/mission:** 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; 5th CCG (ACC), 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 Air Corps' Materiel Division, who died June 16, 1940.

Schriever AFB, Colo. 80912. **Nearest city:** Colorado Springs. **Phone:** 719-567-1110. **Owning command:** AFSPC. **Unit/mission:** 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. **Unit/mission:** 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, Sept. 28, 1912.

Seymour Johnson AFB, N.C. 27531. **Nearest city:** Goldsboro. **Phone:** 919-722-1110. **Owning command:** ACC. **Unit/mission:** 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. **Unit/mission:** 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. **Unit/mission:** 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. **Unit/mission:** 52nd FW (USAFE), 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) 719-474-3840. **Owning command:** AFSPC. **Unit/mission:** 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. **Unit/mission:** 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. **Unit/mission:** 60th AMW (AMC), 349th AMW (AFRC), air mobility 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. **Unit/mission:** 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. **Unit/mission:** 10th ABW (Air Force Academy), support; 306th FTG (AETC), training; Air Force Academy (USAF), education. **History:** established April 1, 1954, at Lowry AFB, Colo. Moved to permanent location in Colorado Springs August 1958.

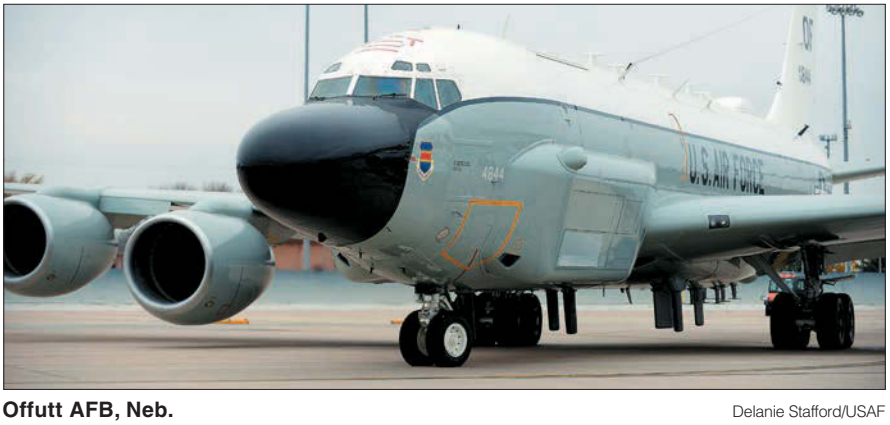
Vance AFB, Okla. 73705. **Nearest city:** Enid. **Phone:** 580-213-5000. **Owning command:** AETC. **Unit/mission:** 71st FTW (AETC), training. **History:** activated November 1941. Named for Lt. Col. Leon R. Vance Jr., Enid native, 1939 West Point graduate, and MOH recipient, killed July 26, 1944.

Vandenberg AFB, Calif. 93437. **Nearest city:** Lompoc. **Phone:** 805-606-1110. **Owning command:** AFSPC. **Unit/mission:** 30th SW (AFSPC), space and launch range operations, host unit; 381st TRG (AETC), training; 576th FLTS (AFSPC), test; 21st SOPS (AFSPC), space operations; Hq. 14th Air Force (AFSPC), operational leadership; Joint Space Operations Center (STRATCOM), space C2 operations. **History:** originally Army's Camp Cooke; activated October 1941. Reassigned to USAF June 7, 1957. Renamed for Gen. Hoyt S. Vandenberg, USAF's second Chief of Staff.

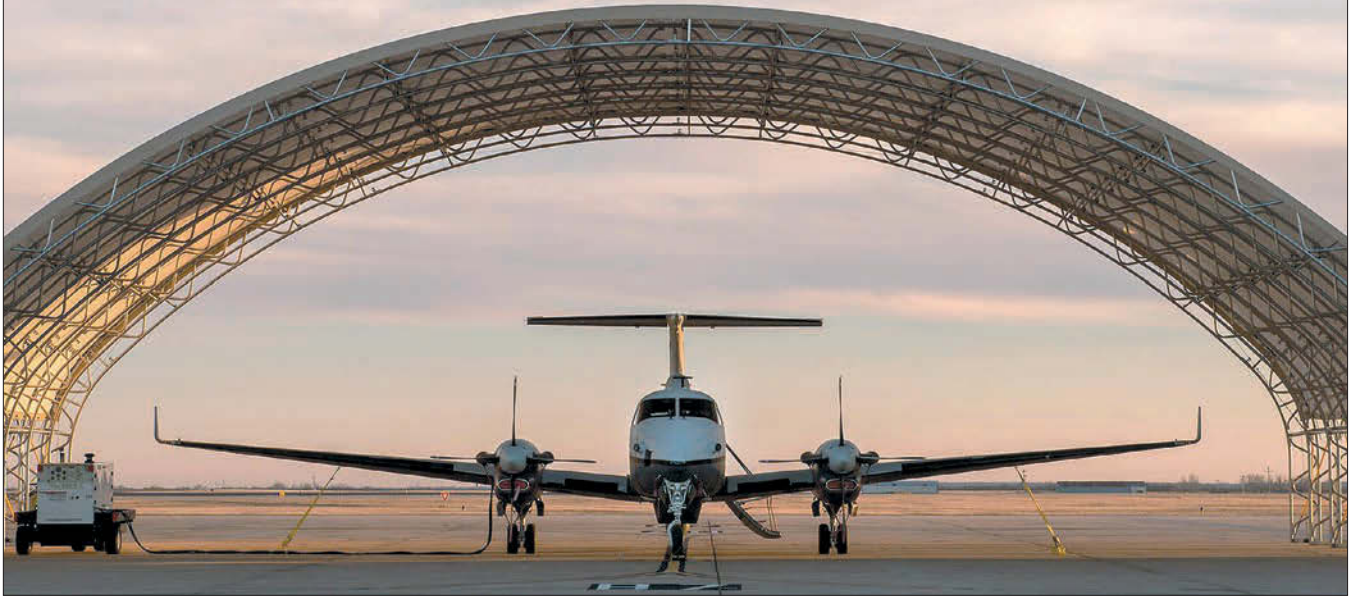
Whiteman AFB, Mo. 65305. **Nearest city:** Knob Noster. **Phone:** 660-687-1110. **Owning command:** AFGSC. **Unit/mission:** 72nd Test and Evaluation Squadron (AFGSC), T&E; 131st BW (ANG), bomber operations; 325th WPS (ACC), tactics training; 442nd FW (AFRC), fighter operations; 509th BW (AFGSC), bomber 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. **Unit/mission:** 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 and Bombers, PEO-ISR and 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 and 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. **Unit/mission:** 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.



Offutt AFB, Neb. Delanie Stafford/USAF



Will Rogers ANGB, Okla. SMSgt. Andrew M. LaMoreaux/ANG

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/mission:** 183rd Wing, CIRF; 183rd AOG, C2, cyber operations.

Allen C. Thompson Field/Jackson-Evers Arpt., Miss. 39232. **Nearest city:** Jackson. **Phone:** 601-405-8300. **Component:** ANG. **Unit/mission:** 172nd AW, 183rd AS, 183rd Aeromedical Evacuation Squadron, 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/mission:** 177th FW, fighter, TACP operations.

Bangor Arpt., Maine 04401. **Nearest city:** Bangor. **Phone:** 866-359-2264. **Component:** ANG. **Unit/mission:** 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.

Berry Field ANGB/Nashville Arpt., Tenn. 37217. **Nearest city:** Nashville. **Phone:** 615-660-8062. **Component:** ANG. **Unit/mission:** 118th Wing, cyber, RPA operations.

Birmingham-Shuttlesworth Arpt., Ala. 35217. **Nearest city:** Birmingham. **Phone:** 205-714-2000. **Component:** ANG. **Unit/mission:** 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/mission:** 124th FW, fighter, cyber, TACP operations. **History:** named for Lt. Paul R. Gowen, killed in B-10 crash in Panama July 11, 1938.

Bradley ANGB, Conn. 06026. **Nearest cities:** Hartford, Conn., and Springfield, Mass. **Phone:** 860-292-2310. **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. **Unit/mission:** 158th FW, fighter operations; 229th IOS, cyber training.

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

Charlotte/Douglas Arpt., N.C. 28208. **Nearest city:** Charlotte. **Phone:** 704-391-4100. **Component:** ANG. **Unit/mission:** 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/mission:** 153rd AW, air mobility, MAFFS operations.

Des Moines Arpt., Iowa 50321. **Nearest city:** Des Moines. **Phone:** 800-257-1693, ext. 210. **Component:** ANG. **Unit/mission:** 132nd Wing, DTOC and RPA, cyber, and ISR operations.

Dobbins ARB, Ga. 30069. **Nearest city:** Atlanta. **Phone:** 678-655-5000. **Component:** AFRC. **Unit/mission:** 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/mission:** 148th FW, EOD, fighter operations.

Eastern West Virginia Arpt. (Shepherd Field), W.Va. 25405. **Nearest city:** Martinsburg. **Phone:** 304-616-5100. **Component:** ANG. **Unit/mission:** 167th AW, air mobility operations.

Ellington Field, Texas 77034. **Nearest city:** Houston. **Phone:** 281-929-2337. **Component:** ANG. **Unit/mission:** 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/mission:** 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/mission:** 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/mission:** 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.

Air Reserve Component Bases in the US

McEntire JNGB, S.C. SrA. Ashleigh S. Pavelek/ANG

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

Greater Peoria Arpt., Ill. 61607. **Nearest city:** Peoria. **Phone:** 800-942-3771. **Component:** ANG. **Unit/mission:** 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 ANGS, 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 refueling operations. **History:** activated 1942 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. Home to Air Force Reserve, Army Reserve, and Marine Corps Reserve units.

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/mission:** 174th ATKW, ISR, RPA, space C2, TACP operations; ISR, RPA training.

Harrisburg Arpt., Pa. 17057. **Nearest city:** Middletown. **Phone:** 717-948-2231. **Component:** ANG. **Unit/mission:** 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. **Unit/mission:** 20th Operations Group Det. 2 (ACC) (active associate), 125th FW Det. 1 (ANG), 482nd FW (AFRC), fighter operations.

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

Jacksonville Arpt., Fla. 32218. **Nearest city:** Jacksonville. **Phone:** 904-741-7100. **Component:** ANG. **Unit/mission:** 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 Air Force Association 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/mission:** 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. **Unit/mission:** 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/mission:** 123rd AW, air mobility, bare base, special tactics operations.

Luis Muñoz 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:** 951-655-4138. **Component:** ANG/AFRC. **Unit/mission:** 163rd ATKW (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/mission:** 175th Wing, cyber, fighter operations.

McEntire JNGB, S.C. 29044. **Nearest city:** Columbia. **Phone:** 803-647-8300. **Component:** ANG. **Unit/mission:** 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. **Unit/mission:** 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. **Component:** ANG/AFRC. **Unit/mission:** 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/mission:** 187th FW, fighter, ISR operations. **History:** originally named for Ens. Clarence Dannelly, Navy pilot killed in WWII.

NAS JRB Fort Worth, Texas 76127. **Nearest city:** Fort Worth. **Navy-hosted switchboard:** 817-782-5000. **ANG Phone:** 817-852-3136. **Component:** ANG/AFRC. **Unit/mission:** 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. **Unit/mission:** 122nd ASOS (Pineville, La.), TACP; 159th FW, fighter operations; 214th EIS, cyber operations; 236th CBCS (Hammond, La.), combat communications.

Youngstown ARS, Ohio

SrA. Joshua Kincaid/USAF

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

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

Otis ANGB, Mass. 02542. **Nearest city:** Falmouth. **Phone:** 508-968-4003. **Component:** ANG. **Unit/mission:** 102nd IW, C2, DCGS operations; 202nd ISRG, cyber intelligence; 253rd CCG, combat communications. **History:** named for 1st Lt. Frank J. Otis, Massachusetts ANG flight surgeon and pilot killed in 1937 crash.

Pease Intl. Tradeport ANGS, N.H. 03803. **Nearest city:** Portsmouth. **Phone:** 603-430-3577. **Component:** ANG. **Unit/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. **Component:** ANG/AFRC. **Unit/mission:** 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. **Component:** ANG/AFRC. **Unit/mission:** 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. **Unit/mission:** 102nd IWS, cyber operations; 143rd AW, air mobility operations.

Reno/Tahoe Arpt. (May Field), Nev. 89502. **Nearest city:** Reno. **Phone:** 775-788-4500. **Component:** ANG. **Unit/mission:** 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. **Unit/mission:** 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. **Unit/mission:** 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/mission:** 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/mission:** 127th Wing, air mobility, fighter. **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.

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

Stewart ANGB, N.Y. 12550. **Nearest city:** Newburgh. **Phone:** 845-563-2000. **Component:** ANG. **Unit/mission:** 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:** 608-245-4395. **Component:** ANG. **Unit/mission:** 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/mission:** 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/mission:** 138th FW, fighter, cyber operations, TACP training.

Volk Field ANGB, Wis. 54618. **Nearest city:** Madison. **Phone:** 608-427-1210. **Component:** ANG. **Unit/mission:** 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/mission:** 110th ATKW, C2, cyber, RPA operations.

Will Rogers ANGB, Okla. 73159. **Nearest city:** Oklahoma City. **Phone:** 405-686-5227. **Component:** ANG/AFSOC. **Unit/mission:** 137th SOW, ISR operations; 146th ASOS, TACP operations; 205th EIS, cyber operations.

Yeager Arpt., W.Va. 25311. **Nearest city:** Charleston. **Phone:** 304-341-6249. **Component:** ANG. **Unit/mission:** 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.

Gallery of Weapons

By Aaron M. U. Church

2017 USAF Almanac

B-1 Lancer

TSgt. Richard Ebensberger/USAF

BOMBER AIRCRAFT

B-1 LANCER

Brief: Long-range penetrating bomber capable of delivering the largest weapon load of any aircraft in the Air Force inventory.

COMMENTARY

The B-1A was initially proposed as a replacement for the B-52, and four prototypes were developed and tested before program cancellation in 1977. The program was revived in 1981 as the B-1B. The vastly upgraded aircraft added 74,000 lb of usable payload, improved radar, and reduced radar cross section, but cut speed to Mach 1.2. B-1B saw first combat in Iraq during Desert Fox in 1998. Its three internal weapons bays hold a substantial payload, allowing different weapons in each bay. The bomber's blended wing/body configuration, variable-geometry design, and turbofan engines provide long range and loiter time. Offensive avionics include SAR for terrain-following and tracking and targeting moving vehicles. Sniper pod was added in 2008. The ongoing integrated battle station modifications is the most comprehensive refresh in the bomber's history. The three-part upgrade includes the Vertical Situation Display (VSD), which adds a digital cockpit, Fully Integrated Data Link (FIDL) to enhance targeting, command and control, and Central Integrated Test System (CITS), giving aircrew real-time aircraft diagnostics and simplifying maintenance and troubleshooting. FIDL includes Link 16 and Joint Range Extension data link, enabling permanent secure LOS/BLOS/C2. It also adds Ethernet to enable rapid airborne retargeting. Ongoing life extension efforts will stretch service life to 2040. The first Sustainment Block 16 airframe was redelivered to Ellsworth AFB, S.D., in May 2016. FY17 funds support development of higher powered Military Code (M-Code) jam-resistant GPS interface. B-1s resumed Pacific presence rotations to Guam in 2016.

EXTANT VARIANT(S)

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

Function: Long-range conventional bomber.
Operator: AFGSC, 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: 62.
Aircraft Location: Dyess AFB, Texas; Edwards AFB, Calif.; Eglin AFB, Fla.; Ellsworth AFB, S.D.
Contractor: Boeing (formerly Rockwell), Harris Corp.
Power Plant: Four General Electric F101-GE-102 turbofans, each 30,780 lb thrust.
Accommodation: Pilot, copilot, and two WSOs (offensive and defensive), on ACES II zero/zero 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 eight 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 nuclear and conventional strike bomber.

COMMENTARY

The B-2 is a flying wing that combines LO stealth design with high aerodynamic efficiency. Spirit entered combat against Serb targets during Allied Force on March 24, 1999. B-2 production was completed in three successive 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. New EHF satcom and high-speed computer upgrade recently entered full production. Both are part of the Defensive Management System-Modernization (DMS-M). FY16 began production funding for a new VLF receiver to provide redundancy, and FY17 starts include radio cryptographic modernization for UHF/VHF comms, and a new Adaptable Communications Suite (ACS) to provide time-sensitive mission data, targeting, intelligence, and C2 updates. AEHF comms will provide two-way, survivable communications for nuclear missions in A2/AD environments. Weapons integration includes the improved GBU-57 Massive Ordnance Penetrator, 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, allowing prerelease guidance to thwart jamming. Phase 2 will allow nuclear and conventional weapons to be

All inventory numbers are total active inventory figures as of Sept. 30, 2016.

B-2 Spirit A1C Arielle Vasquez/USAF

carried simultaneously to increase flexibility. USAF plans to add wideband nuclear C2 under the FAB-T program. Efforts are underway to increase fleet availability, shorten depot-level maintenance, and increase intervals between overhauls. Service life is projected to 2058.

EXTANT VARIANT(S)

• B-2A. Production aircraft upgraded to Block 30 standards.
Function: Long-range heavy bomber.
Operator: AFGSC, AFMC, ANG (associate).
First Flight: July 17, 1989.
Delivered: December 1993-December 1997. (Test asset redelivered as combat capable, July 2000.)
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 ACES II zero/zero 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. It first flew in 1960, and 102 were delivered between May 1961 and October 1962. The aircraft is USAF's only nuclear cruise missile carrier. Multimission capabilities include long-range precision strike, CAS, air interdiction, defense suppression, and maritime surveillance. Litening and Sniper targeting pods have been added. The overall B-52 System Improvements project is replacing key obsolescent components. The Combat Network Communications Technology (CONECT) program is replacing cockpit displays and comms and enabling machine-to-machine tasking/retargeting. The first CONECT airframe was redelivered in 2014. CNS/ATM replaces the B-52's analog systems with digital systems. The Internal Weapons Bay Upgrade enables internal smart weapon carriage. The first six Conventional Rotary Launchers were delivered under the accelerated program in 2016. The CRL roughly doubles smart weapon payloads, while reducing drag and increasing range. The upgrade supports transition from CALCM to the AGM-158B JASSM-ER long-range cruise missile. Future weapons include the GBU-54 Laser JDAM. Thirty B-52s are undergoing conventional weapon-only modifications to comply with the New START nuclear arms reduction agreement. FY17 efforts will replace the bomber's obsolescent radar with a reliable, modern, off-the-shelf system, add low-latency, jam-resistant C2/comms, and upgrade BLOS voice/data capability to preserve current capabilities.

EXTANT VARIANT(S)

● B-52H. Dual-capable nuclear and conventional bomber.
Function: Long-range heavy bomber.
Operator: AFGSC, AFMC, AFRC.
First Flight: April 15, 1952 (YB-52 prototype); 1960 (B-52H).
Delivered: 1955-October 1962.
IOC: June 19, 1955 (B-52A); May 1961 (B-52H).
Production: 744.
Inventory: 76.
Aircraft Location: Barksdale AFB, La.; Edwards AFB, Calif.; Minot AFB, N.D.
Contractor: Boeing, Harris.
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 on upward/downward ejection seats.

Acronyms and Abbreviations

A2/AD	anti-access, area denial
ACTD	Advanced Concept Technology Demonstration
AE	aeromedical evacuation
AEHF	Advanced Extremely High Frequency
AESA	active electronically scanned array
AGM	air-to-ground missile
AIM	air intercept missile
ALCM	Air Launched Cruise Missile
AMRAAM	Advanced Medium-Range Air-to-Air Missile
ASIP	Airborne Signals Intelligence Payload
ATP	advanced targeting pod
BLOS	beyond line of sight
BLU	bomb live unit
BM	battle management
C2	command and control
C3	command, control, and 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
CNS/ATM	communications, navigation, surveillance/air traffic management
Comint	communications intelligence
CONUS	continental US
CSAR	combat search and rescue
CSO	combat systems officer
DV	distinguished visitors
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
FY	Fiscal Year
FYDP	Future Years Defense Program
GATM	Global Air Traffic Management
GBU	guided bomb unit
GCS	ground control station
HARM	High-speed Anti-Radiation Missile
HE	high-explosive
HUD	head-up display
IFF	identification, friend or foe
IIR	imaging infrared
INS	inertial navigation system
IOC	initial operational capability
IR	infrared
ISR	intelligence, surveillance, and 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 and Targeting Infrared for Night
LCD	liquid crystal display
LF	low frequency
LGB	laser guided bomb
LJDAM	Laser Joint Direct Attack Munition
LO	low observable
LOS	line of sight
LRIP	low-rate initial production
MALD	Miniature Air Launched Decoy
Masint	measurement and signature intelligence
MFD	multifunction display
N/A	not available
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
START	Strategic Arms Reduction Treaty
STOL	short takeoff and landing
TACAN	tactical air navigation
TBD	to be determined
TF/TA	terrain-following/terrain-avoidance
T-O	takeoff
UHF	ultrahigh frequency
USAFA	US Air Force Academy
VHF	very high frequency
VLF	very low frequency
WCMD	Wind-Corrected Munitions Dispenser
WSO	weapon systems officer

B-52 Stratofortress A1C Arielle Vasquez/USAF

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, MALD, and MALD-J jammer variant.

FIGHTER & 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 deployed to combat for the first time in 2007. It combines a large, 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. The last of 278 aircraft were upgraded with Helmet Mounted Cueing System (HMCS) in 2015, and USAF is pursuing wing replacement beyond the initial 173 aircraft program ending in FY16. Integration of the Advanced Precision Kill Weapon System (APKWS) recently added carriage of 98 low-collateral, laser guided rockets, immediately arming A-10s in combat over Iraq and Syria. USAF reversed early retirement plans in favor of retaining the A-10 in service until 2022. FY17 funds support Lightweight Airborne Recovery System/Combat Survivor Evader Locator (LARS/CSEL) upgrades to enhance the A-10's ability to locate and aid recovery of downed aircrew.

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 (A-10A); 2007 (A-10C).
Production: 713.
Inventory: 283.
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 (Lockheed Martin).
Power Plant: Two General Electric TF34-GE-100 turbofans, each 9,065 lb thrust.
Accommodation: Pilot on ACES II zero/zero ejection seat.
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 high-explosive incendiary (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, CBU-87, laser guided rockets, various WCMDs, illumination rockets/flares, AGM-65 Mavericks, and AIM-9 Sidewinders.

F-15 EAGLE

Brief: Supersonic, highly maneuverable, all-weather 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/Bs in 1979 and offered superior maneuverability and acceleration, range, weapons, and avionics. It incorporates internal EW countermeasures and an added 2,000 lb of internal fuel (with provision for CFTs). The aircraft accounted for 34 of 37 USAF air-to-air kills during combat debut in Desert Storm. The final 43 production aircraft received the F-15E's APG-70 radar, and the Multistage Improvement Program enhanced tactical capabilities. The F-15C/D is undergoing vital improvements, including new AESA radar and self defenses, needed to survive and fight in future, contested airspace. The first APG-63(V)3 AESA-modified F-15 was delivered in 2010, and the Eagle Passive/Active Warning Survivability System (EPAWSS) engineering development contract was awarded in 2016. EPAWSS initially replaces the current, obsolete system. A second phase will add a towed decoy/angled countermeasure capability. A total of 214 aircraft will be upgraded to augment the limited F-22 fleet. Additional upgrades include jam-resistant Mode 5-compliant IFF and higher capacity, jam-resistant Link 16. Development includes infrared search and track (IRST) to discreetly detect, track, and engage air targets, and advanced data links to enhance interoperability with fifth generation aircraft. New digital cockpit displays will fully exploit AESA capabilities (common with the F-15E). USAF is seeking to rewing the fleet to extend its service life to 2045. The service reduced retirements over the FYDP to support increased European deployments.

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, USAFE, ANG.
First Flight: July 27, 1972 (F-15A).
Delivered: November 1974-79 (F-15A/B); 1979-85 (F-15C/D).
IOC: September 1975.
Production: 874.
Inventory: 212 (F-15C); 24 (F-15D).
Aircraft Location: Barnes Arpt., Mass.; Eglin AFB, Fla.; Fresno ANGB, Calif.; Jacksonville Arpt., Fla.; Kadena AB, Japan; Klamath Falls (Kingsley Field), Ore.; NAS JRB New Orleans,

A-10 Thunderbolt II A1C Giovanni Sims/USAF

F-15E Strike Eagle

Amn. Daniel Snider/USAF

F-16 Fighting Falcon

La.; Portland Arpt., Ore.; RAF Lakenheath, UK.
Contractor: McDonnell Douglas (now Boeing), BAE Systems (EPAWSS), Raytheon (AESA).
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) on ACES II zero/zero ejection seats.
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 attack as well as air-to-air combat.

COMMENTARY

F-15E is an upgraded heavyweight, multirole F-15 capable of sustaining nine Gs throughout the flight envelope. It entered combat during Desert Storm in 1991. F-15E's large, varied 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. Its advanced cockpit controls and displays include a wide-field-of-view HUD and helmet mounted cockpit-cueing, 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/reconnaissance capability. The aircraft are equipped with Link 16 and ARC-210 BLOS satcom. Ongoing upgrades include new APG-82(V)1 AESA radar and Eagle Passive/Active Warning Survivability System (EPAWSS) to replace its obsolete self-defense suite. The combined EPAWSS engineering development contract for all F-15 variants was awarded in 2016. USAF increased development, test, and evaluation funding for FY17 to support EPAWSS, AESA integration, new central computer and cockpit displays (in common with the F-15C/D), jam-resistant Link 16, Mode 5 IFF, and passive IR search and track (IRST). Fatigue testing is underway to determine SLEP requirements to reach 2035 or beyond.

EXTANT VARIANT(S)

• F-15E. Multirole fighter aircraft derived from the F-15.
Function: Multirole fighter.
Operator: ACC, AFMC, USAFE.
First Flight: Dec. 11, 1986.
Delivered: April 1988-2004.
IOC: September 1989.
Production: 236.
Inventory: 220.
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), BAE Systems (EPAWSS), Raytheon (AESA).
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 on ACES II zero/zero ejection seats.
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 comprises 50 percent of USAF's fighter fleet and is among the most maneuverable fighters ever built. It is a lightweight fighter capable of carrying the majority of PGMs. The F-16 entered combat during the 1991 Gulf War. The F-16C/D was introduced in 1984, at Block 25. It featured cockpit, airframe, and core avionics upgrades and added the increased-range APG-68 radar and AMRAAM. Block 30/32 added next stage improvements, new engines, and weapons including HARM. Block 40/42 delivered in 1988 introduced the LANTIRN pod, enabling automatic terrain following and high-speed night/all-weather penetration. It also introduced wide-angle HUD, increased takeoff weight, expanded flight envelope, and higher G limits. Block 50/52 delivered in 1991 is optimized for SEAD, employing HARM and a longer range radar. It added the uprated F110-GE-129 and F100-PW-229 engines, upgradable cockpit, Sniper/Litening ATPs, and ROVER to coordinate with strike controllers. Blocks 40 through 52 were cockpit-standardized with a new color MFD, modular mission computer, Helmet Mounted Integrated Targeting (HMIT), and Link 16. Block 30/32 aircraft are still undergoing mods. Automatic Ground Collision Avoidance System (A-GCAS) was added in 2014. Future efforts include adding air collision avoidance and merging the two systems, as well as developing a similar system that is compatible with early block, analog flight-control systems. SLEP development efforts to extend fatigue life beyond 10,000 hours began in 2016. FY17 funds support modifying AESA radar retrofits to allow NORAD alert aircraft to counter cruise missile threats. JASSM-ER integration and high-capacity, secure, and civil-compliant comm/data link mods are ongoing.

EXTANT VARIANT(S)

• F-16C/D Block 30/32. Multinational Staged Improvement Program II upgraded with new engines, flown by ANG, AFRC, and test and aggressor units.
• 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, USAFE, ANG, AFRC.
First Flight: Dec. 8, 1976 (full-scale development).
Delivered: January 1979-2005.
IOC: October 1980, Hill AFB, Utah.
Production: 2,206.
Inventory: 793 (F-16C); 156 (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: General Dynamics (now Lockheed Martin), Northrop Grumman (radar).
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 (C); two pilots (D) on ACES II zero/zero ejection seats.
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.

SrA. Areca T. Bell/USAF

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 air defenses and achieve air dominance.

COMMENTARY

The F-22 is built for day, night, and adverse weather full-spectrum operations. The world's most advanced fighter, it combines stealth, supercruise, high maneuverability, and integrated avionics. Its integrated avionics and data links permit simultaneous multitarget engagement. Advanced flight controls and thrust vectoring high-performance engines lend great maneuverability. Features include six LCD color cockpit displays, APG-77 radar, EW system with RWR and missile launch 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 ground targets during the aircraft's first combat sortie. Ongoing upgrades include the Reliability, Availability, and Maintainability Maturation Program (RAMMP), software Increment 3.1, and tactical capability improvements, which collectively retrofit combat-coded F-22s with enhanced ground attack, air-to-air, and networking. RAMMP is adding AIM-9X-capable launch rails, and the next software package will add high resolution ground mapping SAR, threat geolocation, EA capability, and integration of SDB I, AIM-120D, and AIM-9X. Five test aircraft are modified to 3.2 standards to begin operational testing in FY17, and fleetwide mods are slated to begin FY18. Additional upgrades include engine safety, performance, and maintainability mods, phase two structural upgrades to extend fleet life, and improved ISR and comms. USAF is exploring options to improve situational awareness and targeting with development of the Raptor Helmet Mounted Display and Cueing System (RHMDCS) and to upgrade training airframes to combat-coded specifications.

EXTANT VARIANT(S)

• F-22A. Fifth generation air dominance fighter.
Function: Multirole air dominance fighter.
Operator: ACC, AFMC, AFRC (associate), PACAF, ANG.
First Flight: Sept. 7, 1997.

F-22 Raptor

SrA. Alex Fox Echols III/USAF

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 on ACES II zero/zero ejection seat.
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 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 capable of penetrating advanced enemy air defenses and striking targets at will. The F-35A carries up to 18,000 lb of weapons on 10 stations, including four internal bays (for maximum stealth) and six additional wing-mounted pylons. The service received its first production aircraft—AF-7—in 2008. USAF most recently awarded LRIP Lot 9 and Lot 10 covering delivery of 85 F-35As to the service through 2020. The Marine Corps declared F-35 IOC in 2015. USAF reached IOC at Hill AFB, Utah, on Aug. 2, 2016, with the first aircraft upgraded with Block 3I software. Block 3I improves the baseline Block 2B software, adding 89 percent of the code needed for full combat capability. The Block 3F software, in testing, will enable full combat capability, adding a range of precision guided munitions. Fiscal 2017 launches Block 4 development to add new weapons and sensors, improve the F-35's EW capabilities, and integrate nuclear weapons beyond 2020. A fuel system flaw partially grounded the fleet last year, but jets were cleared to resume interim flight until depot-level mods are completed. Lockheed Martin delivered the 100th F-35A to Luke AFB, Ariz., on Aug. 26, 2016, and FY17 funding supports procurement of 43 F-35As.

F-35A Lightning II R. Nial Bradshaw/USAF

EXTANT VARIANT(S)

• F-35A. Conventional takeoff and landing (CTOL) variant for the Air Force.
• F-35B. Short takeoff and vertical landing (STOVL) variant for USMC.
• F-35C. Carrier-capable variant for Navy.
Function: Multirole fighter.
Operator: ACC, AETC, AFMC, AFRC. Planned: PACAF, USAFE, ANG.
First Flight: Dec. 15, 2006 (F-35A prototype).
Delivered: April 2011 (first production aircraft).
IOC: Aug. 2, 2016.
Production: Planned: 1,763 USAF (F-35A); 680 Navy and Marine Corps (F-35B/C); unspecified number to development partners and foreign military sales customers.
Inventory: 96 (USAF).
Aircraft Location: Edwards AFB, Calif.; Eglin AFB, Fla.; Hill AFB, Utah; Luke AFB, Ariz.; Nellis AFB, Nev.; future locations include Burlington Arpt., Vt.; Eielson AFB, Alaska; RAF Lakenheath, UK; others TBD.
Contractor: Lockheed Martin, BAE Systems, Northrop Grumman, Pratt & Whitney.
Power Plant: F-35A: one Pratt & Whitney F135-PW-100, 40,000 lb thrust.
Accommodation: Pilot on Martin Baker MK16 zero/zero ejection seat.
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 25 mm GAU-22/A cannon; standard internal loadout: two AIM-120 AMRAAMs and two GBU-31 JDAMs.

SPECIAL OPERATIONS AIRCRAFT

AC-130J GHOSTRIDER

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

The AC-130J is a next generation gunship based on a significantly modified MC-130J, fitted with a modular PSP, and wing-mounted weapon racks. The AC-130J is designed to provide ground forces with a persistent direct-fire platform for urban operations. PSP includes a mission management console, robust communications suite, two EO/IR sensors, advanced fire-control equipment, PGM delivery capability, and trainable cannons. Initial Block 10 aircraft include fully integrated digital avionics cockpit, GPS/INS, integrated defensive systems, color weather radar, and PSP. Block 20 configuration adds a 105 mm gun, laser guided SDB, a side-mounted pilot tactical display, and Large Aircraft Infrared Countermeasures (LAIRCM). Airframes are delivered as MC-130Js for subsequent modification as gunships. The prototype flew its first post-conversion flight in 2014, but was declared a loss after departing controlled flight during developmental testing at Eglin AFB, Fla. The first Block 20 was delivered to Hurlburt Field, Fla., in July 2016 and began live-fire evaluation of the 105 mm cannon and Laser Guided SDB (LSDB). Block 20 operational testing at Hurlburt will continue through mid-2017. Four MC-130Js are undergoing conversion and FY17 funds convert four more. Future upgrades include a high-energy laser weapon, air-launched RPAs to provide below-the-cloud targeting data for all-weather strike, and integration of laser guided Hellfire missiles.

EXTANT VARIANT(S)

• AC-130J Ghostrider Block 10. Prototype gunship based on the MC-130J.
• AC-130J Ghostrider Block 20. Production standard gunship with additional 105 mm gun.
Function: Attack.
Operator: AFSOC.
First Flight: April 5, 1996 (basic C-130J).
Delivered: From 2014 (prototype).
IOC: 2017 (planned).
Production: Four (37 to be converted from new-build MC-130Js).
Inventory: Three.
Aircraft Location: Hurlburt Field, Fla.
Contractor: Lockheed Martin.
Power Plant: Four Rolls Royce AE 2100D3 turboprops, each 4,700 shp.
Accommodation: Two pilots, two CSOs, three gunners (four, with inclusion of 105 mm gun).
Dimensions: Span 132.6 ft, length 97.7 ft, height 39.1 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: Trainable 30 mm GAU-23/A cannon; 105 mm cannon; PGMs.

AC-130U SPOOKY

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

AC-130U is a gunship-configured C-130H modified with gun systems, electronic and EO sensors, fire-control systems, enhanced navigation, sophisticated comms, defensive systems, and in-flight refueling capability. 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. Rockwell converted the initial 13 AC-130Us in 1994-95, and Boeing more recently converted four more, all dubbed "Spooky" in reference to the early AC-47D gunship. The command retired a single nonstandard AC-130U in 2015, before halting phaseout. AFSOC is retaining 16 legacy AC-130Us and accelerating center wing box replacements to extend serviceability and meet high operational demands until replaced by AC-130Js. Ongoing upgrades include Enhanced Situational Awareness (ESA) program mods to provide near real-time intel and data fusion of threat detection, avoidance, geolocation, and adversary-emitter identification. Other upgrades include replacing obsolescent mission computers and EO/IR sensors with a new high-definition suite, and GPS updates. All AC-130Us serve with the 1st Special Operations Wing at Hurlburt Field, Fla.

EXTANT VARIANT(S)

• AC-130U Spooky II. 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: 16 (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-130W STINGER II

Brief: Modified C-130H variant primarily designed for armed overwatch, reconnaissance, and direct ordnance delivery to support ground troops.

COMMENTARY

The AC-130W is a C-130H significantly modified with improved navigation, threat detection, countermeasures, comms, and a standoff Precision Strike Package. The aircraft performs armed overwatch, CAS, and reconnaissance over friendly positions for threat prevention. AC-130Ws also provide strike coordination, nontraditional ISR, and C2. PSP mod includes a mission management console, communications suite, and flight deck hardware. The airframes were originally converted as MC-130W Combat Spear for SOF infiltration/exfiltration and in-flight refueling. Aircraft were redesignated Dragon Spear with the addition of the roll on/roll off PSP to fill a need for more gunships in 2010. The aircraft was redesignated AC-130W Stinger II after further enhancements in 2012. New AC-130Js will eventually replace the AC-130Ws, which average more than 24 years old. Ongoing upgrades include Enhanced Situational Awareness (ESA) program mods to provide near real-time intel and data fusion capability, including threat detection, avoidance, geolocation, and adversary-emitter identification. SDB was added in 2012, and all aircraft are slated for retrofit with a 105 mm gun in common with the AC-130U/J fleets. Ongoing weapons integration includes Hellfire and Laser Guided SDB (LSDB). Future development include enhanced IR suppression to reduce engine heat signatures. A single aircraft will be modified with a high-energy laser (in place of the 30 mm gun) to develop future AC-130J armament.

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.

AC-130J Ghostrider

SSgt. Christopher Callaway/USAF

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, 105 mm cannon (planned).

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 version of the Polish-built PZL Mielec M-28 Skytruck high-wing STOL aircraft with nonretractable landing gear for 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 Aviation Foreign Internal Defense (AvFID) missions. AFSOC now uses contract aircraft to provide partner countries with more tailored assistance and opted to cut the fleet from 16 to the current five aircraft in 2015. C-145s now provide aircrew proficiency for combat aviation advisors.

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 (associate).
First Flight: July 1993 (PZL M-28).
Delivered: From 2009.
IOC: N/A.
Production: 16.
Inventory: Five, 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: 20 (converted).
Inventory: USSOCOM-owned.
Aircraft Location: Cannon AFB, N.M.; Duke Field, Fla.; forward operating locations worldwide.
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 vertical capability of a helicopter with the speed of a fixed wing aircraft.

COMMENTARY

The CV-22 is a medium-lift vertical takeoff and landing (VTOL) tilt-rotor, primarily used for clandestine long-range, all-weather penetration to insert, recover, and support SOF teams. USAF CV-22Bs are equipped with a fully integrated precision TF/TA radar navigation, digital cockpit management system, FLIR, integrated NVG/HUD, digital map system, robust self-defense systems, and secure anti-jam comms. CV-22 can conduct shipboard and austere forward operations. It is capable of operating in nuclear, biological, and chemical (NBC) warfare conditions. It deployed to Africa in November 2008 and first saw combat in Iraq in 2009. AFSOC is retrofitting the CV-22 to Block 20 standards, in common with USMC MV-22s. Mods include new

CV-22 Osprey A1C Joseph Pick/USAF

cabin lighting, color helmet mounted displays, IR searchlight, lightweight ballistic armor, EW upgrades, and situational awareness enhancements. The Silent Knight TF/TA radar (common to the MC-130J) will replace the current radar with a stealthier, low-altitude night/all-weather navigation radar. Europe-based CV-22s will shift to Spangdahlem AB, Germany, with the planned closure of RAF Mildenhall, UK. New ANG associate units formed to jointly operate aircraft at Hurlburt Field, Fla., and Kirtland AFB, N.M. USAF plans to establish a Pacific-based presence at Yokota AB, Japan, and the final production aircraft is slated for delivery in 2017.

EXTANT VARIANT(S)

• CV-22B. Air Force special operations variant of the V-22 Osprey.
Function: Multimission lift.
Operator: AETC, AFSOC, ANG (associate).
First Flight: March 19, 1989 (V-22).
Delivered: January 2007-present.
IOC: 2009.
Production: 50 planned (CV-22; incl two replacements).
Inventory: 49.
Aircraft Location: Cannon AFB, N.M.; Hurlburt Field, Fla.; Kirtland AFB, N.M.; RAF Mildenhall, UK. Planned: Spangdahlem AB, Germany. Yokota AB, Japan.
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 II

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.

C-146 Wolfhound TSgt. Samuel King Jr./USAF

MC-130J Commando II SrA. Peter Reft/USAF

E-3 Sentry

All models are capable of aerial refueling as a receiver and supplier. 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-130Ps (previously HC-130N/P) are a specialized aerial refueling version designed to support SOF and were delivered in the mid-1980s. 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 modernized pod-based aerial refueling system. Ongoing MC-130H mods include center wing replacement, new mission computers, GPS upgrades, permanent Sigint installation, threat warning upgrades, and new lightweight armor. AFSOC is replacing the MC-130P with the new MC-130J, and the California ANG is the variant's sole remaining user. MC-130Hs from Kirtland AFB, N.M., consolidated to Hurlburt Field, Fla., in 2016, and Kadena AB, Japan, is retaining several H models only until its MC-130Js achieve TF/TA capability.

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: AFSOC, ANG.
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: Four (MC-130P); 17 (MC-130H).
Aircraft Location: Hurlburt Field, Fla.; Kadena AB, Japan; Moffett Field, Calif. (MC-130P).
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, for clandestine intrusion into hostile areas to provide air refueling of SOF helicopters and CV-22s. MC-130J enables infiltration, exfiltration, and resupply. Mods include fully integrated INS/GPS, color cockpit LCDs, NVG lighting, HUDs, integrated defensive systems, digital moving map display, EO/IR system, dual secure voice/data satcom, enhanced cargo handling, and extended-life wings. MC-130Js have secondary leaflet and rubber raiding craft aerial delivery roles for psyops and littoral ingress/egress. Crew is smaller than legacy models, but includes CSO/auxiliary flight deck stations to handle aerial refueling (otherwise performed by the flight engineer). Loadmasters handle remaining flight engineer/comms functions. The aircraft was redesignated from Combat Shadow II to Commando II in March 2012 and is replacing the MC-130P. European-based MC-130Js will move from RAF Mildenhall, UK, to Spangdahlem AB, Germany, as part of overall force structure adjustments. FY17 funding supports procurement of six airframes. Ongoing upgrades include new Radio Frequency Countermeasure (RFCM) EW system. The MC-130J currently lacks terrain-following/terrain-avoidance (TF/TA) capability. An MC-130J completed several test sorties with experimental winglets to explore potential efficiency enhancements in 2016. Development and integration of the Silent Knight TF/TA radar will enable low-level nighttime and adverse weather flight with low probability of detection to fully replace legacy platforms.

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: 57 (planned).
Inventory: 35.
Aircraft Location: Cannon AFB, N.M.; Kadena AB, Japan; Kirtland AFB, N.M.; RAF Mildenhall, UK. Planned: Spangdahlem AB, Germany.
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 employed on worldwide special operations missions. 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 in Afghanistan and Iraqi Freedom. Ongoing upgrades include Multispectral Targeting System sensor installation on three airframes and Advanced Threat Warning (ATW) system integration fleetwide in response to current threats.

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: 20 (USSOCOM-owned).

U-28A SrA. Logan Carlson/USAF

SrA. John Linzmeier/USAF

E-8 JSTARS USAF

Aircraft Location: Cannon AFB, N.M.; Hurlburt Field, Fla.
Contractor: Pilatus Aircraft Ltd.
Power Plant: Single Pratt & Whitney PT6A-67B, 1,200 shp.
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: Modified Boeing 707 for all-weather air surveillance, command, and control.

COMMENTARY

The Sentry airborne warning and control system (AWACS) is a heavily modified Boeing 707-320B capable of surveilling airspace in excess of 200 miles from surface to stratosphere. AWACS coordinates theater air operations in direct subordination to joint/combined air and space operations centers. It can simultaneously conduct C2, BM, and target detection/tracking. E-3Bs were upgraded to Block 30/35 standards in 2001. USAF is equipping the aircraft with interim IFF to keep the variant airspace-compliant until Block 40/45 upgrade or divestiture. Block 40/45 aircraft are redesignated E-3G. The upgrade is the most comprehensive AWACS enhancement to date and improves tracking/identification, system reliability, and life-cycle cost. Mods include open architecture computing, operator workload reduction, new consoles, improved electronic support measures (ESM), and passive surveillance capability. DRAGON (Diminishing Manufacturing Sources Replacement of Avionics for Global Operations and Navigation) upgrades add a digital cockpit and next generation CNS/GATM. The first of 24 upgraded airframes was delivered to Tinker AFB, Okla., on Jan. 9, 2017. Future upgrades include the Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS). Six airframes are undergoing Block 40/45 modification under LRIP, and the first was redelivered in 2014. USAF is upgrading 18 more under full-rate production. Seven AWACS slated for divestiture will be retained to FY19 due to operational demand.

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 (associate).
First Flight: Oct. 31, 1975 (full avionics).
Delivered: March 1977-84.
IOC: 1977.
Production: 31.
Inventory: 16 (E-3B); four (E-3C); 11 (E-3G).
Aircraft Location: JB Elmendorf-Richardson, Alaska; Kadena AB, Japan; Tinker AFB, Okla.
Contractor: Boeing, Northrop Grumman (radar), Lockheed Martin (computer), Rockwell Collins (DRAGON cockpit upgrade).
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 enabling national leaders to direct nuclear and conventional forces, execute emergency war orders, and coordinate civil response actions. It is hardened against the effects of nuclear explosions, including electromagnetic pulse (EMP). Comm and data processing capabilities include EHF Milstar satellite, six-channel International Maritime Satellite, and a triband radome houses SHF communications antenna. All aircraft underwent Block 1 upgrades, enhancing electronic and communications infrastructure with commercial off-the-shelf (COTS) systems. Ongoing development includes replacing Milstar data links with AEHF compatible FAB-T. Other developments include replacing the VLF/LF transmitter and CNS/ATM with civil compliant systems. FY17 funds support purchasing the first production Low Frequency Transmit System (LFTS) kit. USAF is drafting requirements to replace E-4B with a more modern platform. Airframes are viable to 2039, but phaseout of commercial 747-200s hampers sustainment beyond 2020. The fleet transferred from ACC to AFGSC in 2016, aligning with its primarily nuclear role.

EXTANT VARIANT(S)

• E-4B. Modified Boeing 747-200 equipped as a NAOC.
Function: Nuclear command and control.
Operator: AFGSC.
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.
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 for locating, classifying, and tracking moving ground targets.

COMMENTARY

E-8C primarily provides theater commanders ground surveillance data to support tactical operations. E-8 evolved from the Army/Air Force Joint Surveillance Target Attack Radar System program. The first two aircraft deployed for Desert Storm while still under development, and early airframes were eventually retrofit to Block 20 production standards, 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 radar antenna. It can locate, classify, and track vehicles at distances exceeding 124 miles, and recent refinements enable human-target tracking. Target data is transmitted via data link to ground stations or other aircraft. USAF halted modernization funds and retired the program's T-3 systems integration testbed aircraft in 2015. The service issued a request for proposals to replace the E-8 with a more affordable business-class airframe in late 2016. A contract for 17 aircraft is planned in 2018, with IOC slated for FY24. USAF postponed retiring five aircraft to FY19. Fleetwide retirement depends on full fielding of a replacement.

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: ANG.
First Flight: December 1988.

E-11A Battlefield Airborne Communications Node

SSgt. Katherine Spessa/USAF

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, 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.
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 for test tracking and range clearance.

COMMENTARY

The E-9A is a modified DHC-8 commuter aircraft that provides air-to-air telemetry support for weapons testing, target drone operations, and range clearance for the vast Eglin Test and Training Range over the Gulf of Mexico. Upgrades include AN/APS-143(V-1) airborne sea surveillance radar, UHF telemetry, and signal relay systems. The E-9 is able to track flying and surface targets. It can detect small watercraft at ranges up to 25 miles and alert range safety personnel to clear the area before live-fire testing. The aircraft can also remotely initiate 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.
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 for tactical communications and data relay.

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 Internet protocol-based data transfer between dissimilar systems. It was fielded to meet an urgent operational need for BLOS communications relay capability between ground troops and other airborne platforms. The system entered combat in Afghanistan in 2008 and enables troops to overcome the limitations of LOS comms in rugged terrain. The Battlefield Airborne Communications Node (BACN) payload is integrated on a mixed fleet of manned E-11As and unmanned EQ-4B Global Hawks. The combined BACN fleet has provided near-constant coverage in theater. The service is seeking to extend operations and possibly acquire the E-11A as a long-term program.

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 force management. The fleet has been deployed near-constantly since the beginning of combat operations in Afghanistan in 2001. All aircraft have been retrofitted to Block 35 standards, and all are aerial refuelable. The aircraft was designed to be easily updated and modified. 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/countersatellite navigation, and ongoing upgrades include installation of digital glass cockpits. The first two cockpit-upgraded airframes were redelivered to Davis-Monthan AFB, Ariz., in August 2016. USAF requested to retire seven aircraft, converting one as an NEC-130H testbed. The sole TC-130H crew trainer was retired in July 2016. Congress barred fleetwide retirement, citing emergent high-end threats, and required USAF to draft plans to extend or replace the aircraft with a comparable capability.

EXTANT VARIANT(S)

• EC-130H. Electronic attack variant of the C-130H.
• 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 (EC-130H).
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/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 operations (MISO) and civil affairs broadcast. 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 broadcast equipment for psychological warfare, enhanced navigation, self-protection, and an aerial refueling receptacle. With transition to the EC-130J, USAF added a new, secondary mission resulting in a second variant. Three heavily modified EC-130J Commando Solo aircraft serve as a standard broadcasting station for psychological warfare operations. Four EC-130Js, dubbed Super J, perform secondary, low-cost EA role on top of their special operations mobility (SOFFLEX) mission. SOFFLEX includes personnel and cargo airdrop, combat offload, and infiltration/exfiltration. FY17 funding supports demodification of three Super Js to make them multimission capable, and procurement of three of the seven planned roll-on/roll-off Removable Airborne MISO Systems (RAMS). RAMS is based on the Army's Fly Away Broadcast System and will allow the Super J to supplement Commando Solo. All variants are operated by the ANG's 193rd Special Operations Wing.

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.
Operator: ANG.
First Flight: April 5, 1996 (C-130J).
Delivered: 2003.
IOC: 2004.
Production: Seven.
Inventory: 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 used for medium/low-altitude ISR.

COMMENTARY

The MC-12W is a manned tactical ISR, Sigint, and targeting platform based on the Beechcraft King Air 350. 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. Specialized equipment includes FMV, laser designation, various sensors, BLOS connectivity, and satcom. An initial seven 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, adding enhanced FMV with laser designator, improved Sigint, and increased bandwidth BLOS. The sensor-equipped C-12s were acquired to augment RPA systems operating in Southwest Asia and entered combat in both Iraq and Afghanistan in 2009. ACC divested its 33-strong MC-12 fleet in 2015. The Oklahoma ANG acquired 13 of the airframes to form a dedicated SOF support mission, deploying for the first time to Afghanistan in 2016.

MC-12W Liberty SrA. Tiffany Trojca/USAF

EXTANT VARIANT(S)

• MC-12W. Modified Beechcraft King Air equipped for battlefield ISR and targeting.
Function: Tactical reconnaissance.
Operator: ANG.
First Flight: April 2009.
Delivered: From April 2009.
IOC: June 2009.
Production: 42.
Inventory: 13.
Aircraft Location: Will Rogers ANGB, Okla.
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 party to the 1992 Open Skies Treaty. Specialized mission equipment includes side-looking synthetic aperture radar, infrared line scanning devices, video camera, and framing and panoramic optical cameras installed in the rear of the aircraft. The 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. USAF is developing a digital camera suite to replace the increasingly obsolete and difficult to maintain wet-film cameras in compliance with a presidential directive. FY17 funds support testing and certification of a prototype digital imaging suite.

EXTANT VARIANT(S)

• OC-135B. Modified C-135 equipped for photo reconnaissance/treaty verification.
Function: Observation.
Operator: ACC.
First Flight: 1993.
Delivered: 1993-96.

OC-135 Open Skies Tim Felce

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.
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/manned ISR.

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. The Air Force originally planned to divest the fleet in FY15, but is funding continued operations.

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: Des Moines Aprt., Iowa; 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.; Truax 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.

RC-135S Cobra Ball Josh Plueger/USAF

U-2 Dragon Lady

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 collects optical and electronic data on ballistic missile activity. It can deploy anywhere in the world in 24 hours and provide on-scene EO reconnaissance. Ongoing upgrades include Wideband Global Satellite reachback connectivity, new airborne tracking system, improved operator interface, liquid cooling system, Rivet Joint Comint suite integration, and capabilities enhancements for operations in dense signal environments.

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 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. FY17 funds support wideband satcom reachback connectivity, integration of Rivet Joint's Comint suite, improved operator interface, new intercom, and capability enhancement for dense signal environments.

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-26 Condor Sgt. Lalita Laksbergs/ARNG

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. Ongoing Baseline 11 upgrades include new direction finding Comint, precision Elint/Sigint system integration, wideband satcoms, enhanced near real-time data dissemination, new steerable beam antenna, improved weather radar, digital cockpit instruments, modernized operator interface, and improved dense signal environment capabilities. Planned upgrades include increased signal bandwidth/exploitation, Distributed Common Ground Station (DCGS) interoperability, and operator station 3-D maps. Britain will receive the last of three RC-135W (dubbed Airseeker) in FY17, to fill an urgent capability gap. USAF/RAF personnel co-crew both fleets.

EXTANT VARIANT(S)

• RC-135V/W Rivet Joint. Self-contained stand-off 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; RAF Waddington, UK (USAF co-manned).
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 of-

SSgt. Robert M. Trujillo/USAF


HC-130J Combat King II

TSgt. Zachary Wolf/USAF

ficers, 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: Manned, single-engine, high-altitude, long endurance ISR aircraft.

COMMENTARY

The U-2 is the Air Force's manned high-altitude ISR platform, capable of carrying multiple, simultaneous intelligence sensors. U-2 can carry a variety of advanced optical, multispectral EO/IR, SAR, Sigint, and other payloads. U-2 was initially designed in the 1950s, but current U-2s date to the 1980s when the production was reopened to produce the larger and more capable TR-1. S model conversions began in 1994, and all current aircraft are Block 20 configured, featuring a glass cockpit, digital autopilot, modernized EW system, and updated data links. Sensor upgrades include the ASARS-2A SAR sensor, SYERS-2A multispectral EO/IR imagery system, and enhanced Airborne Signals Intelligence Payload (ASIP). The legacy optical bar camera is still in use, providing broad-area synoptic imagery coverage. U-2's modular payload and open system architecture allow new sensors to be rapidly fielded to meet emerging needs. USAF planned to start retiring the fleet in FY16 due to budget constraints. Congress stipulated the RQ-4 Block 30 achieve sensor parity with the U-2 before the fleet is phased out, delaying retirement to FY19. U-2s are heavily tasked meeting operational demands, and retirement would reduce high altitude ISR capacity by 50 percent. Future funds are limited to flight safety and sustainment, unless critical to national security. Ongoing upgrades include ASARS development, integration, and testing, as well as EO sensor and EW system upgrades, and flight safety and airspace compliance mods. A two-seat TU-2S was destroyed in a crash near Beale AFB, Calif., on Sept. 20, 2016.

EXTANT VARIANT(S)

• U-2S. Current variant of the U-2/TR-1.
• TU-2S. A two-seat trainer aircraft originally designated U-2ST.
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 (T/U-2S).
Inventory: 27 (U-2); five (TU-2 trainers).
Aircraft Location: Beale AFB, Calif.; permanent forward operating locations worldwide.
Contractor: Lockheed Martin, Northrop Grumman (ASIP), Raytheon (ASARS), UTC Aerospace (SYERS/Optical Bar Camera).
Power Plant: General Electric F118-GE-101 turbojet.
Accommodation: Pilot (U-2S); two pilots (TU-2S) on RQ201 zero/zero ejection seats.
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 Looking Glass equipped with air sampling and collection equipment. The air sampling program using the original WB-29 detected debris from the Soviet Union's first atomic test in 1949 and has since monitored both weapons tests and nuclear disasters, including Chernobyl and more recently Fukushima, Japan. The WC-135's primary air-sampling mission supports the Nuclear Test Ban Treaty, and its collection suite allows mission crew to detect radioactive "clouds" in real time. The collection system uses external flow-through devices to collect particles on filter paper for later analysis. The fleet has recently been heavily tasked monitoring increased North Korean nuclear weapons tests.

EXTANT VARIANT(S)

• WC-135C. Modified EC-135C equipped for radiological monitoring and air sampling.
• WC-135W. Modified C-135B 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: One (WC-135C); one (WC-135W).
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-130J COMBAT KING II

Brief: Extended-range C-130J tanker variant designed for personnel recovery in hostile environments, C2, deploying pararescue (PJ), and helicopter in-flight refueling.

COMMENTARY

The HC-130J aircraft replaces legacy HC-130N/Ps and is based on the USMC's KC-130J tanker. It adds an enhanced service life wing, improved cargo handling system, refueling receptacle, EO/IR sensor, flight deck CSO console, and dual satcom. Features include integrated INS/GPS, NVG-compatible lighting, FLIR, radar/missile warning receivers, and chaff/flare dispensers. Upgrades would add the Lightweight Airborne Radio System V12 to speed locating isolated personnel and would add the ALQ 213 EW management system to automate/integrate defensive systems. Plans call for continuous common block upgrades for the combined HC/MC-130J fleet. Block 8.1 upgrades which include Link 16, civil GPS and data link, flight management mods, advanced IFF, special mission interface, and satellite-updating real-time flight information are undergoing development and integration. Mode 5 IFF and CNS/ATM upgrades will be fielded ahead of cycle to meet FAA compliance deadlines, in line with the baseline C-130J. USAF awarded two contracts, including a multiyear deal in 2015, covering 14 additional HC-130Js. FY17 funding supports production of three aircraft and USAF expects to complete fleet recap by 2023.

EXTANT VARIANT(S)

• HC-130J. C-130J modified for CSAR and aerial refueling.
Function: Aerial refueling/airlift.
Operator: ACC, AETC. Planned: ANG, AFRC.
First Flight: July 29, 2010.
Delivered: From 2010.
IOC: 2013.
Production: 37 (planned).
Inventory: 19.
Aircraft Location: Davis-Monthan AFB, Ariz.; Kirtland AFB, N.M.; Moody AFB, Ga. Planned: Francis S. Gabreski Arpt., N.Y.; JB Elmendorf-Richardson, Alaska; 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.

HC-130N/P KING

Brief: Extended-range C-130H tanker variant converted for personnel recovery in hostile environments, deploying pararescue (PJ), and 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 airdrop, 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, noncombatant 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 suffer airworthiness, maintainability, and operational limitations and are being replaced by HC-130J. Corrosion issues forced early retirement of a significant part of the remaining fleet. Serviceable aircraft were diverted from storage to fill an operational gap at Patrick AFB, Fla., until recapitalization with the HC-130J. The last Active Duty HC-130N/P assigned to AETC at Kirtland AFB, N.M., retired Oct. 4, 2016. The Alaska ANG also retired its final HC-130N/P in January 2017, before re-equipping with the 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.
First Flight: Dec. 8, 1964 (as HC-130H).
Delivered: From 1965.
IOC: 1986.
Production: 33 converted N/P models.
Inventory: Eight (HC-130N); five (HC-130P).
Aircraft Location: Francis S. Gabreski Arpt., N.Y.; Kirtland AFB, N.M.; JB Elmendorf-Richardson, Alaska; Patrick AFB, Fla.

HC-130N/P King SrA. Brandon P. Kalloo Sanes/USAF

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.

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 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 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 (CNS/ATM). Advanced Mode 5 IFF integration is ongoing. Modifications extend service life 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 (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. In 2011 Boeing was awarded a contract for 179 KC-46A tankers, the first increment (KC-X) toward replacing USAF's KC-135R fleet. Compared to the 50-year-old KC-135, the KC-46A will have enhanced 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 full-up KC-46A flew for the first time from Everett, Wash., Sept. 25, 2015. Japan became the KC-46's first export customer in 2015. Four airframes are supporting developmental testing at Edwards AFB, Calif., and have completed more than 1,000 combined flight test hours to date. Operational testing is scheduled to begin in April 2017. Higher than expected stress loads encountered during C-17 refueling-compatibility trials forced a limited boom redesign before clearance for LRIP. The service awarded LRIP Lot 1 and Lot 2 contracts for seven and 12 aircraft respectively in August 2016 and a follow-on Lot 3 contract for 15 tankers in January 2017. Eighteen airframes are slated for delivery ahead of planned IOC, which slipped six months to January 2018 due to boom mods.

KC-10 Extender and CV-22 Osprey

EXTANT VARIANT(S)

• KC-46A. Modified Boeing 767 designed as a multirole cargo-tanker.
Function: Aerial refueling/airlift.
Operator: AFMC; AMC (planned).
First Flight: Dec. 28, 2014 (provisioned 767-2C prototype).
Delivered: from 2017 (planned).
IOC: August 2017 (planned).
Production: 179 (planned).
Inventory: Two (KC-46A); two (provisioned 767-2C).
Aircraft Location: Edwards AFB, Calif.; Paine Field, Wash. 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.

A1C Joseph Pick/USAF

KC-135 STRATOTANKER

Brief: Medium-range tanker aircraft capable of cargo and AE support.

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 include a modernized digital flight deck. New Global Air Traffic Management upgrades were completed in 2011. Link 16 capability was also added to a limited number of aircraft. KC-135Ts are upgraded and sustained alongside the KC-135R fleet under common programs. USAF plans to modify 395 aircraft with Block 45 upgrades through 2026. These include additional glass cockpit display for engine instrumentation, a radar altimeter, advanced autopilot, and flight director to replace obsolescent systems. The first Block 45 aircraft was redelivered in 2013, and the 45th aircraft was turned over Jan. 27, 2017. Fleet service life is projected out to 2040.

EXTANT VARIANT(S)

• KC-135R. Re-engined KC-135A/Es fitted with CFM turbofan engines.
• KC-135T. Former KC-135Qs, able to carry different fuels in wing and fuselage tanks.
Function: Aerial refueling/airlift.
Operator: AETC, AFMC, AMC, PACAF, USAFE, ANG, AFRC.
First Flight: August 1956.
Delivered: January 1957-65.
IOC: June 1957, Castle AFB, Calif.
Production: 732.
Inventory: 387 (KC-135R); 54 (KC-135T).
Aircraft Location: Altus AFB, Okla.; Beale AFB, Calif.; 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, Alaska, Arizona, Hawaii, Illinois, Iowa, Kansas, Maine, Michigan, Mississippi, Nebraska, New Hampshire, New Jersey, Ohio, Pennsylvania, Tennessee, Utah, Washington, Wisconsin. Planned: New York.
Contractor: Boeing, Rockwell Collins (Block 45).
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/outsize cargo.

COMMENTARY

The C-5 is USAF's largest airlifter and one of the 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, if required. The Galaxy's front and rear cargo doors permit simultaneous drive-through loading/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 was upgrading the C-5 fleet through a combination of the Avionics Modernization Program (AMP)—completed in 2011—and Reliability Enhancement and Re-engining Program (RERP), ongoing. 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 avionics and structural reliability fixes. USAF plans to modernize 52 C-5s to C-5M standards, including 49 B models, two C models, and one C-5A. The final C-5B departed for conversion to Super Galaxy standards in January 2017. FY17 funds support CNS/ATM upgrades aided by a new core mission computer and weather radar. Other mods include modernized IR countermeasures and lavatory redesign to address leaking/corrosion issues.

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 carrying outsize NASA space cargo.
• C-5M. Super Galaxy, including AMP and RERP modified legacy C-5s.
• C-5M-SCM. Super Galaxy converted from C-5C to carry large NASA cargo.
Function: Strategic airlift.
Operator: AFMC, AMC, AFRC.
First Flight: June 30, 1968 (C-5A); June 6, 2006 (C-5M).
Delivered: October 1969-April 1989.
IOC: September 1970.
Production: 131.
Inventory: Five (C-5A); four (C-5B); one (C-5C); 37 (C-5M); one (C-5M-SCM).
Aircraft Location: Dover AFB, Del.; JBSA-Lackland, Texas; 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: Militarized civil twin-engine turboprops used for diplomatic/special duties, light passenger/cargo airlift, and test support.

COMMENTARY

The C-12 family includes a series of military versions based on 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 upgrades, including three MFDs, integrated GPS, flight management systems, autopilot, VHF/UHF radios, and weather radar. Current updates encompass basic safety, reliability, and maintainability mods.

EXTANT VARIANT(S)

• C-12C. C-12As retrofit with PT6A-41 engines.
• C-12D. C-12 with enlarged cargo doors and strengthened wings.

C-5M Galaxy

SSgt. Timothy Moore/USAF

C-17 Globemaster III Heide Couch/USAF

C-20B Gulfstream

• 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); three (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: Beechcraft.
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

C-17 is the US military's core airlifter. It is able to operate on small, austere airfields (3,500 ft by 90 ft) previously limited to C-130s. It is the only aircraft able to directly deliver or air-drop outsize cargo into a tactical environment and is the first military transport to feature full digital fly-by-wire control. Boeing delivered the 223rd and final USAF aircraft on Sept. 12, 2013, and the final international aircraft on Nov. 29, 2015. Fleetwide Block 16 avionics and weather radar mods were completed in 2015, and all aircraft will be upgraded to the final Block 20 production standard through regular programmed depot maintenance cycles. Block 20 retrofits include some 60 programs to bring early production aircraft to a common configuration. Ongoing mods include next generation Large Aircraft Infrared Countermeasures (LAIRCM) to combat the proliferation of man portable air defenses, next generation CNS/GATM, Mode 5 IFF, dynamic retasking, and structural, safety, and sustainment mods. Ongoing development includes the C-17 Advanced Technology Demonstration (ATD), which is testing high efficiency engines and drag-reduction devices to improve economy; next generation BLOS comms and GPS; and HUD replacement.

EXTANT VARIANT(S)

• C-17A. Long-range 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-Jackson-Evers Arpt., 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.; Stewart ANGB, N.Y.; 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 transport DOD and other government officials worldwide. The C-20B, delivered in 1988, has 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 is divesting the C-20B and C-20H aircraft, due to the limited 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, USAFE.
First Flight: December 1979.
Delivered: September 1983-89.
IOC: Circa 1983.
Production: N/A.
Inventory: Three (C-20B); two (C-20H).
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

C-12 Huron Yasuo Okabe/USAF

SMSgt. Kevin Wallace/USAF

C-32 Air Force Two

MSgt. Kevin Wallace/USAF

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 the European Theater, including AE missions if required. Ongoing upgrades support modifying 19 aircraft with modern digital systems, including new weather radar, GPS, flight management system, Mode 5 transponder, and satellite-updating real-time flight information to comply with FAA standards.

EXTANT VARIANT(S)

• C-21A. Military version of the Learjet 35A.
Function: Light airlift.
Operator: AMC, USAFE, ANG.
First Flight: January 1973.
Delivered: April 1984-October 1985.
IOC: April 1984.
Production: 84.
Inventory: 24.
Aircraft Location: JB Andrews, Md.; Peterson AFB, Colo.; Ramstein AB, Germany; Scott AFB, Ill.
Contractor: Bombardier (previously 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.
Ceiling: 45,000 ft.
Performance: Speed 530 mph at 41,000 ft, range 2,306 miles.

■ C-32B/C-32A AIR FORCE TWO

Brief: Commercial aircraft used for dedicated vice presidential and distinguished visitor (DV) airlift.

COMMENTARY

The C-32A was acquired as a commercial Boeing 757 and primarily provides vice presidential airlift under the call sign Air Force Two. Aircraft assigned to the 89th Airlift Wing at JB Andrews, Md., additionally serve the first lady, the vice president, and Congress and Cabinet officials. The cabin is divided into sections including a worldwide clear and secure voice and data communications suite, first-class cabin, two business-class cabins, center galley, lavatories, fully enclosed stateroom, and a conference and staff area. The C-32B provides DOD rapid, global airlift in support of government crisis response efforts. The C-32's modern flight deck avionics are upgradable, and new developments include nitrogen fuel-tank inerting and commercial wideband satcom mods. FY17 funds support commercial WGS integration as well as CNS/ATM upgrades to meet future airspace standards.

EXTANT VARIANT(S)

• C-32A. Presidential support-configured commercial Boeing 757-200 airliner.
• C-32B. Commercial Boeing 757-200 tasked with global crisis response airlift.
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 and DV support.

COMMENTARY

The C-37 family consists of 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 incorporates directional IR countermeasures for self-defense and the advanced Honeywell Plane-View flight deck. Ongoing mods include commercial wideband satcom, to ensure senior leaders access to secure data and voice networks, and FAA-required CNS/ATM updates.

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, USAFE.
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-40 CLIPPER

Brief: Commercial-based aircraft used primarily for medium-range DV airlift.

COMMENTARY

The C-40 is based on the commercial Boeing 737-700 and is used to transport senior military commanders, Cabinet officials, and members of Congress and to perform 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, are VIP configured with sleep accommodations, and are 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 aircraft has auxiliary fuel tanks and managed passenger communications. Ongoing mods include nitrogen fuel tank inerting for the C-40C and commercial wideband satcom on the C-40B, to ensure leader's secure top-secret voice, data, and video links. Additional mods include navigation, and air traffic management compliance, and low-cost sustainment upgrades. The fleet is designed for a 30-year service life, with 23 years remaining.

EXTANT VARIANT(S)

• C-40B. Military version of the Boeing 737-700 with added winglets.
• C-40C. VIP configured Boeing 737-700 with added winglets, but lacking advanced comms.
Function: VIP transport.
Operator: AMC, PACAF, USAFE, 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-130H HERCULES

Brief: Medium-range tactical airlifter capable of operating from unimproved airstrips and providing intertheater support.

COMMENTARY

The C-130H is an all-purpose theater transport that performs diverse roles, including tactical and intertheater airlift and airdrop support, Arctic resupply, AE, aerial spraying, aerial firefighting, and humanitarian missions. The H model improved on the C-130E and was delivered starting in 1965, with the current, more advanced models delivered starting in 1974. Improvements included uprated engines, redesigned outer wing, improved pneumatic systems, new avionics, improved radar, and NVG lighting. The last C-130E retired in FY15, and C-130Hs are being replaced by the C-130J. The New York ANG operates the small fleet of LC-130H for Antarctic support. The LC-130H had been upgraded with eight-bladed propellers, digital displays and flight management systems, multifunction radar, modernized comms, and a single air data computer. WC-130Hs are operated by the Puerto Rico ANG and are equipped with palletized mission equipment for tropical storm data collection. Ongoing upgrades include C-130H Avionics Modernization Program (previously Viability and Airspace Access Program). It will bring legacy aircraft in compliance with international airspace, navigation, and communications rules, as well as critical center wing box replacement to 54 airframes.

EXTANT VARIANT(S)

• 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.
Function: Tactical airlift.
Operator: AMC, PACAF, ANG, AFRC.
First Flight: August 1954 (C-130A).
Delivered: 1974-96.
IOC: Circa 1974.
Production: 308.
Inventory: 217 (C-130H); 10 (LC-130H); seven (WC-130H).
Aircraft Location: Dobbins ARB, Ga.; Little Rock AFB, Ark.; Maxwell AFB, Ala.; Minneapolis-St. Paul Arpt./ARS, Minn.; Peterson AFB, Colo.; Pittsburgh Arpt., Pa.; Yokota AB, Japan; Youngstown ARS, Ohio; and ANG in Alaska, Arkansas, Connecticut, Delaware, Georgia, Illinois, Kentucky, Minnesota, Missouri, Montana, Nevada, New York, North Carolina, Ohio, Puerto Rico, Texas, West Virginia, Wyoming.
Contractor: Lockheed Martin.
Power Plant: Four Allison T56-A-15 turboprops, each 4,591 shp.
Accommodation: Crew: two pilots, navigator, flight engineer, loadmaster. 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.
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; max payload 42,000 lb.
Ceiling: With max payload, 23,000 ft.
Performance: Speed 366 mph; range with 35,000 lb payload 1,496 miles.

C-130J SUPER HERCULES

Brief: Medium-range tactical airlifter capable of operating from unimproved airstrips and providing intertheater support.

COMMENTARY

The C-130J is the upgraded, current production version of the C-130 all-purpose theater transport. Missions include tactical and intertheater airlift and airdrop support, AE, weather reconnaissance, wildfire suppression using the Modular Airborne Firefighting System (MAFFS), and humanitarian relief. The aircraft first deployed in combat in Southwest Asia in 2004. AFRC's "Hurricane Hunters" at Keesler AFB, Miss., operated the only WC-130Js, which are equipped with palletized equipment to measure tropical and winter storms. The Super Hercules features a three-crew flight operations system, more powerful engines, composite six-blade propeller system, digital avionics, and mission computers. The C-130J can fly faster, higher, and farther than earlier C-130s. The C-130J-30 variant features a 15-foot longer "stretched" fuselage. The combined fleet is sustained via block upgrades. USAF is combining the future Block 7/8.1 upgrades to reduce modification down time. Block 7 includes Link 16, new flight management systems, civil GPS, and a special mission processor. Block 8.1 adds improved LOS data link and BLOS comms, improved precision navigational aids, enhanced covert lighting, replaces UHF comms with satcoms, and updates mission planning systems. Mode 5 IFF and air traffic management upgrades will be fielded ahead of cycle to meet FAA compliance deadlines. The current multiyear contract includes 29 USAF C-130Js. FY17 funds support production of three aircraft, including one operational loss replacement.

EXTANT VARIANT(S)

• C-130J Super Hercules. Current production version.

C-40B Clipper SMSgt. Kevin Wallace/USAF

C-130 Hercules

• 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, ANG, AFRC.
First Flight: April 1996.
Delivered: February 1999-present.
IOC: October 2006.
Production: 330+.
Inventory: 107 (C-130J); 10 (WC-130J).
Aircraft Location: Dyess AFB, Texas; Keesler AFB, Miss.; Little Rock AFB, Ark.; Ramstein AB, Germany; and ANG in California, Kentucky, Rhode Island. Planned: Maryland.
Contractor: Lockheed Martin.
Power Plant: Four Rolls Royce AE2100D3 turboprops, each 4,700 shp.
Accommodation: Crew: two pilots, loadmaster. 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 (J); 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 (J-30).
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 (J), 164,000 lb (J-30); max payload 42,000 lb (J), 44,000 lb (J-30).
Ceiling: With max payload, 26,000 ft (J), 28,000 (J-30).
Performance: Speed 417 mph (J), 410 mph (J-30); range with 35,000 lb payload 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 for airlifting the President and his entourage. VC-25s operate under the call sign Air Force One when the President is aboard, and SAM (Special Air Mission) during non-presidential flights. 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

SSgt. Edward Eagerton/ANG

operated by the Presidential Airlift Group at the 89th Airlift Wing, JB Andrews, Md. Ongoing mods include nitrogen fuel tank inerting, commercial wideband satcom, and service life extension. USAF plans to replace VC-25s with a modified version of Boeing's latest 747-8 intercontinental airliner. The fleet has five years' estimated service life remaining and requires a life extension/block upgrade to remain viable until replacement aircraft are fielded. Required mods include protected satcom, chillers, nitrogen generation system, weather radar, digital/voice data, and network upgrades. SLEP efforts will be accomplished during regular depot maintenance starting in FY17. Boeing is conducting initial design and risk reduction work to modify two 747-8 replacement aircraft, planned for delivery starting in 2024.

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 Pave Hawk is a highly modified Black Hawk helicopter equipped with advanced INS/GPS/Doppler navigation systems, satcom, and secure/anti-jam communications. It is fitted with a personnel locating system (PLS) that aids location of survivor's radio. It includes automatic flight control, NVG lighting, FLIR, 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. Ongoing fleet upgrades include color weather radar, improved TACAN, new RWR, auto direction finding, and digital intercoms. Future upgrades include new FLIR/Laser Radar turret to enhance situational awareness in low visibility condition, over-the-horizon comms for long-range ops in remote areas, and a rotor brake for shipboard operations. The first Army surplus UH-60L converted as an operational loss replacement was delivered June 28, 2016. The converted airframes will help restore the fleet to 112 aircraft. USAF plans to replace the HH-60G with the new HH-60W Combat Rescue Helicopter (CRH). The more powerful helicopter will improve hot weather/high-altitude performance and feature an enlarged cabin and longer range. Nine HH-60Ws will begin developmental testing at Eglin AFB, Fla., in 2018. The first of 112 new-build helicopters is planned for delivery in 2019, and FY17 funds support procurement of five test aircraft.

EXTANT VARIANT(S)

• HH-60G. Modified UH-60 helicopter equipped for CSAR.
• HH-60U. Converted surplus UH-60L.
• HH-60W. Developmental next generation Combat Rescue Helicopter.
Function: Personnel recovery/medium lift.
Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG, AFRC.
First Flight: October 1974.
Delivered: From 1982.
IOC: Circa 1982.
Production: 115.
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: Sikorsky (Lockheed Martin).
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.

VC-25 Air Force One TSgt. Matt Hecht/ANG

HH-60 Pave Hawk SSgt. Ryan Callaghan/USAF

UH-1 HUEY/IROQUOIS

Brief: Utility helicopter for missile field security, 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 role. UH-1Ns provide administrative lift to US National Capital Region and PACAF officials from JB Andrews, Md., and Yokota AB, Japan, respectively, and support aircrew survival training at Fairchild AFB, Wash. The TH-1H fleet provides Air Force helicopter pilot training at Fort Rucker, Ala. USAF converted all single-engine UH-1H models to twin-engine TH-1H variants, extending their service lives by at least 20 years. With termination of the earlier Common Vertical Lift Support Program (CVLSP), AFGSC is modifying its UH-1N with NVG-compatible cockpit, upgraded sensors, and safety and sustainment improvements to bridge the gap to a replacement helicopter. USAF launched the UH-1N Replacement Program in 2016 to recapitalize the fleet with up to 84 off-the-shelf helicopters suitable for mission-specific modification. Competitive contract award is planned for 2018, with operational testing beginning as early as FY19.

UH-1 Huey/Iroquois SrA. David Owsianka/USAF

T-1 Jayhawk USAF

T-6 Texan II

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, Air Force District of Washington, AFGSC, AFMC, PACAF.
First Flight: 1956 (UH-1A).
Delivered: From September 1970 (UH-1N).
IOC: Circa 1970.
Production: 28 (TH-1H); 63 (UH-1N).
Inventory: 28 (TH-1H); 63 (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 Helicopter, 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 for pilot and CSO training.

COMMENTARY
The T-1A is a military version of Beechcraft 400A used in the advanced phase of JSUPT for students selected to fly tanker or transport aircraft, as well as 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 incorporate GPS-driven SAR and simulated RWR, as well as a second student and instructor station. Upgrade efforts are focused on avionics modernization and include new MFD and terrain collision avoidance systems. FY17 funds support avionics proof-of-concept mods to 15 initial aircraft. Service life of 18,000 flying hours is estimated to keep the T-1 structurally airworthy to 2032.

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 primary trainer.

COMMENTARY
The T-6 is a joint Air Force/Navy trainer developed under the Joint Primary Aircraft Training System program, 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. The tandem student and instructor positions are interchangeable, including single-pilot operation from either seat. The T-6 is fully aerobatic and features an anti-G system. USAF production completed in 2010, with an expected service life of 21 years. Ongoing mods include airspace compliant avionics, improved canopy fracture initiation system, replacement of unavailable components, and updated training aids.

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); 328 (USN).
Inventory: 444 (USAF).
Aircraft Location: USAF: Columbus AFB, Miss.; Laughlin AFB, JBSA-Randolph, and Sheppard AFB, Texas; Vance AFB, Okla. Navy: NAS Corpus Christi, Texas; NAS Pensacola, Fla.; NAS Whiting, Fla.
Contractor: Beechcraft Defense (formerly Raytheon).
Power Plant: One Pratt & Whitney Canada PT6A-68 turboprop, 1,100 shp.
Accommodation: Two pilots, in tandem, on Martin Baker MK16LA 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-38 TALON
Brief: Twin-engine, supersonic advanced jet trainer.

COMMENTARY
The T-38 was the first supersonic trainer aircraft and is primarily used by AETC for advanced JSUPT fighter/bomber tracks and Introduction to Fighter Fundamentals. The aircraft is used to teach supersonic techniques, aerobatics,

UV-18 Twin Otter SrA.Chris Massey/USAF

SrA. Ariel D. Partlow/USAF

T-38 Talon

MSgt. Burt Traynor/USAF

formation, night and instrument flying, and cross-country/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-38Bs are equipped with a gunsight and centerline hardpoint for mounting external stores including ECM pod/practice bomb dispensers. Aircraft were redesignated T-38Cs after avionics modernization that added a glass cockpit and HUD, color MFDs, mission computer, integrated INS/GPS, and reshaped air intakes. T-38Cs were delivered from 2002 to 2007. Sustainment measures include replacement of major engine components to improve reliability and maintainability. Full fleet replacement is not projected until 2034, and USAF is additionally extending aircraft. The structural renewal effort is the most intensive in the T-38's history, replacing major longerons, bulkheads/formers, intakes, internal skins, and structural floors. The first airframe was redelivered in 2015. Additional upgrades include wingset replacement, digital avionics upgrades, replacement HUD, VHF nav/comms, airspace compliance, safety, and low-cost mods. USAF aims to field the next generation T-X aircraft with initial capability in 2024.

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.
First Flight: April 1959.
Delivered: 1961-72 (T-38A).
IOC: March 1961.
Production: More than 1,100.
Inventory: 53 (T-38A); six (AT-38B); 445 (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, on Martin Baker MK16T zero/zero 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 standard on Cirrus aircraft. T-53s are designed for 12,000 flying hours. Upgrades are limited to FAA-mandated airworthiness compliance mods and simulator updates.

EXTANT VARIANT(S)

• T-53A. Military designated Cirrus SR20.

Function: Trainer.
Operator: AETC.
Delivered: 2012.
Inventory: 24.
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 Academy parachute team, Wings of Blue. Upgrades are limited to FAA-mandated airworthiness compliance mods.

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 shp.
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 and multispectral targeting with combined 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. RQ-1 became a fully USAF system in 1996, and the designation was changed to MQ-1 (denoting multimission capability) when it was armed with the Hellfire missile in 2002. USAF forward deploys launch and recovery element (LRE) systems and support personnel for takeoff and landing operations, while the CONUS-based GCSs conduct 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. The service is also integrating the advanced Airborne Cueing and Exploitation System Hyperspectral Sensor (ACES HY) to fill ISR shortfalls. USAF is increasingly relying on contractors to operate MQ-1s for nonkinetic ISR support. The MQ-1 is being replaced by the MQ-9, and USAF plans to retire the fleet by 2018.

EXTANT VARIANT(S)

• MQ-1B. Armed version of the General Atomics Predator.

MQ-1 Predator

SSgt. Stacy Jonsgaard/USAF

MQ-9 Reaper

A1C James Thompson/USAF

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: 129.
GCS Location: Cannon AFB, N.M.; Creech AFB, Nev.; Davis-Monthan AFB, Ariz.; Ellington Field, Texas; Hector Arpt., N.D.; Holloman AFB, N.M.; 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.; Hector Arpt., N.D.; Holloman AFB, N.M.; Whiteman AFB, Mo., and deployed locations worldwide.
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 hunter-killer RPA.

COMMENTARY

The MQ-9B is a medium- to high-altitude, long-endurance hunter-killer RPA, primarily tasked with eliminating time-critical and high-value targets in a permissive combat environment. The MQ-9 fulfills a secondary tactical ISR role utilizing its Multispectral Targeting System-B (MTS-B). The system integrates EO/IR, color/monochrome daylight TV, image-intensified TV, and a laser designator/illuminator. MTS-B provides FMV as separate video streams or fused together, and the MQ-9 employs SAR for GBU-38 JDAM targeting. Additional roles include CAS, CSAR, precision strike, armed overwatch, target development/designation, and terminal weapon guidance. MQ-9B debuted in combat in Afghanistan in 2007. The Reaper system comprises three aircraft, GCS, LOS/BLOS satellite and terrestrial data links, support equipment/personnel, and crews for deployed 24-hour operations. Development is underway to incorporate automatic takeoff and landing capability, Counter-Improvised Explosive Device (C-IED), Dismount Detection Radar (DDR), Gorgon Stare wide-area surveillance, missile defense, and other sensor upgrades, weapons integration, and reliability enhancements. The Extended Range Reaper reached IOC and entered combat in 2015. Reaper ER adds external fuel tanks, a four-bladed propeller, engine alcohol/water injection, heavyweight landing gear, longer wings and tail surfaces, and other enhancements to Block 1 aircraft. Production shifted from MQ-9 Block 1 to Block 5 aircraft in 2015, and 12 of the planned 155 airframes have been delivered. Block 5 incorporates improved electrical system and avionics bay, new radio and encrypted data links, digital engine control, high definition video, lighter bomb racks, upgraded software, and the new Block 30 GCS. Block 5 aircraft/Block 30 GCS fielding is planned for early FY17, with production running through FY21.

EXTANT VARIANT(S)

• MQ-9B Reaper Block 1. Air Force version of the General Atomics Predator B.
• MQ-9B Reaper Block 5. Improved, current production Reaper.
• MQ-9B Reaper ER. Extended range MQ-9 with external fuel tanks, longer wings, and other enhancements.
Function: Attack/armed reconnaissance.
Operator: ACC, AFMC, AFSOC, ANG.
First Flight: February 2001.
Delivered: November 2003.
IOC: October 2007.
Production: 346 (planned).
Inventory: 188.
GCS Location: Cannon AFB, N.M.; Creech AFB, Nev.; Des Moines Arpt., Iowa; Ellsworth AFB, S.D.; Fort Smith Arpt., Ark.; Hancock Field, N.Y.; Holloman AFB, N.M.; March ARB, Calif. Planned: Niagara Falls Arpt., N.Y.; Shaw AFB, S.C.
Aircraft Location: Cannon AFB, N.M.; Creech AFB, Nev.; Eglin AFB, Fla.; Fort Drum, N.Y.; Hancock Field, N.Y.; Holloman AFB, N.M.; March ARB, Calif.; Nellis AFB, Nev., and deployed locations worldwide.
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 27 hr; 34 hr (ER).
Armament: Combination of AGM-114 Hellfires, GBU-12/49 Paveway IIs, and GBU-38 JDAMs.

RQ-4 GLOBAL HAWK

Brief: High-altitude, long-range, long-endurance RPA sensor platform.

COMMENTARY

The Global Hawk is primarily a long-endurance, high altitude, "deep look" ISR platform to complement satellite and manned strategic ISR. The weapon 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. Block 20 aircraft were initially delivered as an imagery intelligence (Imint) platform incorporating the Enhanced Integrated Sensor Suite (EISS). Four airframes were subsequently converted to EQ-4B communications relay platforms with the Battlefield Airborne Communications Node (BACN), and three remain active. The Block 30 variant is a multi-intelligence platform equipped with EO/IR, SAR, as well as Sigint sensors and has supported combat 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 detect and track moving ground targets as well as cruise missiles. USAF reversed its FY13 decision to divest the Block 30 fleet, electing to instead retire the U-2 in 2019. Congress stipulated the RQ-4 demonstrate sensor parity with the U-2 before divestment. The developmental universal payload adapter will enable carriage of several U-2-unique sensors, including the MS-177 electro-optical sensor and wet-film Optical Bar Camera. Initial sensor capability is planned circa 2017. Planned improvements include weather-avoidance radar and anti-icing system for all-weather operations, Airborne Signals Intelligence Payload (ASIP) increment I Sigint improvement, reliability improvements, and airspace compatibility mods.

EXTANT VARIANT(S)

• EQ-4B Block 20. Battlefield Airborne Communications Node (BACN) comm relay platform.

• RQ-4B Block 30. Multi-intelligence platform equipped with EO/IR and SAR sensors.
• RQ-4B 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: August 2011 (Block 30); Aug. 29, 2016 (Block 40).
Production: 33.
Inventory: Three (Block 20); 19 (Block 30); 11 (Block 40).
Aircraft Location: Beale AFB, Calif.; Grand Forks AFB, N.D. (Block 40). Forward operating locations: Andersen AFB, Guam; Misawa AB, Japan; NAS Sigonella, Italy.
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.

COMMENTARY

Although the RQ-170 was still under development and test, USAF 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. The type is operated by the 432nd Wing at Creech AFB, Nev., and the 30th Reconnaissance Squadron at Tonopah Test Range, Nev. 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.
GCS Location: Creech AFB, Nev.; Tonopah Test Range, Nev.
Aircraft Location: Tonopah Test Range, Nev.; deployed worldwide.
Contractor: Lockheed Martin.

FULL-SCALE AERIAL TARGETS

QF-4 PHANTOM II

Brief: Regenerated F-4 Phantom IIs converted as aerial targets to support missile testing.

COMMENTARY

The QF-4 became USAF's Full-scale Aerial Target (FSAT) system in 1997 and was primarily used to support missile and weapon systems development, testing, and evaluation. The majority of flights were conducted with a safety pilot in the cockpit to facilitate air combat training and evaluation. For live-shot weapons tests or training, QF-4s flew in the "not under live local operator" (NULLO) control configuration, equipped with explosive charges to terminate flight if damaged, and 16 to 20 kills were 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. The final QF-4 was converted from an RF-4C and delivered in November 2013. QF-16s began replacing QF-4s in 2015. Holloman AFB, N.M., launched the final unmanned QF-4 sortie Aug. 17, 2016, ahead of the aircraft's retirement on Dec. 21, 2017. The remaining airframes will be used as ground targets.

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: 317.
Inventory: 13.
Aircraft Location: Holloman AFB, N.M.
Contractor: Boeing (previously McDonnell Douglas), BAE Systems.
Power Plant: Two General Electric J79-GE-17G afterburning turbojets, each 17,900 lb thrust.
Accommodation: Safety pilot (optional) on Martin Baker MK7 zero/zero ejection seat.
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-4 Phantom II R. Nial Bradshaw/USAF

QF-16 FULL-SCALE AERIAL TARGET

Brief: Regenerated F-16s converted as aerial targets to support missile testing.

COMMENTARY

The QF-16 began replacing the dwindling and obsolescent QF-4 Full-scale Aerial Target (FSAT) 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. The first of LRIP QF-16s was delivered to Tyndall AFB, Fla., in early 2015. Boeing is under contract to deliver 62 converted airframes in three production lots through October 2017. ACC declared IOC with 15 operational aircraft on Sept. 23, 2016, and full operational capability is planned for late 2017. Current efforts include developing new EA pods and software to more accurately replicate adversary capabilities and tactics, ground control improvements, preliminary development of two-seat trainer, and future F-16 block conversions. Holloman AFB, N.M., launched its first operational QF-16 sortie on Feb. 10, 2017.

EXTANT VARIANT(S)

• QF-16A/B. Converted from retired 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: Sept. 23, 2016.
Production: 126 (planned).
Inventory: seven (QF-16A); 10 (QF-16C).
Aircraft Location: Tyndall AFB, Fla. Planned: Holloman AFB, N.M.
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: Safety pilot (optional) on ACES II zero/zero ejection seat.
Dimensions: Span 32.8 ft, length 49.3 ft, height 16.7 ft.

RQ-4 Global Hawk TSgt. Christopher Boitz/USAF

QF-16 Full-Scale Aerial Target Sara Vidoni/USAF

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 2,000+ miles.

STRATEGIC WEAPONS

AGM-86 AIR LAUNCHED CRUISE MISSILE (ALCM)

Brief: Nuclear or conventional armed small, air launched, subsonic air vehicle.

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 is to cut inventory to 528 and consolidate it 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. USAF released a request for proposal for the LRSO in 2016 and plans to field the nuclear missile by the late 2020s, possibly followed by a conventional derivative thereafter.

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).

B61 THERMONUCLEAR BOMB

Brief: Air-dropped nuclear freefall weapon.

COMMENTARY

B61 is the primary strategic nuclear weapon for the B-2 bomber and equips both the F-16 and F-15E, providing forward deployed, extended deterrence to allies. The weapon was first delivered in 1966, and the most recent B61 Mod 11 introduced in 1997 adds a ground-penetrating capability, enhancing its destructive effect to destroy buried and hardened targets. The weapon incorporates several preselectable yield options, tailored to mission requirements. Work is underway on the next B61 Mod 12 life extension program (LEP), which entered developmental testing in 2012. The LEP aims to improve the safety, security, and reliability of the weapon through 2040, adding a new guided tail kit in addition to warhead upgrade/refurbishment. USAF completed inert, developmental test drops in 2015, and production engineering work was scheduled to begin in 2016. B61-12 will consolidate the B61-3, -4, -7, and -10 weapons into a single, standardized configuration. The first production example is scheduled for delivery in 2020, and integration work is planned on the B-2, F-15E, F-16, and the F-35A starting in 2018.

EXTANT VARIANT(S)

• B61. Current supersonic-droppable freefall thermonuclear weapon.
• B61 Mod 12. Upgraded, life-extended B61 with precision guided tail kit assembly.
Function: Air-to-surface thermonuclear bomb.
Delivered: From 1966.
IOC: N/A.
Contractor: Los Alamos National Laboratory (weapon), Boeing (B61-12 tail kit).
Guidance: None (B61 Mod 1 to 11); N/A (B61 Mod 12).
Warhead: One B61 -3, -4, -7, -10, or -11.
Dimensions: Length 11 ft 8 in., diameter 1 ft 1 in.
Weight: 700 lb.
Performance: N/A.

LGM-30 MINUTEMAN

Brief: Silo-launched, solid-fuel ICBM capable of delivering up to three thermonuclear warheads.

B61 Thermonuclear Bomb

COMMENTARY

Minuteman is a three-stage, solid-propellant ICBM housed in an underground silo. 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, guidance and propulsion upgrades, and modernized re-entry vehicles would extend that to 2030. AFGSC initially deployed 550, later reducing toward 400 based at Malmstrom AFB, Mont., Minot AFB, N.D., and F. E. Warren AFB, Wyo. AFGSC completed reducing its deployed ICBMs to a single warhead in 2014, under limits imposed by the New START agreement. USAF issued a request for proposal to replace Minuteman with a future Ground Based Strategic Deterrent (GBSD) in 2016.

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: 406.
Unit Location: F. E. Warren AFB, Wyo.; Malmstrom AFB, Mont.; Minot AFB, N.D.
Contractor: Boeing, BAE Systems, General Electric, Lockheed Martin, Orbital ATK.
Propulsion: Stage 1: Orbital ATK refurbished M55 solid-propellant motor, 202,600 lb thrust; stage 2: Orbital ATK refurbished SR19 solid-propellant motor, 60,721 lb thrust; stage 3:

LGM-30 Minuteman MSgt. Lorenzo Gaines/USAF

USAF

ADM-160 Miniature Air Launched Decoy A1C Micaiah Anthony/USAF

Orbital ATK refurbished SR73 solid-propellant motor, 34,400 lb thrust.
Guidance: Inertial guidance system.
Re-entry Vehicle: One Mk 21 RV; one to three Mk 12/12A MIRVs.
Warhead: One (currently) to three 300 kiloton W87 enriched uranium thermonuclear weapons.
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.

LONG-RANGE STANDOFF WEAPONS

■ ADM-160 MINIATURE AIR LAUNCHED DECOY (MALD)

Brief: Air launched programmable electronic warfare platform designed to thwart enemy integrated air defense systems (IADS).

COMMENTARY

MALD is a low-cost, modular, autonomous flight vehicle that mimics US or allied aircraft to enemy IADS. 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, of which 2,400 are the jammer version. USAF demonstrated a new data link in 2014 to potentially enable in-flight retargeting. Operational testing revealed material durability problems with both variants and navigational accuracy problems with MALD-J in GPS degraded/denied environments. Both platforms are considered operationally effective, and software development efforts are underway to address shortcomings. USAF awarded a MALD-J contract option for Lot 10 production in 2016.

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 (JSOW)

Brief: Low-cost glide weapon.

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. The AGM-154C incorporates an additional imaging IR seeker and is intended for use against hardened, stationary targets. JSOW is integrated onto the B-1, B-2, B-52, F-15E, and F-16, and an F-35C conducted the strike fighter's first drop during integration testing on March 23, 2016. The new AGM-154C-1 variant that adds moving, maritime strike capability to the baseline C variant reached IOC with the Navy in 2016 and will eventually equip the F-35A/C.

EXTANT VARIANT(S)

• AGM-154A. Baseline BLU-97 CEM variant for soft/area targets.
• AGM-154B. The BLU-108 submunition variant for anti-armor.
• AGM-154C. Imaging IR guided variant for hardened tactical targets.
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 (JASSM)

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 and IIR terminal seeker. The base variant is integrated on the B-1B, B-2, B-52H, F-15E, and F-16 Block 50. Planned integration includes F-16 Block 40 and F-35A. The JASSM-Extended Range (JASSM-ER) version uses same baseline body but a new engine and fuel system that increases range to more than 500 miles. The ER variant was cleared for combat use on the B-1B in 2015 and is planned for integration on the B-52H, F-15E, all F-16 blocks, and the F-35A. Full rate production of the ER began the same year and JASSM production shifted to ER-only in FY16. Lockheed Martin surpassed 2,000 weapons delivered in 2016. Lockheed Martin is developing a new anti-shipping variant, dubbed Long-Range Anti-Ship Missile (LRASM), for both the Air Force and Navy. Initial integration is planned on the B-1B in 2019.

EXTANT VARIANT(S)

• AGM-158A JASSM. Base variant.
• AGM-158B JASSM-ER. Extended-range variant.
• AGM-158C LRASM. Long-Range Anti-Ship Missile based on JASSM.
Function: Air-to-surface guided weapon.
First Flight: April 8, 1999.
Delivered: Through FY19 (planned).
IOC: September 2003; December 2014 (ER variant).
Contractor: Lockheed Martin, Raytheon, Honeywell.
Power Plant: Teledyne Technologies J402 turbojet (JASSM); Williams Intl. F107-WR-105 turbofan (JASSM-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.

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-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. The current production AIM-9X Block 2 was cleared for full rate production in September 2015, and an F-35A conducted its first live-fire with the weapon in early 2016. Ongoing development includes control actuation, IR counter-countermeasures, improved lock-after-launch, added partial/degraded cue capability, and improved small target acquisition and surface attack capability. FY17 funds procure 287 AIM-9X and several developmental AIM-9X Block II-plus with enhanced aircraft survivability features.

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: AIM-9M from 1983; AIM-9X 2002-2011 (Block I); 2011 to present (Block II).
IOC: Circa 1983 (9M); 2003 (9X).
Contractor: Raytheon, Orbital ATK (propulsion).
Propulsion: Mk 36 Mod 11 (9M); Orbital ATK Mk 139 solid-propellant rocket motor (9X).
Guidance: Passive IR homing guidance.
Warhead: HE annular blast fragmentation.
Dimensions: Span 2.1 ft, length 9.4 ft, diameter 5 in.
Performance: Speed Mach 2+, range 10+ miles.

■ AIM-120 ADVANCED MEDIUM-RANGE AIR-TO-AIR MISSILE (AMRAAM)

Brief: Supersonic, medium-range, active radar guided air-to-air missile.

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 completed operational testing in July 2014 and was fielded in January 2015. The latest variant offers improved range, GPS-assisted guidance, updated data links, and jam resistance, in addition to greater lethality. Ongoing upgrades undergoing operational testing will further enhance weapon performance and electronic protection. FY17 funds procure 256 AIM-120D missiles.

EXTANT VARIANT(S)
• AIM-120B. Upgraded, reprogrammable variant of AIM-120A.
• AIM-120C. Production variant optimized for the F-22/F-35.
• AIM-120D. Latest variant with GPS guidance, improved range, lethality, and jam-resistance.
Function: Air-to-air guided missile.
First Flight: December 1984.
Delivered: From 1988.
IOC: September 1991; July 2015 (120D).
Contractor: Raytheon, Orbital ATK and Nammo Group (propulsion).
Propulsion: Boost-sustain solid-propellant rocket motor.
Guidance: Active radar terminal/inertial midcourse.
Warhead: HE blast fragmentation.
Dimensions: Span 1.7 ft, length 12 ft, diameter 7 in.
Performance: Supersonic, range 20+ miles.

AGM-65 Maverick
Capt. Amber House/USAF

AIR-TO-GROUND WEAPONS

■ AGM-65 MAVERICK

Brief: A tactical, TV-, IIR-, or laser guided standoff air-to-surface missile.

COMMENTARY
Maverick was first employed during the Vietnam War and was used extensively in Desert Storm and Iraqi Freedom. It is employed by the A-10 and F-16 against tanks, vehicles, and air defenses. AGM-65B is a launch-and-leave, EO/TV guided missile, equipped with "scene magnification" TV allowing acquisition of small/distant targets. Fielded in 1986, AGM-65D employs an IIR seeker for all-weather day/night use. The AGM-65E is laser guided with a heavyweight penetrator warhead. The AGM-65G fielded in 1989 combines an IIR seeker, software to track larger targets, with a heavyweight penetrator warhead, digital autopilot, and a pneumatic actuation system. The AGM-65H is an upgraded B variant that recently completed tracker upgrades. The AGM-65K is a modified G variant, replacing IR guidance with EO TV guidance, and is also undergoing a tracker upgrade. The AGM-65L is the newest EO TV/semiactive-laser seeker equipped, Laser Maverick, designed to strike high-speed moving targets. FY17 funds modify 244 legacy missiles to Laser Maverick standards and replenish weapons expended in ongoing combat.

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.
IOC: February 1973.
Contractor: Raytheon, Orbital ATK (propulsion).
Propulsion: Two-stage sustain thrust 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: Supersonic, range 20 miles.

■ AGM-88 HIGH-SPEED ANTI-RADIATION MISSILE (HARM)

Brief: Tactical anti-radar air-to-surface missile.

COMMENTARY
HARM is a joint USAF-Navy weapon, highly effective against enemy ground radar, and carried by USAF F-16CJs dedicated to the 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 a HARM Control Section Mod (HCSM) in 2013 to convert current models to more precise AGM-88Fs incorporating improved GPS/INS guidance, anti-counter measure performance, and reduced risk of 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: Supersonic, range 30+ miles.

■ AGM-114 HELLFIRE

Brief: Laser guided, low-collateral, air-to-ground anti-armor/anti-personnel missile.

COMMENTARY
Hellfire is a precision missile utilizing semi-active laser guidance. Missiles are used on the MQ-1 Predator and MQ-9 Reaper, and AFSOC aims to integrate 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. The combo was employed in combat for the first time in Afghanistan on Oct. 7, 2001. USAF is working to integrate the latest AGM-114R, which replaces several types with a single, multitarget weapon, onto the MQ-9. The Army had to divert missiles to the Air Force to replace stocks severely depleted by combat over Iraq and Syria. FY17 funds support procurement of 1,536 missiles.

EXTANT VARIANT(S)

• AGM-114. Numerous subvariants, depending on target and mission requirements.
Function: Air-to-surface guided missile.
First Flight: Feb. 16, 2000 (USAF).
Delivered: September 2001-present.
IOC: N/A.
Contractor: Lockheed Martin, Orbital ATK (propulsion).
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, range 5+ miles.

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 AC-130J Ghostrider gunships. The AGB-176B is employable on RPAs.

EXTANT VARIANT(S)

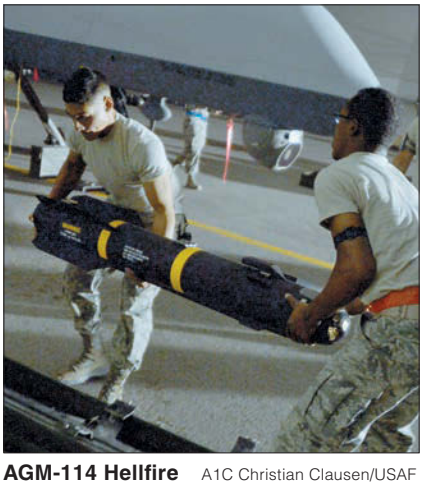
• AGM-176A. Aft-ejecting missile employed as part of the PSP.
• AGM-176B. Forward-firing variant optimized for light aircraft/RPAs.
Function: Air-to-surface guided missile.
First Flight: Feb. 16, 2000 (USAF).
Delivered: September 2001.
IOC: N/A.
Contractor: Raytheon.
Propulsion: Solid-propellant rocket motor.
Guidance: GPS/INS/semi-active laser.
Warhead: Blast fragmentation.
Dimensions: Length 43 in, diameter 5.5 in.
Performance: Subsonic, range 12 + miles.

CBU-105 SENSOR FUZED WEAPON (SFW)

Brief: Anti-armor munition capable of destroying multiple moving and stationary land combat vehicles per pass.

COMMENTARY

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 a 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. CBU-105 is the only standard USAF cluster munition that meets the less-than-one-percent failure rate mandated by DOD for use beyond 2018.



AGM-114 Hellfire A1C Christian Clausen/USAF

AGM-88 High-speed Anti-Radiation Missile (HARM) Jim Haseltine/courtesy USAF

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.
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 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 2,500 ft 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).

GBU-43/B Massive Ordnance Air Blast (MOAB) Bomb

Courtesy Eglin AFB, Fla.

GBU-31 Joint Direct Attack Munition

Performance: CEP 29.7 ft, range 9.2 miles (GBU-10); CEP 29.7 ft, range about six miles (GBU-12/49).

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 penetrators developed for use against Iraq's deeply buried, hardened C2 facilities. 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. JDAM seeker/tail kits can be mounted on general-purpose or penetrating warheads in each weight class. A JDAM kit is under development for the 5,000-lb BLU-113 penetrating weapon, slated for integration and flight testing on the F-15E. FY17 funds support priority procurement of more than 30,000 JDAM variants to replenish depleted stocks.

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 I/II

Brief: 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 load-out 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 by an F-15E over Iraq in 2006. SDB II is a joint USAF-Navy program to attack moving targets from standoff range in all weather. SDB II adds a millimeter-wave radar, IIR, and semi-active laser packaged into a tri-mode seeker. The bomb is retargetable after release. Improvements include reduced susceptibility to countermeasures and network-enablement through Link 16/UHF data links. SDB II is in operational testing and is slated to begin live drops from the F-15E in 2017. SDB I is a major procurement priority, and funds support acquisition of 4,507 weapons.

EXTANT VARIANT(S)

• GBU-39/B 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 (SDB I), Raytheon (SDB II).
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 the name Massive Ordnance Air Blast (MOAB) but was 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 the 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. Used operationally for the first time in April 2017 against ISIS-occupied cave complex in Afghanistan.

EXTANT VARIANT(S)

• GBU-43/B. GPS guided 21,000-lb bomb.
Function: Massive guided bomb.
Guidance: GPS/INS.
Warhead: BLU-120/B 18,700-lb HE.
Dimensions: Length 30 ft, diameter 3.3 ft.

GBU-54 LASER JOINT DIRECT ATTACK MUNITION (LJDAM)

Brief: GPS/INS guided weapon equipped with additional laser seeker for highly accurate, autonomous, all-weather conventional attack against fixed and moving targets.

TSgt. James Hodgman/USAF

GBU-39 Small Diameter Bomb

TSgt. Dana Rosso/USAF

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. 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 the contract in 2009 for B-2A bomber integration, which was completed in 2011. A B-2 successfully test-dropped the GBU-57 in 2014 and 2015. Recent tests proved the effectiveness of several enhancements and cleared the way for continued testing and potential early fielding, though the Air Force's recommendation is classified.

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: Constellation providing global, secure, protected, and jam-resistant military communication.

COMMENTARY

AEHF is replacing existing Milstar satellites and operates at a much higher capacity and data rate. It offers secure, anti-jam tactical and strategic communications around the world. AEHF uses cross-linked satellites, eliminating the need for ground relay stations. The program is a collaboration with Canada, the Netherlands, and the United Kingdom. The AEHF system achieved IOC in 2015. SV-4 is scheduled to launch in 2017, paving the way for 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 oldest operational satellite, DMSP-13, suffered an apparent electrical short and exploded, creating a cloud of debris in space in 2015. DMSP-19 most recently launched in 2014. The vehicle subsequently suffered a power failure in early 2016, rendering it uncontrollable. Data from the craft remains usable until its orbit decays. Congress canceled the DMSP program before the final spacecraft (DMSP-20) could be launched. DMSP-20 is in storage awaiting a decision to launch it as a replacement to DMSP-19 or to dispose of the vehicle. USAF is also considering requirements for a follow-on system.

EXTANT VARIANT(S)

• Block 5D-2. Launched 1982 to 1997; one active (DMSP-14).
• 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: Six low Earth orbit (LEO).
Design Life: Five yr (Block 5D-3).
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; covers 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 its two oldest DSCS satellites, B-12 in July 2014 and DSCS-10 in June 2015. 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 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.
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: Employs 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. Control of the constellation was consolidated to the new Block 10 Mission Control Station at Buckley AFB, Colo., in early 2016.

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-year requirement and five-year goal.
Launch Vehicle: Titan IV with inertial upper stage; Delta IV Heavy EELV.
Operational Location: Buckley 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.

Defense Support Program USAF illustration

Weight: Approx 5,200 lb.
Performance: Uses IR sensors to sense heat from missile and booster plumes against Earth's background.

GEOSYNCHRONOUS SPACE SITUATIONAL AWARENESS PROGRAM (GSSAP)

Brief: Space-based platform to track and characterize manmade objects in geosynchronous orbit to aid safety and avoidance.

COMMENTARY

GSSAP are "neighborhood watch" satellites that augment the legacy Space Based Space Surveillance (SBSS) system. SBSS tracks and classifies manmade objects in low Earth orbit, and GSSAP extends this coverage to geosynchronous orbit. Two GSSAP satellites were launched in 2014 and attained IOC on Sept. 29, 2015. The satellites operate in near-geosynchronous orbit to effectively monitor objects and aid in preventing collisions in space. GSSAP carry EO/IR sensors and are able to maneuver to observe objects at close range and can track objects without the weather and atmospheric disruptions affecting ground systems.

EXTANT VARIANT(S)

• GSSAP. Launched 2014; two active.
Operator: AFSPC.
First Launch: July 28, 2014.
IOC: Sept. 29, 2015.
Constellation: Two spacecraft.
Launch Vehicle: Delta IV.
Operational Location: Schriever AFB, Colo.
Orbit Altitude: 22,300 miles, above geosynchronous.
Contractor: Orbital Sciences Corp.
Power: Solar panels.

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 Air Force decommissioned the final Block IIA, launched to replace original GPS Block I series, on Aug. 26, 2016. 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. The last of 12 GPS IIF satellites deployed since 2010 launched from Cape Canaveral AFS, Fla., on Feb. 5, 2016. The next generation GPS Block IIIA currently in production is expected to improve accuracy, availability, integrity, and resistance to jamming. The first launch was pushed back from 2014 to a tentative 2017 target. SpaceX was awarded its first GPS launch contract to launch the second GPS IIIA on its Falcon 9 booster in May 2018. USAF recently contracted Lockheed Martin to build GPS IIIA vehicles nine and 10 for expected launch in 2022.

EXTANT VARIANT(S)

• GPS Block IIA. Launched 1990 to 1997; final satellite retired in 2016.
• 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 2016; 11 active, one recently launched.
• 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, Falcon 9 (planned).
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. Milstar I satellites launched 1994-95.
• Block II. Milstar II satellites launched 1999-2003.

Function: Communications.
Operator: AFSPC.
First Launch: Feb. 7, 1994.
IOC: July 1997 (Milstar I).
Constellation: Five: two Milstar I; three Milstar II.
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.

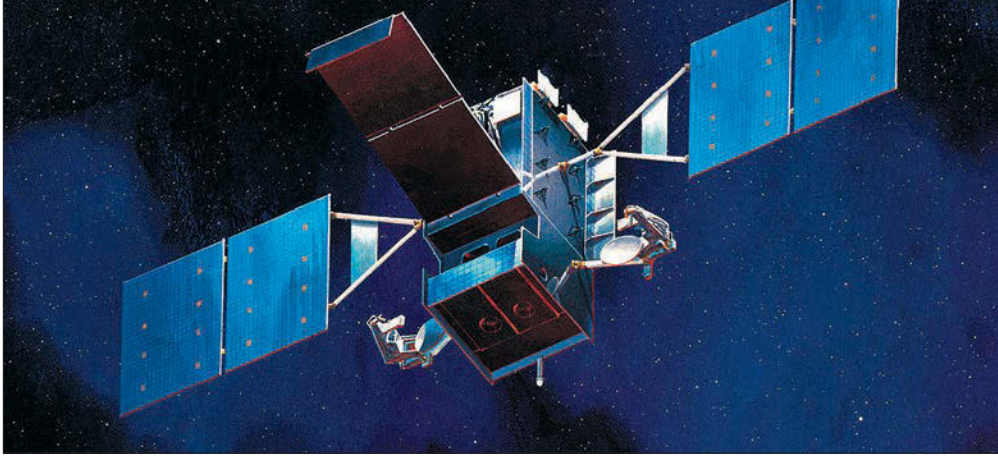
COMMENTARY

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 the 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. USAF announced plans to allow civil use of SBIRS data to aid weather prediction, Arctic ice monitoring, and wildfire tracking. GEO-3 launched into orbit Jan. 20, 2017, after delays to validate the performance of its liquid apogee engine. GEO-4 is slated to launch in 2017. The next two GEO satellites are under contract and will eventually replace the oldest two on orbit. SBIRS Control was consolidated to the new Block 10 Mission Control Station at Buckley AFB, Colo., in early 2016.

EXTANT SYSTEM(S)

• SBIRS HEO-1. Payload operational in 2008; currently active.
• SBIRS HEO-2. Payload operational in 2009; active.

Milstar USAF illustration



Space Based Infrared System USAF illustration

• SBIRS HEO-3. Payload operational in 2015; active.
• SBIRS GEO-1. Launched in 2011; active.
• SBIRS GEO-2. Launched in 2013; active.
• SBIRS GEO-3. Launched in 2017; 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, three HEO sensors (hosted).
Design Life: N/A.
Launch Vehicle: GEO, Atlas V.
Operational Location: Buckley 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. 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 SYSTEM(S)

• SBSS Block 10. Launched in 2010; 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 yr.
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. 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. SV-7 launched on July 23, 2015, and became operational that October. SV-8 launched into orbit on Dec. 7, 2016, and SV-9 launched March 18, 2017. All four satellites are expected to be aloft and operational by 2019. USAF recently contracted industry to develop anti-jamming capability for tactical users and is reviewing alternatives to eventually replenish the constellation with three additional satellites or develop a follow-on system.

EXTANT VARIANT(S)

• Block I. Satellites SV-1 to SV-3; launched 2007 to 2009; active.
• Block II. Satellites SV-4 to SV-8; launched 2009 to 2016; active.
Function: Communications.
Operator: AFSPC.
First Launch: October 2007.
IOC: April 16, 2008.
Constellation: Seven satellites.
Design Life: 14 yr.
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.

Aaron M. U. Church is a freelance writer in Grand Forks, N.D. He is a former *Air Force Magazine* senior editor.

Leaders Through the Years

2017 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	Aug. 1, 1907	June 30, 1910
	Capt. Arthur S. Cowan	July 1, 1910	June 19, 1911
	Capt. Charles deForest Chandler	June 20, 1911	Sept. 9, 1913
	Maj. Samuel Reber	Sept. 10, 1913	July 17, 1914
AVIATION SECTION, US SIGNAL CORPS[a] July 18, 1914 - May 20, 1918			
Chief, Aviation Section	Lt. Col. Samuel Reber	July 18, 1914	May 5, 1916
	Lt. Col. George O. Squier	May 20, 1916	Feb. 19, 1917
	Lt. Col. John B. Bennet	Feb. 19, 1917	June 30, 1917
	Maj. Benjamin D. Foulois	June 30, 1917	Nov. 12, 1917
	Brig. Gen. Arthur I. Dade	Nov. 12, 1917	Feb. 27, 1918
	Col. Lawrence Brown	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	May 20, 1918	August 1918
	(Kept same title three months into absorption by Air Service)		
AIR SERVICE May 24, 1918 - July 2, 1926			
Director of Air Service	John D. Ryan	Aug. 28, 1918	Nov. 27, 1918
	Maj. Gen. Charles T. Menoher	Jan. 2, 1919	June 4, 1920
Chief of Air Service	Maj. Gen. Charles T. Menoher	June 4, 1920	Oct. 4, 1921
	Maj. Gen. Mason M. Patrick	Oct. 5, 1921	July 2, 1926
AIR CORPS[b] July 2, 1926 - Sept. 18, 1947			
Chief of Air Corps	Maj. Gen. Mason M. Patrick	July 2, 1926	Dec. 13, 1927
	Maj. Gen. James E. Fechet	Dec. 14, 1927	Dec. 19, 1931
	Maj. Gen. Benjamin D. Foulois	Dec. 20, 1931	Dec. 21, 1935
	Maj. Gen. Oscar Westover	Dec. 22, 1935	Sept. 21, 1938
	Maj. Gen. Henry H. Arnold	Sept. 29, 1938	June 20, 1941
ARMY AIR FORCES (AAF) June 20, 1941 - Sept. 18, 1947			
Chief, Army Air Forces	Lt. Gen. Henry H. Arnold	June 20, 1941	March 9, 1942
Commanding General, AAF	Gen. of the Army Henry H. Arnold[c]	March 9, 1942	Feb. 9, 1946
	Gen. Carl A. Spaatz	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

[a]Between April 1917 and May 1918, the Aviation Section was known by various other names: Aeronautical Division, Airplane Division, Air Division, and Air Service Division.

[b]The 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.

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

Headquarters USAF Leaders

SECRETARY OF THE AIR FORCE

Stuart Symington	Sept. 18, 1947	April 24, 1950
Thomas K. Finletter	April 24, 1950	Jan. 20, 1953
Harold E. Talbott	Feb. 4, 1953	Aug. 13, 1955
Donald A. Quarles	Aug. 15, 1955	April 30, 1957
James H. Douglas Jr.	May 1, 1957	Dec. 10, 1959
Dudley C. Sharp	Dec. 11, 1959	Jan. 20, 1961
Eugene M. Zuckert	Jan. 23, 1961	Sept. 30, 1965
Harold Brown	Oct. 1, 1965	Feb. 14, 1969
Robert C. Seamans Jr.	Feb. 15, 1969	May 14, 1973
John L. McLucas*	May 15, 1973	Nov. 23, 1975
James W. Plummer (acting)	Nov. 23, 1975	Jan. 2, 1976
Thomas C. Reed	Jan. 2, 1976	April 6, 1977
John C. Stetson	April 6, 1977	May 18, 1979
Hans M. Mark*	May 18, 1979	Feb. 9, 1981
Verne Orr	Feb. 9, 1981	Nov. 30, 1985
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
John J. Welch Jr. (acting)	April 29, 1989	May 21, 1989
Donald B. Rice	May 22, 1989	Jan. 20, 1993
Michael B. Donley (acting)	Jan. 20, 1993	July 13, 1993
Gen. Merrill A. McPeak (acting)	July 14, 1993	Aug. 5, 1993
Sheila E. Widnall	Aug. 6, 1993	Oct. 31, 1997
F. Whitten Peters*	Nov. 1, 1997	Jan. 20, 2001
Lawrence J. Delaney (acting)	Jan. 20, 2001	June 1, 2001
James G. Roche	June 1, 2001	Jan. 20, 2005
Peter B. Teets (acting)	Jan. 20, 2005	March 25, 2005
Michael L. Dominguez (acting)	March 25, 2005	July 29, 2005
Preston M. Geren (acting)	July 29, 2005	Nov. 3, 2005
Michael W. Wynne	Nov. 3, 2005	June 20, 2008
Michael B. Donley*	June 21, 2008	June 21, 2013
Eric Fanning (acting)	June 21, 2013	Dec. 20, 2013
Deborah Lee James	Dec. 20, 2013	Jan. 19, 2017
Lisa S. Disbrow (acting)	Jan. 20, 2017	

*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.

CHIEF OF STAFF OF THE AIR FORCE

Gen. Carl A. Spaatz	Sept. 26, 1947	April 29, 1948
Gen. Hoyt S. Vandenberg	April 30, 1948	June 29, 1953
Gen. Nathan F. Twining	June 30, 1953	June 30, 1957
Gen. Thomas D. White	July 1, 1957	June 30, 1961
Gen. Curtis E. LeMay	June 30, 1961	Jan. 31, 1965
Gen. John P. McConnell	Feb. 1, 1965	July 31, 1969
Gen. John D. Ryan	Aug. 1, 1969	July 31, 1973
Gen. George S. Brown	Aug. 1, 1973	June 30, 1974
Gen. David C. Jones	July 1, 1974	June 20, 1978
Gen. Lew Allen Jr.	July 1, 1978	June 30, 1982
Gen. Charles A. Gabriel	July 1, 1982	June 30, 1986
Gen. Larry D. Welch	July 1, 1986	June 30, 1990
Gen. Michael J. Dugan	July 1, 1990	Sept. 17, 1990
Gen. John Michael Loh (acting)	Sept. 18, 1990	Oct. 27, 1990
Gen. Merrill A. McPeak	Oct. 27, 1990	Oct. 25, 1994
Gen. Ronald R. Fogleman	Oct. 25, 1994	Sept. 1, 1997
Gen. Ralph E. Eberhart (acting)	Sept. 1, 1997	Oct. 6, 1997
Gen. Michael E. Ryan	Oct. 6, 1997	Sept. 6, 2001
Gen. John P. Jumper	Sept. 6, 2001	Sept. 2, 2005
Gen. T. Michael Moseley	Sept. 2, 2005	July 12, 2008
Gen. Duncan J. McNabb (acting)	July 12, 2008	Aug. 12, 2008
Gen. Norton A. Schwartz	Aug. 12, 2008	Aug. 10, 2012
Gen. Mark A. Welsh III	Aug. 10, 2012	July 1, 2016
Gen. David L. Goldfein	July 1, 2016	

VICE CHIEF OF STAFF OF THE AIR FORCE

Gen. Hoyt S. Vandenberg	Oct. 10, 1947	April 28, 1948
Gen. Muir S. Fairchild	May 27, 1948	March 17, 1950
Lt. Gen. Lauris Norstad (acting)	May 22, 1950	Oct. 9, 1950
Gen. Nathan F. Twining	Oct. 10, 1950	June 29, 1953
Gen. Thomas D. White	June 30, 1953	June 30, 1957
Gen. Curtis E. LeMay	July 1, 1957	June 30, 1961
Gen. Frederic H. Smith Jr.	July 1, 1961	June 30, 1962
Gen. William F. McKee	July 1, 1962	July 31, 1964
Gen. John P. McConnell	Aug. 1, 1964	Jan. 31, 1965
Gen. William H. Blanchard	Feb. 19, 1965	May 31, 1966
Lt. Gen. Hewitt T. Wheless (acting)	June 13, 1966	July 31, 1966
Gen. Bruce K. Holloway	Aug. 1, 1966	July 31, 1968
Gen. John D. Ryan	Aug. 1, 1968	July 31, 1969
Gen. John C. Meyer	Aug. 1, 1969	April 30, 1972
Gen. Horace M. Wade	May 1, 1972	Oct. 31, 1973
Gen. Richard H. Ellis	Nov. 1, 1973	Aug. 18, 1975
Gen. William V. McBride	Sept. 1, 1975	March 31, 1978
Gen. Lew Allen Jr.	April 1, 1978	June 30, 1978
Gen. James A. Hill	July 1, 1978	Feb. 29, 1980
Gen. Robert C. Mathis	March 1, 1980	May 31, 1982
Gen. Jerome F. O'Malley	June 1, 1982	Oct. 5, 1983
Gen. Lawrence A. Skantze	Oct. 6, 1983	July 31, 1984
Gen. Larry D. Welch	Aug. 1, 1984	July 31, 1985
Gen. John L. Piotrowski	Aug. 1, 1985	Jan. 31, 1987
Gen. Monroe W. Hatch Jr.	Feb. 1, 1987	May 24, 1990
Gen. John Michael Loh	May 25, 1990	March 25, 1991
Gen. Michael P. C. Carns	May 16, 1991	July 28, 1994
Gen. Thomas S. Moorman Jr.	July 29, 1994	July 11, 1997
Gen. Ralph E. Eberhart	July 11, 1997	May 26, 1999
Gen. Lester L. Lyles	May 27, 1999	April 17, 2000
Gen. John W. Handy	April 17, 2000	Nov. 5, 2001
Gen. Robert H. Foglesong	Nov. 5, 2001	Aug. 11, 2003
Gen. T. Michael Moseley	Aug. 12, 2003	Sept. 2, 2005
Gen. John D. W. Corley	Sept. 2, 2005	Sept. 17, 2007
Gen. Duncan J. McNabb	Sept. 17, 2007	Sept. 4, 2008
Gen. William M. Fraser III	Oct. 8, 2008	Aug. 27, 2009
Gen. Carrol H. Chandler	Aug. 27, 2009	Jan. 14, 2011
Gen. Philip M. Breedlove	Jan. 14, 2011	July 27, 2012
Gen. Larry O. Spencer	July 27, 2012	Aug. 6, 2015
Gen. David L. Goldfein	Aug. 6, 2015	July 1, 2016
Gen. Stephen W. Wilson	July 22, 2016	

CHIEF MASTER SERGEANT OF THE AIR FORCE

CMSAF Paul W. Airey	April 3, 1967	July 31, 1969
CMSAF Donald L. Harlow	Aug. 1, 1969	Sept. 30, 1971
CMSAF Richard D. Kisling	Oct. 1, 1971	Sept. 30, 1973
CMSAF Thomas N. Barnes	Oct. 1, 1973	July 31, 1977
CMSAF Robert D. Gaylor	Aug. 1, 1977	July 31, 1979
CMSAF James M. McCoy	Aug. 1, 1979	July 31, 1981
CMSAF Arthur L. Andrews	Aug. 1, 1981	July 31, 1983
CMSAF Sam E. Parish	Aug. 1, 1983	June 30, 1986
CMSAF James C. Binnicker	July 1, 1986	July 31, 1990
CMSAF Gary R. Pfingston	Aug. 1, 1990	Oct. 25, 1994
CMSAF David J. Campanale	Oct. 26, 1994	Nov. 4, 1996
CMSAF Eric W. Benken	Nov. 5, 1996	July 30, 1999
CMSAF Frederick J. Finch	July 30, 1999	July 1, 2002
CMSAF Gerald R. Murray	July 1, 2002	June 30, 2006
CMSAF Rodney J. McKinley	June 30, 2006	June 30, 2009
CMSAF James A. Roy	June 30, 2009	Jan. 24, 2013
CMSAF James A. Cody	Jan. 24, 2013	Feb. 17, 2017
CMSAF Kaleth O. Wright	Feb. 17, 2017	

Major Command and ANG Leaders

This section presents the leaders of USAF's major commands and the Air National Guard (ANG) under a command's current designation. Leaders of historic Air Force major commands (and of active commands' previous designations) are listed in the next section.

AIR COMBAT COMMAND

Gen. John Michael Loh	June 1, 1992	June 23, 1995
Gen. Joseph W. Ralston	June 23, 1995	Feb. 28, 1996
Lt. Gen. Brett M. Dula (acting)	Feb. 28, 1996	April 5, 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	Aug. 25, 2001
Lt. Gen. Donald G. Cook (acting)	Aug. 25, 2001	Nov. 14, 2001
Gen. Hal M. Hornburg	Nov. 14, 2001	Nov. 17, 2004
Lt. Gen. Bruce A. Wright (acting)	Nov. 17, 2004	Feb. 3, 2005
Lt. Gen. William Fraser III (acting)	Feb. 3, 2005	May 27, 2005
Gen. Ronald E. Keys	May 27, 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	March 10, 2017
Gen. James M. Holmes	March 10, 2017	

AIR EDUCATION AND TRAINING COMMAND

Gen. Henry Viccellio Jr.	July 1, 1993	June 20, 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. 10, 2001
Lt. Gen. John D. Hopper Jr. (acting)	Nov. 10, 2001	Dec. 15, 2001
Gen. Donald G. Cook	Dec. 15, 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	July 21, 2015
Lt. Gen. Darryl L. Roberson	July 21, 2015	

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	July 28, 2015
Gen. Robin Rand	July 28, 2015	

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 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	June 8, 2015
Gen. Ellen M. Pawlikowski	June 8, 2015	

AIR FORCE RESERVE COMMAND

Maj. Gen. Robert A. McIntosh	Feb. 17, 1997	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	July 15, 2016
Lt. Gen. Maryanne Miller	July 15, 2016	

Gen. Robin Rand, head of Air Force Global Strike Command, hosts a commander's call at Kirtland AFB, N.M.

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	Oct. 25, 2016
Gen. John W. Raymond	Oct. 25, 2016	

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	July 19, 2016
Lt. Gen. Marshall B. Webb	July 19, 2016	

AIR MOBILITY COMMAND

Gen. Hansford T. Johnson	June 1, 1992	Aug. 25, 1992
Gen. Ronald R. Fogleman	Aug. 25, 1992	Oct. 18, 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 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	Aug. 11, 2015
Gen. Carlton D. Everhart II	Aug. 11, 2015	

Todd R. Berenger/USAF

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 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 Titshaw (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	Dec. 18, 2015
Maj. Gen. Brian G. Neal (acting)	Dec. 18, 2015	May 10, 2016
Lt. Gen. L. Scott Rice	May 10, 2016	

PACIFIC AIR FORCES

Gen. Laurence S. Kuter	July 1, 1957	Aug. 1, 1959
Gen. Emmett O'Donnell Jr.	Aug. 1, 1959	Aug. 1, 1963
Gen. Jacob E. Smart	Aug. 1, 1963	Aug. 1, 1964
Gen. Hunter Harris Jr.	Aug. 1, 1964	Feb. 1, 1967
Gen. John D. Ryan	Feb. 1, 1967	Aug. 1, 1968
Gen. Joseph J. Nazzaro	Aug. 1, 1968	Aug. 1, 1971
Gen. Lucius D. Clay Jr.	Aug. 1, 1971	Oct. 1, 1973
Gen. John W. Vogt Jr.	Oct. 1, 1973	July 1, 1974
Gen. Louis L. Wilson Jr.	July 1, 1974	June 3, 1977
Lt. Gen. James A. Hill	June 3, 1977	June 15, 1978
Lt. Gen. James D. Hughes	June 15, 1978	June 8, 1981
Lt. Gen. Arnold W. Braswell	June 8, 1981	Oct. 8, 1983
Gen. Jerome F. O'Malley	Oct. 8, 1983	Sept. 25, 1984
Gen. Robert W. Bazley	Sept. 25, 1984	Dec. 16, 1986
Gen. Jack I. Gregory	Dec. 16, 1986	July 22, 1988
Gen. Merrill A. McPeak	July 22, 1988	Nov. 5, 1990
Lt. Gen. James B. Davis	Nov. 5, 1990	Feb. 19, 1991
Gen. Jimmie V. Adams	Feb. 19, 1991	Jan. 22, 1993
Gen. Robert L. Rutherford	Jan. 22, 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	May 11, 2016
Lt. Gen. Russell J. Handy (acting)	May 11, 2016	July 12, 2016
Gen. Terrence J. O'Shaughnessy	July 12, 2016	

A maintenance crew chief with the 56th Rescue Squadron, US Air Forces in Europe, works on an HH-60G Pave Hawk anti-icing component.

MSgt. Eric Burks/USAF

US AIR FORCES IN EUROPE

Lt. Gen. John K. Cannon	Aug. 7, 1945	Aug. 14, 1947
Brig. Gen. John F. McBlain (acting)	Aug. 14, 1947	Oct. 20, 1947
Lt. Gen. Curtis E. LeMay	Oct. 20, 1947	Oct. 16, 1948
Lt. Gen. John K. Cannon	Oct. 16, 1948	Jan. 21, 1951
Gen. Lauris Norstad	Jan. 21, 1951	July 27, 1953
Lt. Gen. William H. Tunner	July 27, 1953	July 1, 1957
Gen. Frank F. Everest	July 1, 1957	Aug. 1, 1959
Gen. Frederic H. Smith Jr.	Aug. 1, 1959	July 1, 1961
Gen. Truman H. Landon	July 1, 1961	Aug. 1, 1963
Gen. Gabriel P. Disosway	Aug. 1, 1963	Aug. 1, 1965
Gen. Bruce K. Holloway	Aug. 1, 1965	Aug. 1, 1966
Gen. Maurice A. Preston	Aug. 1, 1966	Aug. 1, 1968
Gen. Horace M. Wade	Aug. 1, 1968	Aug. 1, 1969
Gen. Joseph R. Holzapple	Feb. 1, 1969	Sept. 1, 1971
Gen. David C. Jones	Sept. 1, 1971	July 1, 1974
Gen. John W. Vogt	July 1, 1974	Sept. 1, 1975
Gen. Richard H. Ellis	Sept. 1, 1975	Aug. 1, 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 17, 1995
Gen. Richard E. Hawley	July 17, 1995	April 4, 1996
Gen. Michael E. Ryan	April 4, 1996	Oct. 6, 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
Lt. Gen. Robert D. Bishop Jr.	Dec. 10, 2007	Jan. 9, 2008
Gen. Roger A. Brady	Jan. 9, 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	Aug. 11, 2016
Gen. Tod D. Wolters	Aug. 11, 2016	

Historic Major Command Leaders

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 Smith (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.

YF-22 Advanced Tactical Fighters were delivered to Air Force Systems Command before its inactivation.

AIR FORCE RESERVE

Maj. Gen. Rollin B. Moore Jr.	Aug. 1, 1968	Jan. 27, 1972
Brig. Gen. Alfred Verhulst (acting)	Jan. 27, 1972	March 16, 1972
Maj. Gen. Homer I. Lewis	March 16, 1972	April 16, 1975
Maj. Gen. William Lyon	April 16, 1975	April 17, 1979
Maj. Gen. Richard Bodycombe	April 17, 1979	Nov. 1, 1982
Maj. Gen. Sloan R. Gill	Nov. 1, 1982	Nov. 1, 1986
Maj. Gen. Roger P. Scheer	Nov. 1, 1986	Nov. 1, 1990
Maj. Gen. John J. Closner III	Nov. 1, 1990	Nov. 1, 1994
Maj. Gen. Robert A McIntosh	Nov. 1, 1994	Feb. 17, 1997

Established as Air Force Reserve, an operating agency, June 21, 1968. Became a direct reporting unit July 1, 1978. Returned to agency status May 1, 1983. Became a field operating agency Feb. 5, 1991. Redesignated Air Force Reserve Command Feb. 17, 1997. For current leaders, see Air Force Reserve Command in Major Command and ANG Leaders.

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 Sessums (acting)	July 1, 1957	July 31, 195
Lt. Gen. Samuel E. Anderson	Aug. 1, 1957	March 9, 1959
Maj. Gen. John 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.

USAF

Historic Major Command Leaders (continued)

AIR TRAINING COMMAND

Lt. Gen. Barton K. Yount	Jan. 28 1942	Sept. 27, 1945
Maj. Gen. James P. Hodges	Sept. 27, 1945	April 13, 1946
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. 11, 1992	June 30, 1993

Established as Air Corps Flying Training Command Jan. 23, 1942. Redesignated as AAF Flying Training Command March 15, 1942; AAF Training Command July 31, 1943; Air Training Command July 1, 1946; Air Education and Training Command July 1, 1993. For current leaders, see Air Education and Training Command in Major Command and ANG Leaders.

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 Pacific Air Forces.

In 1980, F-4E Phantoms from the 21st Tactical Fighter Wing, Elmendorf AFB, Alaska, fly past Mount McKinley. They were assigned to Alaskan Air Command.

USAF

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 Wilson (acting)	June 19, 1965	Aug. 18, 1965
Lt. Gen. Cecil H. Childre	Aug. 18, 1965	May 1966
Maj. Gen. 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.

A Far East Air Forces B-57 passes Mount Fuji, Japan, about 1957.

Then-Lt. Gen. George Kenney in Australia.

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 field operating agency, Air Intelligence Agency, Oct. 1, 1993.

FAR EAST AIR FORCES		
Gen. George C. Kenney	Aug. 3, 1944	Dec. 30, 1945
Lt. Gen. Ennis C. Whitehead	Dec. 30, 1945	April 26, 1949
Lt. Gen. George E. Stratemeyer	April 26, 1949	May 21, 1951
Lt. Gen. Earle E. Partridge (acting)	May 21, 1951	June 10, 1951
Gen. Otto P. Weyland	June 10, 1951	March 26, 1954
Gen. Earle E. Partridge	March 26, 1954	June 4, 1955
Gen. Laurence S. Kuter	June 4, 1955	July 1, 1959

Activated as Far East Air Forces Aug. 3, 1944. Redesignated Pacific Air Command, US Army, Dec. 6, 1945; Far East Air Forces Jan. 1, 1947; Pacific Air Forces July 1, 1957. For current leaders, see Pacific Air Forces in Major Command and ANG Leaders.

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.

MILITARY AIRLIFT COMMAND		
Maj. Gen. Robert M. Olds	May 29, 1941	April 1, 1942
Lt. Gen. Harold L. George	April 1, 1942	Sept. 20, 1946
Maj. Gen. Robert M. Webster	Sept. 20, 1946	July 1, 1947
Maj. Gen. Robert W. Harper	July 1, 1947	June 1, 1948
Lt. Gen. Laurence S. Kuter	June 1, 1948	Nov. 19, 1951
Lt. Gen. Joseph Smith	Nov. 19, 1951	July 1, 1958
Lt. Gen. William H. Tunner	July 1, 1958	June 1, 1960
Gen. Joe W. Kelly	June 1, 1960	July 19, 1964
Gen. Howell M. Estes Jr.	July 19, 1964	Aug. 1, 1969
Gen. Jack J. Catton	Aug. 1, 1969	Sept. 12, 1972
Lt. Gen. Jay T. Robbins (acting)	Sept. 12, 1972	Sept. 20, 1972
Gen. Paul K. Carlton	Sept. 20, 1972	April 1, 1977
Gen. William G. Moore Jr.	April 1, 1977	July 1, 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.	June 30, 1983	Sept. 20, 1985
Gen. Duane H. Cassidy	Sept. 20, 1985	Sept. 22, 1989
Gen. Hansford T. Johnson	Sept. 22, 1989	June 1, 1992

Established as Air Corps Ferrying Command May 29, 1941. Redesignated AAF Ferry Command March 9, 1942; AAF Ferrying Command March 31, 1942; Air Transport Command July 1, 1942; Military Air Transport Service June 1, 1948; Military Airlift Command Jan. 1, 1966. Inactivated June 1, 1992. Consolidated with Air Mobility Command. For current leaders, see Air Mobility Command in Major Command and ANG Leaders.

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, was reorganized and redesignated Northeast Air Command, a new major command, Oct. 1, 1950. Inactivated March 31, 1957.

USAF; USAF

Tactical Air Command F-104s from Hamilton AFB, Calif., at Taeyan AB, Taiwan, during a 1958 operation.

STRATEGIC AIR COMMAND

Brig. Gen. Eugene H. Beebe	Dec. 15, 1944	March 1, 1945
Maj. Gen. St. Clair Streett	March 1, 1945	July 1, 1945
Gen. Henry H. Arnold	July 1, 1945	March 21, 1946
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 as Air Force Global Strike Command Aug. 7, 2009. For current leaders, see Air Force Global Strike Command in Major Command and ANG Leaders.

TACTICAL AIR COMMAND

Lt. Gen. Elwood R. Quesada	March 21, 1946	Nov. 24, 1948
Maj. Gen. Robert M. Lee	Nov. 24, 1948	July 8, 1950
Maj. Gen. Otto P. Weyland	July, 8 1950	July 17, 1950
Maj. Gen. Glenn O. Barcus	July 17, 1950	Jan. 25, 1951
Gen. John K. Cannon	Jan. 25, 1951	May 1, 1954
Gen. Otto P. Weyland	May 1, 1954	Aug. 1, 1959
Gen. Frank F. Everest	Aug. 1, 1959	Oct. 1, 1961
Gen. Walter C. Sweeney Jr.	Oct. 1, 1961	Aug. 1, 1965
Gen. Gabriel P. Disosway	Aug. 1, 1965	Aug. 1, 1968
Gen. William W. Momyer	Aug. 1, 1968	Oct. 1, 1973
Gen. Robert J. Dixon	Oct. 1, 1973	May 1, 1978
Gen. W. L. Creech	May 1, 1978	Sept. 28, 1984
Gen. Jerome F. O'Malley	Sept. 28, 1984	May 22, 1985
Gen. Robert D. Russ	May 22, 1985	March 26, 1991
Gen. John Michael Loh	March 26, 1991	June 1, 1992

Established as Tactical Air Command March 21, 1946. Lost majcom status and assigned to Continental Air Command Dec. 1, 1948. Returned to majcom status Dec. 1, 1950. Inactivated June 1, 1992. Consolidated with Air Combat Command. For current leaders, see Air Combat Command in Major Command and ANG Leaders.

Gen. Curtis LeMay (left), head of Strategic Air Command, and Gen. Otto Weyland, Far East Air Forces commander, in 1952.

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.

US STRATEGIC AIR FORCES IN EUROPE

Brig. Gen. Asa N. Duncan	Jan 28, 1942	May 5, 1942
Maj. Gen. Carl A. Spaatz	May 5, 1942	Dec. 1, 1942
Lt. Gen. Ira C. Eaker	Dec. 1, 1942	Jan. 6, 1944
Gen. Carl A. Spaatz	Jan. 6, 1944	June 3, 1945
Lt. Gen. John K. Cannon	June 3, 1945	June 13, 1945
Gen. Carl A. Spaatz	June 13, 1945	July 4, 1945
Lt. Gen. John K. Cannon	July 4, 1945	Aug. 7, 1945

Established as 8th Air Force Jan. 19, 1942. Redesignated Eighth Air Force Sept. 18, 1942; United States Strategic Air Forces in Europe Feb. 22, 1944; US Air Forces in Europe Aug. 7, 1945. For current leaders, see US Air Forces in Europe in the Major Command and ANG Leaders.

USAF; USAF via National Archives

Headquarters DOD Leaders

SECRETARY OF DEFENSE

James V. Forrestal	Sept. 17, 1947	March 28, 1949
Louis A. Johnson	March 28, 1949	Sept. 19, 1950
George C. Marshall	Sept. 21, 1950	Sept. 12, 1951
Robert A. Lovett	Sept. 17, 1951	Jan. 20, 1953
Charles E. Wilson	Jan. 28, 1953	Oct. 8, 1957
Neil H. McElroy	Oct. 9, 1957	Dec. 1, 1959
Thomas S. Gates	Dec. 2, 1959	Jan. 20, 1961
Robert S. McNamara	Jan. 21, 1961	Feb. 29, 1968
Clark M. Clifford	March 1, 1968	Jan. 20, 1969
Melvin R. Laird	Jan. 22, 1969	Jan. 29, 1973
Elliot L. Richardson	Jan. 30, 1973	May 24, 1973
James R. Schlesinger	July 2, 1973	Nov. 19, 1975
Donald H. Rumsfeld	Nov. 20, 1975	Jan. 20, 1977
Harold Brown	Jan. 21, 1977	Jan. 20, 1981
Caspar W. Weinberger	Jan. 21, 1981	Nov. 23, 1987
Frank C. Carlucci	Nov. 23, 1987	Jan. 20, 1989
Richard B. Cheney	March 21, 1989	Jan. 20, 1993
Les Aspin	Jan. 21, 1993	Feb. 3, 1994
William J. Perry	Feb. 3, 1994	Jan. 23, 1997
William S. Cohen	Jan. 24, 1997	Jan. 20, 2001
Donald H. Rumsfeld	Jan. 20, 2001	Dec. 18, 2006
Robert M. Gates	Dec. 18, 2006	July 1, 2011
Leon E. Panetta	July 1, 2011	Feb. 27, 2013
Chuck Hagel	Feb. 27, 2013	Feb. 17, 2015
Ashton B. Carter	Feb. 17, 2015	Jan. 19, 2017
James N. Mattis	Jan. 20, 2017	

CHAIRMAN OF THE JOINT CHIEFS OF STAFF

Gen. of the Army Omar N. Bradley	Aug. 16, 1949	Aug. 15, 1953
Adm. Arthur W. Radford, USN	Aug. 15, 1953	Aug. 15, 1957
Gen. Nathan F. Twining, USAF	Aug. 15, 1957	Sept. 30, 1960
Gen. Lyman L. Lemnitzer, USA	Oct. 1, 1960	Sept. 30, 1962
Gen. Maxwell D. Taylor, USA	Oct. 1, 1962	July 1, 1964
Gen. Earle G. Wheeler, USA	July 3, 1964	July 2, 1970
Adm. Thomas H. Moorer, USN	July 2, 1970	July 1, 1974
Gen. George S. Brown, USAF	July 1, 1974	June 20, 1978
Gen. David C. Jones, USAF	June 21, 1978	June 18, 1982
Gen. John W. Vessey Jr., USA	June 18, 1982	Sept. 30, 1985
Adm. William J. Crowe Jr., USN	Oct. 1, 1985	Sept. 30, 1989
Gen. Colin L. Powell, USA	Oct. 1, 1989	Sept. 30, 1993
Adm. David Jeremiah, USN (acting)	Oct. 1, 1993	Oct. 24, 1993
Gen. John M. Shalikashvili, USA	Oct. 25, 1993	Sept. 30, 1997
Gen. Henry H. Shelton, USA	Oct. 1, 1997	Oct. 1, 2001
Gen. Richard B. Myers, USAF	Oct. 1, 2001	Sept. 30, 2005
Gen. Peter Pace, USMC	Sept. 30, 2005	Oct. 1, 2007
Adm. Michael G. Mullen, USN	Oct. 1, 2007	Sept. 30, 2011
Gen. Martin E. Dempsey, USA	Sept. 30, 2011	Sept. 25, 2015
Gen. Joseph F. Dunford Jr., USMC	Sept. 25, 2015	

VICE CHAIRMAN OF THE JOINT CHIEFS OF STAFF

Gen. Robert T. Herres, USAF	Feb. 6, 1987	Feb. 28, 1990
Adm. David E. Jeremiah, USN	March 1, 1990	Feb. 28, 1994
Adm. William A. Owens, USN	March 1, 1994	Feb. 27, 1996
Gen. Joseph W. Ralston, USAF	March 1, 1996	Feb. 29, 2000
Gen. Richard B. Myers, USAF	March 1, 2000	Oct. 1, 2001
Gen. Peter Pace, USMC	Oct. 1, 2001	Aug. 12, 2005
Adm. Edmund Giambastiani Jr., USN	Aug. 12, 2005	Aug. 3, 2007
Gen. James E. Cartwright, USMC	Aug. 4, 2007	Aug. 4, 2011
Adm. James A. Winnefeld Jr., USN	Aug. 4, 2011	July 31, 2015
Gen. Paul J. Selva, USAF	July 31, 2015	

The Joint Chiefs of Staff in 1997 (left to right): Air Force Gen. Joseph Ralston, vice chairman of the Joint Chiefs of Staff; Army Gen. Henry Shelton, Chairman of the Joint Chiefs of Staff; Gen. Dennis Reimer, Army Chief of Staff; Gen. Charles Krulak, Marine Corps Commandant; Adm. Jay Johnson, Chief of Naval Operations; and Gen. Michael Ryan, Air Force Chief of Staff.

R. D. Ward/DOD

Unified Command, National Guard Bureau, and NORAD Leaders

This section presents the leaders of DOD's unified commands, the National Guard Bureau, and NORAD under the current designation. Leaders of historic DOD commands (and of active commands' previous designations) are listed in the next section.

Gen. Joseph Dunford, then International Security Assistance Force commander (left), and Gen. James Mattis, then CENTCOM commander, in Afghanistan in 2013.

NORAD and NORTHCOM commander Gen. Lori Robinson (right) is briefed by a customs and border patrol official.

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	July 18, 2016
Gen. Thomas D. Waldhauser, USMC	July 18, 2016	

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 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	March 30, 2016
Gen. Joseph L. Votel, USA	March 30, 2016	

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	May 3, 2016
Gen. Curtis M. Scaparrotti, USA	May 3, 2016	

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	May 13, 2016
Gen. Lori J. Robinson, USAF	May 13, 2016	

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 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 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	May 27, 2015
Adm. Harry B. Harris Jr., USN	May 27, 2015	

Sgt. Mallory S. VanderSchans/USMC, US Northern Command

Unified Command, National Guard Bureau, and NORAD Leaders (continued)

US SOUTHERN COMMAND

Gen. Andrew P. O'Meara, USA	June 6, 1963	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. Worthington, USAF (acting)	October 1993	Feb. 17, 1994
Gen. Barry R. McCaffrey, USA	Feb. 17, 1994	March 1, 1996
RAdm. James Perkins, 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	Jan 14, 2016
Adm. Kurt W. Tidd, USN	Jan. 14, 2016	

Formerly US Caribbean Command Nov. 1, 1947. Redesignated June 6, 1963. For historical leaders, see US Caribbean Command in Historic Unified Command Leaders section.

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	March 30, 2016
Gen. Raymond A. Thomas, USA	March 30, 2016	

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. Robert Kehler, USAF (acting)	Aug. 10, 2007	Oct. 3, 2007
Gen. Kevin P. Chilton, USAF	Oct. 3, 2007	Jan. 28, 2011
Gen. Robert Kehler, USAF	Jan. 28, 2011	Nov. 15, 2013
Adm. Cecil D. Haney, USN	Nov. 15, 2013	Nov. 3, 2016
Gen. John E. Hyten, USAF	Nov. 3, 2016	

Merged the functions of US Space Command into US Strategic Command 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	July 31, 2015
VAdm. William Brown, USN (acting)	July 31, 2015	Aug. 26, 2015
Gen. Darren W. McDew, USAF	Aug. 26, 2015	

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, 1950	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 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 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	Aug. 3, 2016
Gen. Joseph L. Lengyel, USAF	Aug. 3, 2016	

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	May 13, 2016
Gen. Lori J. Robinson, USAF	May 13, 2016	

Historic Unified Command Leaders

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 CARIBBEAN COMMAND

Lt. Gen. Willis D. Crittenberger, 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 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	June 6, 1963

Redesignated US Southern Command June 6, 1963.

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 Giambastiani Jr., USN	Oct. 2, 2002	Aug. 1, 2005
Lt. Gen. Robert 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. 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	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 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, which was established December 1961 and disestablished Dec. 31, 1971. US Readiness 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.

Guide to Aces and Heroes

2017 USAF Almanac

Major Decorations

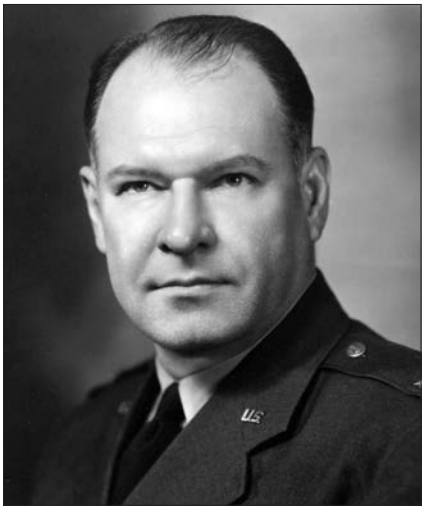
USAF Recipients of the Medal of Honor

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	Binarville, France
Goettler, 1st Lt. Harold E.	Chicago	Oct. 6, 1918	Binarville, France
Luke, 2nd Lt. Frank Jr.	Phoenix	Sept. 29, 1918	Murvaux, France
Rickenbacker, 1st Lt. Edward V.	Columbus, Ohio	Sept. 25, 1918	Billy, France
World War II			
Baker, Lt. Col. Addison E.	Chicago	Aug. 1, 1943	Ploesti, Romania
Bong, Maj. Richard I.	Superior, Wis.	Oct. 10-Nov. 15, 1944	Southwest Pacific
Carswell, Maj. Horace S. Jr.	Fort Worth, 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
Jerstad, Maj. John L.	Racine, Wis.	Aug. 1, 1943	Ploesti, Romania
Johnson, Col. Leon W.	Columbia, Mo.	Aug. 1, 1943	Ploesti, Romania

Erwin Bleckley

Frank Luke

Demas Craw



John Kane

Louis Sebille

George Day

NAME AND RANK AT TIME OF ACTION	PLACE OF BIRTH	DATE OF ACTION	PLACE OF ACTION
World War II (continued)			
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	Vegesack, Germany
McGuire, Maj. Thomas B. Jr.	Ridgewood, N.J.	Dec. 25-26, 1944	Luzon, Philippines
Metzger, 2nd Lt. William E. Jr.	Lima, Ohio	Nov. 9, 1944	Saarbrücken, Germany
Michael, 1st Lt. Edward S.	Chicago	April 11, 1944	Brunswick, Germany
Morgan, 2nd Lt. John C.	Vernon, 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
Korean War			
Davis, Maj. George A. Jr.	Dublin, Texas	Feb. 10, 1952	Sinuiju, Yalu River, North Korea
Loring, Maj. Charles J. Jr.	Portland, Maine	Nov. 22, 1952	Sniper Ridge, North Korea
Sebille, Maj. Louis J.	Harbor Beach, Mich.	Aug. 5, 1950	Hamchang, South Korea
Walmsley, Capt. John S. Jr.	Baltimore	Sept. 14, 1951	Yangdok, North Korea
Vietnam War			
Bennett, Capt. Steven L.	Palestine, Texas	June 29, 1972	Quang Tri, South Vietnam
Day, Maj. George E.	Sioux City, Iowa	Aug. 26, 1967-March 14, 1973	Conspicuous gallantry while POW
Dethlefsen, Capt. Merlyn H.	Greenville, Iowa	March 10, 1967	Thai Nguyen, North 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, South 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, South Vietnam
Jones, Col. William A. III	Norfolk, Va.	Sept. 1, 1968	Dong Hoi, North Vietnam
Levitow, A1C John L.	Hartford, Conn.	Feb. 24, 1969	Long Binh, South Vietnam
Pitsenbarger, A1C William H.	Piqua, Ohio	April 11, 1966	Cam My, South Vietnam
Sijan, Capt. Lance P.	Milwaukee	Nov. 9, 1967-Jan. 22, 1968	Conspicuous gallantry while POW
Thorsness, Maj. Leo K.*	Walnut Grove, Minn.	April 19, 1967	North Vietnam
Wilbanks, Capt. Hilliard A.	Cornelia, Ga.	Feb. 24, 1967	Da Lat, South Vietnam
Young, Capt. Gerald O.	Anacortes, Wash.	Nov. 9, 1967	Khe Sanh, South Vietnam

*Living Medal of Honor recipient

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.
Brereton, 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.
Jervey, 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.
Rucker, 1st Lt. Edward W.
Rummell, 1st Lt. Leslie J.
Saunders, Capt. William H.

Numbers in parentheses are total DSCs received by the individual.

Frank Hunter

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)
Wyly, 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.

Horace Carswell

Richard Bong

Beam, 1st Lt. Ralph E.
Beck, 1st Lt. Joseph A. Jr.
Beckham, Capt. Walter C.
Beerbower, Maj. Don M.
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.
Bolefahr, 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.

USAF Recipients of the Distinguished Service Cross (continued)

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. James 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.
Faires, SSgt. George D.
Falletta, 2nd Lt. Charlie
Fegan, SSgt. Robert W.
Ferguson, 1st Lt. William H. Jr.
Fields, Maj. Virgil C. Jr.

*Philippine Army Air Corps pilot, assigned to US Army Air Forces.

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.
Glober, 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.
Gozar, 3rd Lt. Jose P.*
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.
Hunt, Capt. Raymond C. Jr.
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.

RANK ABBREVIATIONS

Cpl.: Corporal
F.O.: Flight Officer
Pfc.: Private First Class
Pvt.: Private
Sfc.: Sergeant First Class
Sgt.: Sergeant

For other ranks, see USAF Grades and Insignia.

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
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.

USAF Recipients of the Distinguished Service Cross (continued)

Lipscomb, 1st Lt. Paul M.
Littge, Capt. Raymond H.
Litton, Lt. Col. William P.
Loegering, 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. Allan W.
Ludolph, 1st Lt. George L.
Ludwig, 1st Lt. Vance P.
Luksic, 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.
McLoughlin, 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.
Molina, Capt. Pedro Q.
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.
Morrissey, 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.
Pawloswski, 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.
Rairigh, 1st Lt. John E.
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.
Smith, SSgt. Mack H.
Smith, 1st Lt. Stephen M.
Snyder, TSgt. Donald L.
Spencer, 2nd Lt. Charles W.

Leroy Schreiber

USAF Recipients of the Distinguished Service Cross (continued)

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.
Tarrant, Lt. Col. Yancey S.
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.

*Philippine Army Air Corps pilot, assigned to US Army Air Forces.

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.
Vondrachek, 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.

Jesus Villamor

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.
Zemke, Col. Hubert

Korean War

Baker, Col. Royal N.
Blesse, Maj. Frederick C.
Bryan, Maj. William E. Jr.
Davis, Maj. George A. Jr.
Dixon, Lt. Col. Jacob W.
Fernandez, Capt. Manuel J. Jr.
Fischer, Capt. Harold E.
Freligh, Maj. Lawrence E.
Garrison, Lt. Col. Vermont
Gebaur, Lt. Col. Arthur W. Jr.
Georgi, Lt. Col. William F.
Halton, Col. William T.
Hicks, 1st Lt. Forrest L.
Jabara, Capt. James
Johnson, Col. James K.
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.

Cuban Missile 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.
Beale, Maj. Robert S.
Black, A3C Arthur N.
Bode, Maj. John R.
Boyd, Capt. Charles G.
Boyd, Lt. Col. William Jr.
Brickel, Lt. Col. James R.
Britt, Maj. Aquilla F.
Britton, Col. Warner A.
Broughton, Col. Jacksel M.
Brower, Capt. Ralph W.
Bucher, Maj. Bernard L.
Burroughs, Maj. William D.
Caldwell, Capt. William R.
Campbell, Maj. Jesse W.
Campbell, Maj. Thomas A.
Carroll, Maj. John L.
Carter, 1st Lt. William R.

Fred Cherry

Cherry, Col. Fred V.
Clarke, Maj. Colin A.
Clay, SSgt. Eugene L.
Cobeil, Lt. Col. Earl G.
Cody, Capt. Howard R.
Collins, Capt. Willard M.
Conley, Lt. Col. Eugene O.
Conran, Maj. Philip J.
Cooper, Lt. Col. William E.
Corder, Capt. John A.
Courtney, Capt. Terence F.
Curtis, Capt. Thomas J.
Dallman, Lt. Col. Howard M.
Day, Col. George E.
Dayton, Maj. Thomas E.
DeBellevue, Capt. Charles B.
DeTar, Maj. Dean E.
Donelson, Capt. Nicholas J.
Donohue, Maj. Frederic M.

USAF Recipients of the Air Force Cross (continued)

Duane Hackney

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.
Hoblit, Capt. Jerry N.
Hoggatt, Lt. Col. Ralph S.
Holland, Maj. Lawrence T.
Hopkins, Lt. Col. James R.
Horinek, Capt. Ramon A.
Hudson, Capt. Jackson L.
Hunt, Sgt. Russell M.
Jeanotte, Lt. Col. Alfred J. Jr.
Johnson, Capt. Harold E.
Kalen, Maj. Herbert D.
Kasler, Lt. Col. James H. (3)
Kennedy, Capt. Leland T. (2)
Kent, Sgt. Nacey Jr.
Killian, Col. Melvin J.
King, A1C Charles D.
Kirk, Col. Thomas H. Jr.
Knight, Col. Roy A. Jr.
Koeltzow, Maj. Paul F.
Lackey, Capt. John E.
Leetun, Capt. Darel D.
Lielmanis, 1st Lt. Atis K.
Lukasik, Capt. Bernard F.
Madden, Maj. Joseph B.
Maisey, Capt. Reginald V. Jr.
Martin, 1st Lt. Duane W.
Martin, Capt. William R.
Marx, Capt. Donald L.
Mason, Capt. Larry B.
Maysey, Sgt. Larry W.
Maywald, Capt. 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.

Keary Miller

Richardson, Sgt. Dennis M.
Richter, 1st Lt. Karl W.
Risner, Lt. Col. James R. (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.

Christopher Baradat

Smith, Maj. Weston T.
Stevens, Capt. Donald D.
Stocks, Maj. Bruce D.
Storz, Lt. Col. Ronald E.
Stovall, Capt. Dale E.
Talley, Amn. Joel E.
Titus, Lt. Col. Robert F.
Trautman, Maj. Konrad W.
Traynor, Capt. Dennis W. III
Tsouprake, Maj. Peter
Turner, Maj. Robert E.
Weatherby, Capt. Jack W.
Wells, Capt. Norman L.
Whatley, Maj. Wayne N.
White, Col. Robert M.
Whitesides, Capt. Richard L.
Wilke, Col. Robert F.
Williams, Capt. David H.
Wofford, Maj. Travis
Wood, Maj. Patrick H.
Worrell, 1st Lt. Rowland H. III
Wright, Capt. Garth A.
Wright, TSgt. LeRoy M.
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. William F.
Johnson, Capt. Paul T.

Somalia

Wilkinson, TSgt. Timothy A.

Operation Enduring Freedom

Baradat, SSgt. Christopher G.
Chapman, TSgt. John A.
Crawford, Capt. Barry F. Jr.
Cunningham, SrA. Jason D.
Gutierrez, SSgt. Robert Jr.
Miller, MSgt. Keary, J.
Rhyner, SSgt. Zachary J.
Ruiz, MSgt. Ivan M.
Temple, SrA. Dustin H.

USAF Recipients of Special Congressional Medals (highest noncombat award)

NAME AND RANK AT TIME OF AWARD	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 20, 1969
Collins, Maj. Gen. Michael	Gold	Aug. 7, 2009	Command module pilot, Apollo 11 mission, July 20, 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
Filipino World War II Veterans	Gold	Dec. 14, 2016	Courage and perseverance during the war
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

Air Force Aces

Some Famous Firsts

April 23, 1918	First Air Service ace in World War I: 1st Lt. Paul F. Baer
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

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

Manuel Fernandez earned 14.5 aerial victory credits in the Korean War.

By tradition, anyone with five official aerial victory credits is an ace. In compiling this list of aces who flew with the US Air Force and predecessor organizations (the Air Service, Air Corps, and Army Air Forces), *Air Force Magazine* relies on USAF's official accounting of 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 update its 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 F.	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

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

Stenseth, 1st Lt. Martinus	8
White, 2nd Lt. Wilbert W.	8
Burdick, 2nd Lt. Howard	7
Chambers, 1st Lt. Reed M.	7
Cook, 1st Lt. Harvey W.	7
Creech, 1st Lt. Jesse O.	7
Holden, 1st Lt. Lansing C.	7
Robertson, 1st Lt. Wendel A.	7
Rummell, 1st Lt. Leslie J.	7
Schoen, 1st Lt. Karl J.	7
Sewall, 1st Lt. Sumner	7
Beane, 1st Lt. James D.	6
Biddle, Capt. Charles J.	6
Brooks, 2nd Lt. Arthur R.	6
Campbell, 1st Lt. Douglas	6
Curtis, 1st Lt. Edward P.	6
Easterbrook, 1st Lt. Arthur E.	6
Guthrie, 1st Lt. Murray K.	6
Hammond, 1st Lt. Leonard C.	6
Hays, 2nd Lt. Frank K.	6
Hudson, 1st Lt. Donald	6
Knotts, 2nd Lt. Howard C.	6
Lindsay, 1st Lt. Robert O.	6
MacArthur, 2nd Lt. John K.	6
Ponder, 2nd Lt. William T.	6
Putnam, 1st Lt. David E.	6
Stovall, 1st Lt. William H.	6
Tobin, 1st Lt. Edgar G.	6
Vasconcells, 1st Lt. Jerry C.	6
Badham, 2nd Lt. William T.	5
Bair, 1st Lt. Hilbert L.	5
Bissell, 1st Lt. Clayton L.	5
Buckley, 1st Lt. Harold R.	5
Cook, 1st Lt. Everett R.	5
D'Olive, 1st Lt. Charles R.	5
Furlow, 1st Lt. George W.	5
George, 1st Lt. Harold H.	5
Grey, 1st Lt. Charles G.	5
Haight, 1st Lt. Edward M.	5
Healy, 1st Lt. James A.	5
Keating, 1st Lt. James A.	5
Knowles, 1st Lt. James Jr.	5
Larner, 1st Lt. G. DeFreest	5
Luff, 1st Lt. Frederick E.	5
O'Neill, 2nd Lt. Ralph A.	5
Owens, 2nd Lt. John S.	5
Porter, 2nd Lt. Kenneth L.	5
Ralston, 1st Lt. Orville A.	5
Seerley, 1st Lt. John J.	5
Strahm, Capt. Victor H.	5
Todd, 2nd Lt. Robert M.	5
Vernam, 1st Lt. Remington D. B.	5
Wehner, 1st Lt. Joseph F.	5

Field Kindley (12)

Leading Army Air Forces Aces of World War II (Ten or more victories)

Don Gentile (19.83)

Ranks are as of last victory in World War II.

Bong, Maj. Richard I.	40
McGuire, Maj. Thomas B. Jr.	38
Gabreski, Lt. Col. Francis S.	28
Johnson, Capt. Robert S.	27
MacDonald, Col. Charles H.	27
Preddy, Maj. George E.	26.83
Meyer, Lt. Col. John C.	24
Schilling, Col. David C.	22.5
Johnson, Lt. Col. Gerald R.	22
Kearby, Col. Neel E.	22
Robbins, Maj. Jay T.	22
Christensen, Capt. Fred J.	21.5
Wetmore, Capt. Ray S.	21.25
Voll, Capt. John J.	21
Mahurin, Maj. Walker M.	20.75
Lynch, Lt. Col. Thomas J.	20
Westbrook, Lt. Col. Robert B.	20
Gentile, Capt. Don S.	19.83
Duncan, Col. Glenn E.	19.5
Carson, Capt. Leonard K.	18.5
Eagleston, Maj. Glenn T.	18.5
Beckham, Maj. Walter C.	18
Green, Maj. Herschel H.	18
Herbst, Lt. Col. John C.	18
Zemke, Col. Hubert	17.75
England, Maj. John B.	17.5
Beeson, Capt. Duane W.	17.33
Thornell, 1st Lt. John F. Jr.	17.25
Varnell, Capt. James S. Jr.	17
Johnson, Maj. Gerald W.	16.5

Leading Army Air Forces Aces of World War II (continued)

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
Brueland, Maj. Lowell K.	12.5
Brown, Maj. Quince L.	12.33
Brezas, 1st Lt. Michael	12
Chase, Lt. Col. Levi R.	12
East, Capt. Clyde B.	12

George Welch (16)

Left to right: Richard Peterson (15.5), **Leonard Carson** (18.5), **John England** (17.5), **and Clarence Anderson** (16.25).

Gleason, Capt. George W.	12
Hively, Maj. Howard D.	12
Ladd, Capt. Kenneth G.	12
Moore, Maj. Robert W.	12
Olds, Maj. Robin	12
Schreiber, Capt. Leroy A.	12
Skogstad, 1st Lt. Norman C.	12
Sloan, 1st Lt. William J.	12
Watkins, Capt. James A.	12
Megura, Capt. Nicholas	11.83
Blakeslee, Col. Donald J. M.	11.5
Conger, Maj. Paul A.	11.5
Kirla, 1st Lt. John A.	11.5
McDonald, Maj. Norman L.	11.5
Stewart, Maj. James C.	11.5
Yeager, Capt. Charles E.	11.5
Norley, Maj. Louis H.	11.33
Frantz, 1st Lt. Carl M.	11
Goebel, Capt. Robert J.	11
Lawler, Capt. John B.	11
Lent, 1st Lt. Francis J.	11
Leverette, Lt. Col. William L.	11

Hubert Zemke (17.75)

Loisel, Maj. John S.	11
Lowry, 1st Lt. Wayne L.	11
McCorkle, Col. Charles M.	11
McKennon, Maj. Pierce W.	11
Mitchell, Lt. Col. John W.	11
Molland, Capt. Leland P.	11
Quirk, Capt. Michael J.	11
Riddle, 1st Lt. Robert E.	11
Shubin, 1st Lt. Murray J.	11
Smith, Capt. Cornelius M. Jr.	11
Sparks, 1st Lt. Kenneth C.	11
Turner, Maj. Richard E.	11
O'Connor, Capt. Frank Q.	10.75
Ceuleers, Lt. Col. George F.	10.5
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
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

*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.

For a list of all Air Force-recognized World War II AAF aces, please see airforcemag.com.

USAF Aces of the Korean War

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. James R.	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

*USMC exchange pilot.

James Hagerstrom (8.5)

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

Joseph McConnell (16)

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

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

	WW II	KOREA	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. Jr.	6	1		7
Bettinger, Maj. Stephen L.	1	5		6
Visscher, Maj. Herman W.	5	1		6
Liles, Capt. Brooks J.	1	4		5
Mattson, Capt. Conrad E.	1	4		5
Shaeffer, Maj. William F.	2	3		5

Leading Air Service/AAF/USAF Aces of All Wars

Bong, Maj. Richard I.	40	WW II
McGuire, Maj. Thomas B. Jr.	38	WW II
Gabreski, Col. Francis S.	34.5	WW II, Korea
Johnson, Capt. Robert S.	27	WW II
MacDonald, Col. Charles H.	27	WW II
Preddy, Maj. George E.	26.83	WW II
Meyer, Col. John C.	26	WW II, Korea
Rickenbacker, Capt. Edward V.	26	WW I
Mahurin, Col. Walker M.	24.25	WW II, Korea
Schilling, Col. David C.	22.5	WW II
Johnson, Lt. Col. Gerald R.	22	WW II
Kearby, Col. Neel E.	22	WW II
Robbins, Maj. Jay T.	22	WW II
Christensen, Capt. Fred J.	21.5	WW II
Wetmore, Capt. Ray S.	21.25	WW II
Davis, Maj. George A. Jr.	21	WW II, Korea
Voll, Capt. John J.	21	WW II
Whisner, Capt. William T. Jr.	21	WW II, Korea
Eagleston, Col. Glenn T.	20.5	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
Godfrey, Capt. John T.	16.33	WW II
Anderson, Capt. Clarence E. Jr.	16.25	WW II
Dunham, Lt. Col. William D.	16	WW II
Harris, Lt. Col. Bill	16	WW II
McConnell, Capt. Joseph C. Jr.	16	Korea
Olds, Col. Robin	16	WW II, Vietnam
Welch, Capt. George S.	16	WW II
Beerbower, Capt. Don M.	15.5	WW II
Brown, Maj. Samuel J.	15.5	WW II
Peterson, Capt. Richard A.	15.5	WW II
Bradley, Lt. Col. Jack T.	15	WW II
Cragg, Maj. Edward	15	WW II
Dahlberg, Capt. Kenneth H.	15	WW II
Foy, Maj. Robert W.	15	WW II
Hofer, 2nd Lt. Ralph K.	15	WW II
Homer, Capt. Cyril F.	15	WW II

Walker Mahurin (24.25)

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THE CANBERRA

By Steven Beeny

It began as an RAF aircraft, but USAF knew it as the B-57.

Ferry crews pick up a new B-57B at Glenn Martin Arpt., Md., in 1955. This B model clearly shows early night intruder paint work and the hinged canopy.

Laos, March 1966: Piloting their US Air Force B-57B on a ground attack mission during the Vietnam War, Capt. Larry Mason and Capt. Jere Joyner were about to learn the meaning of the word "rugged"—both in terms of machine and man.

On their second attack run of the day, they were pounded by ground fire. Cannon shells punched into the cockpit area and blew away large sections of wing and flap surface.

With an engine on fire and back-seater Joyner critically injured and losing blood, Mason nursed the B-57 home and brought it in for a landing with severe damage. Both crew and machine survived.

Middle Child

The Canberra, or Martin B-57 as it was known within USAF, began as a design by the English Electric Co. in the UK. In the US, the Glenn L. Martin Co. license-built it, and it first entered Air Force service in 1953.

The B-57 met the Air Force requirement for a medium-range tactical bomber. It went on to fill the gap in the post-Korean War period as a nuclear-armed intruder, serve as a highly adaptable test bed for many development programs, and deliver an impressive performance during the Vietnam War.

Despite decades of solid and varied service, the B-57 is an often-overlooked USAF aircraft.

I Was Smitten

But I knew it well. I grew up in England, near RAF Wyton, home of the Royal Air Force's last Canberra squadrons.

My grandfather had worked on the bombers during his RAF career, and I was smitten with the plane as a child.

In my 20s, I began a series of email conversations with former crews that had maintained and flown the Canberra. This gradually snowballed into a much larger oral history project.

Ten years later—last fall—I completed a book, *The Canberra Experience,* compiling recollections and photos of airmen from 11 of the many countries that flew this aircraft.

On these pages are some of the photos I collected while working on the book. ✪

Graphic designer Steven Beeny lives in Irvine, Calif., and is a member of the Orange County/Gen. Curtis E. LeMay Chapter.

Courtesy of Steven Beeny

A B-57B Canberra on the prowl over South Vietnam. The type was used heavily during the war. Although they were effective in ground attack, many were destroyed in combat or because of guerilla attacks.

B-57 FACTS

Number built (USAF):

403

First Flight:

07.20.1953

(US-built aircraft)

First Flight Location:

Middle River, Md.

Models/Variants:

B-57, EB-57, RB-57, WB-57

Retired:

1974 (RB-57). 1982 (ANG EB-57)

USAF Nickname: Cranberry

In Service With:

Argentina, Australia, Chile, Ecuador, Ethiopia, France, India, New Zealand, Peru, Rhodesia, South Africa, Sweden, UK, Venezuela, West Germany (English Electric version). Pakistan, Republic of China, US (Martin version).

Air Force Lt. Col. Charles Leonard exits his WB-57F at a run. He had just completed more than 1,000 flight hours in the type. Leonard was one of the few to have flown in all models, amassing over 5,000 hours total.

He Asked. AFA Answered.

In 2014, Steven Beeny contacted the Air Force Association, looking for members willing to tell their personal B-57 stories for the US Air Force section of his book, *The Canberra Experience.* AFA obliged Beeny by sending out a blast email seeking Canberra reminiscences, and the association's marketing director went on to ask him if he was a member—hint, hint. Beeny joined.

By the way, he reported that AFA's call for B-57 veterans generated six replies in less than an hour. The members at right are included in Beeny's book. —The Editors

/1/ Now a retired USAF major general and an Alamo Chapter (Texas) member, Gerry Cooke poses in 1955 at Rhein Main AB, West Germany, in high-altitude gear. /2/ Bertrand Buckhout, now a retired USAF colonel and a member of Michigan's Mount Clemens Chapter, stands next to an RB-57A at Elmendorf AFB, Alaska, in 1957. He was assigned to the 172nd Tactical Reconnaissance Squadron, Battle Creek, Mich.

CHAPTER NEWS

By June L. Kim, Associate Editor

LANCE P. SIJAN CHAPTER

The Lance P. Sijan Chapter (Colo.) held an impressive Casino Night in February for wounded airmen in Colorado Springs, Colo. It was a "fresh new approach" to the chapter's annual fundraiser for the Wounded Airman Program, said Colorado State President Linda Aldrich.

Some 400 people attended the event, held on the last day of the Cyberspace Symposium, which was hosted by the Armed Forces Communications and Electronics Association.

The chapter raised $6,000 from door prize tickets and donations. All of that money went toward Airmen and Family Programs, for the Wounded Airman Program, said Aldrich.

The Lance P. Sijan Chapter held a Casino Night to raise funds for AFA's Wounded Airman Program. Some 400 people attended the fund-raiser in Colorado Springs, Colo.

One of the top prizes for locals was the chance to host their own mini Casino night, which came with a gaming table and a dealer. Other prizes were Cuban cigars, gift cards to stores and restaurants, and beverages. All prizes were donated by chapter members or Community Partners.

The event was such a success that other AFA chapters asked for help to host similar events, she said.

AFA Chairman of the Board F. Whitten Peters, AFA Executive Vice President Denise Hollywood, and AFA Director Emeritus Jerry White were also present.

SHOOTING STAR CHAPTER

The Shooting Star Chapter (N.J.) heard from one of their own during a chapter meeting in February. Aviation artist Keith C. Ferris talked about his latest completed artwork, "Lightning at Sea."

"We ask him periodically if he would like to give us a talk," said Chapter Treasurer Howard Leach.

Ferris explained to a crowd of 20 people how he started sketching the painting on a napkin, "drawing the objects using descriptive geometry with adjustments for the horizon, [and] painting of the objects with warm and cool colors using just three basic colors," said Leach.

This was the third and last installment of F-35 paintings commissioned by Pratt & Whitney, said Leach. The painting shows an F-35C taking off from soon-to-be commissioned aircraft carrier USS *Gerald R. Ford,* according to a Pratt & Whitney news release.

"It's like a photo. Only better," said Leach.

A close-up of Shooting Star Chapter member Keith Ferris' painting, "Lightning at Sea." Ferris, an aviation artist, talked about the painting at a chapter meeting in February.

Freepik; Eric Savage; Howard Leach

AFA EMERGING LEADER: Evan T. McCauley

Home State: New Jersey
Chapter: Baltimore Chapter
Joined AFA: 2004
AFA Office: Maryland State President
Military Service: 2006-current, Active Duty
Occupation: Engineer, AFROTC instructor
Education: B.S., Computer Engineering, B.S., Electrical Engineering, North Carolina State University; M.A., Military Studies, Air University

Maj. Evan McCauley, an AFROTC instructor at the University of Maryland and Maryland State President, speaks to his cadets in March.

How did you first hear of AFA?
I joined AFA as a cadet member ... and then my involvement took a nosedive when I commissioned and went Active Duty in 2006. That's probably a common trend with [Arnold Air Society] members, one that I am trying to address with our Arnies. ... I reactivated my AFA membership in summer 2015.

What do you enjoy most about it?
Hands down, the best [things] ... are the professional development opportunities like Air, Space & Cyber Conference and the Air Warfare Symposium. In particular, in my role as an ROTC instructor, my AFA membership gives me the chance to connect my cadets (our future AF leaders) with unique opportunities like last year's Airpower Advocates teleconference with then-CSAF General Welsh!

What does AFA need to do to get more members?
I don't need more members. I need more *involvement*. I need more *active* members doing things in the community that support that AFA mission. ... Give me [fewer] members [who] are more actively engaged and I'll turn this state upside down for AFA!

How do we build awareness about it?
Engagement. Human connection at the field level. ... If we do a good job of engagement at the field level and develop a strong base of active membership, I expect that will snowball into both higher membership and higher awareness of AFA.

Courtesy photo

McCONNELL

Brothers in Arms

They were the "Flying McConnells," three brothers from the American heartland who gained lasting fame in air battles of World War II. Thomas L., Fred J., and Edwin M. McConnell, all natives of Kansas, today lend their illustrious surname to one of the Air Force's largest bases.

The three all grew up in Wichita and attended North High School, where they excelled in academics and sports. Fred was 24, Edwin was 21, and Thomas was 19 when they joined the Army Air Forces as aviation cadets on the same day (March 22, 1943) at Fort Riley, Kan. They trained together in California and received their pilot's wings on the same day at Luke Field, Ariz.

The brothers were a media sensation, billed as "Three of a Kind." All three became B-24 copilots and joined the same squadron in the South Pacific theater, where they went into action on the same day. Yet the brothers fought together for only a few months.

Second Lt. Thomas McConnell, the youngest of the three, was killed in action on July 10, 1943, on his third combat mission. His B-24 had just bombed Japan's Kahili airfield at Bougainville and was returning to base on Guadalcanal when the bomber, in dense fog, crashed into a mountainside. All 11 crew died. Thomas was 20.

The other two McConnells survived the war. Fred flew 61 missions and attained the grade of captain only to perish on active duty after returning home. He was a military flying instructor stationed at Cook Field, Neb., and was flying to a new assignment at Garden Plain, Kan., when his aircraft on Oct. 22, 1945, struck a power line and crashed. Fred was killed instantly. He was 27.

Edwin flew 56 combat missions and returned home with a Distinguished Flying Cross. He resigned from active duty in August 1945 and spent two years as a commercial airline pilot, eventually enrolling in college and taking a job in industry. Edwin remained in the Air Force Reserve and finally ended his military career in 1981. Retired Lt. Col. Edwin McConnell died at his home in Englewood, Colo., on Sept. 1, 1997. He was 76.

On April 12, 1954, Wichita AFB, Kan., was rechristened McConnell Air Force Base in honor of Tom and Fred. Edwin was not included due to policy against naming a base after a living person. At a rededication ceremony on June 14, 1999, Edwin's name was added.

Throughout World War II, B-29s were built at a Boeing factory adjacent to the base. McConnell became a Strategic Air Command base for B-47 bombers. Today, McConnell's mission is to provide global reach via its many airlift and tanker aircraft.

THOMAS L. McCONNELL

Born: April 9, 1923, Wichita, Kan.
Died: July 10, 1943 (KIA), Guadalcanal, Solomon Islands
Service: US Army Air Forces
Era: World War II
Combat: South Pacific
Final Grade: Second Lieutenant
Years Active: 1943
Occupation: US military officer

FRED JUNIOR McCONNELL

Born: April 23, 1918, Wichita, Kan.
Died: Oct. 22, 1945, Garden Plain, Kan.
Service: US Army Air Forces
Era: World War II
Combat: South Pacific
Final Grade: Captain
Years Active: 1943-45
Occupation: US military officer

EDWIN MAURICE McCONNELL

Born: Jan. 29, 1921, 0Wichita, Kan.
Died: Sept. 1, 1997, Englewood Colo.
Colleges: Michigan State University, University of Colorado
Service: US Army Air Forces, Air Force Reserve
Era: World War II
Years Active: 1943-45 (active duty); 1945-81 (Reserve duty)
Combat: South Pacific
Final Grade: Lieutenant Colonel
Honors: Distinguished Flying Cross
Occupations: US military officer, Engineer

McCONNELL AFB, KAN.

State: Kansas
Nearest City: Wichita
Area: 4.7 sq mi/3,000 acres
Status: Open, operational
Opened (Wichita Municipal Airport): June 28, 1929
Leased: by USAAF August 1941
Returned to Civilian Use: Oct. 11, 1942
Reopened: (by USAF) May 31, 1951
Renamed: Wichita AFB, May 15, 1953
Renamed: McConnell AFB, April 12, 1954
Current Owner: Air Mobility Command
Former Owners: Air Training Command, Strategic Air Command, Tactical Air Command, Air Combat Command
Home of: 22nd Air Refueling Wing

1. Thomas McConnell. **2.** Fred McConnell. **3.** Edwin McConnell. **4.** KC-135s perform an elephant walk on the runway at McConnell AFB, Kan. Tanker and transport aircraft at the Air Mobility Command base sustain airpower operations worldwide.

AFA library; Airman 1st Class Christopher Thornbury/USAF

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Photo: U.S. Air Force

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