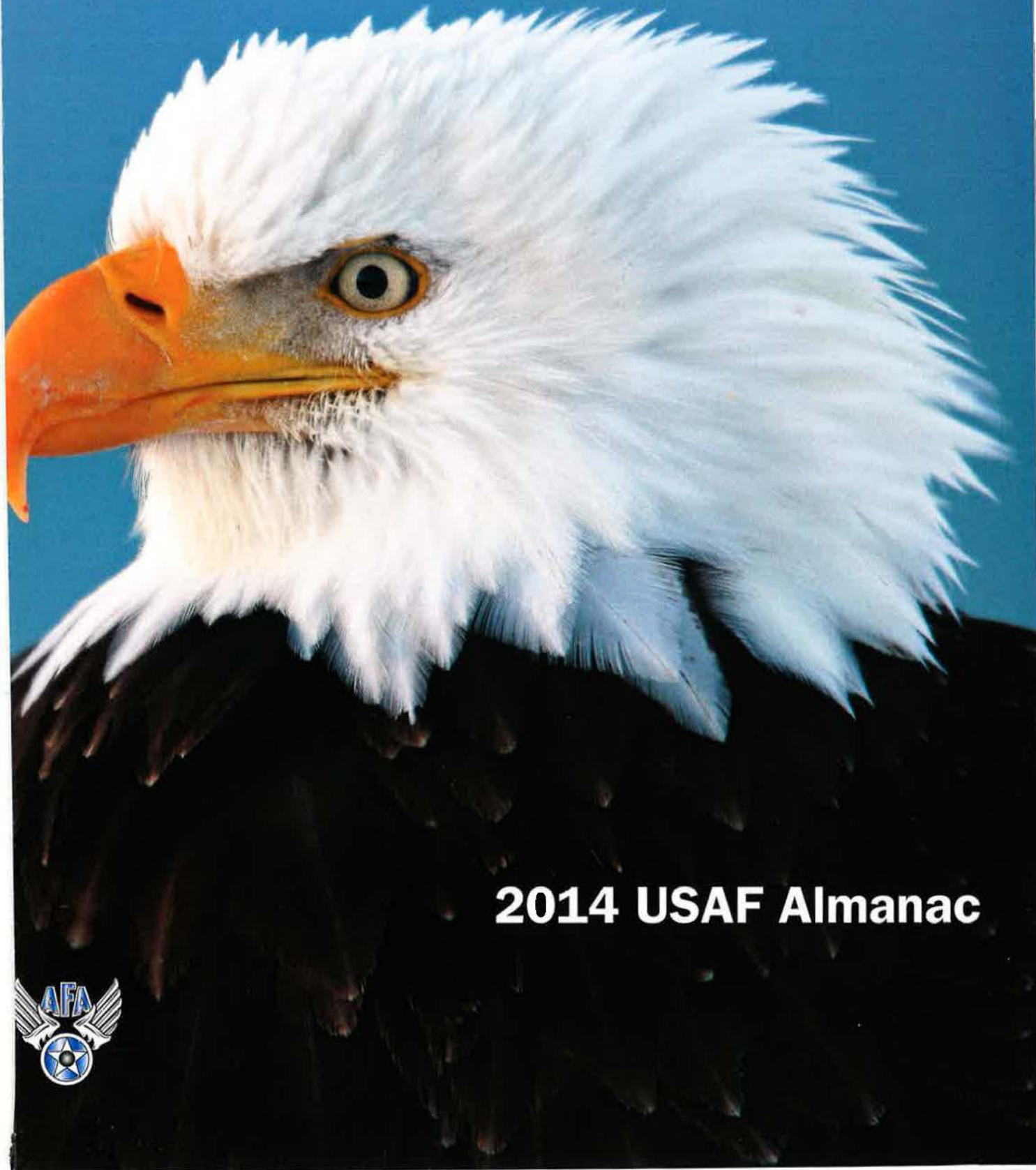


May 2014/\$20

*Journal of the Air Force Association*  
**AIR FORCE**  
MAGAZINE



**2014 USAF Almanac**



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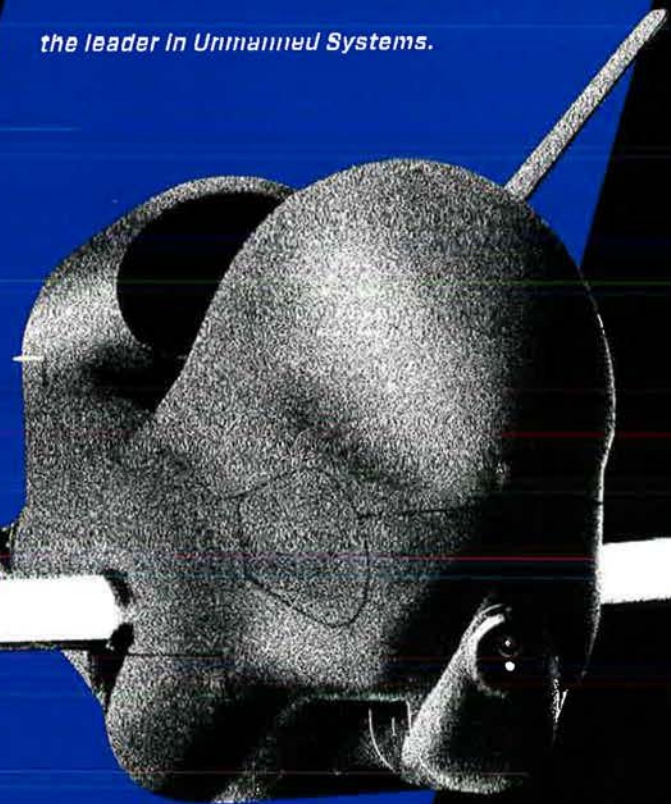
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**About the cover:** Bald Eagle in Alaska. See "USAF Almanac 2014," p. 22. Corbis photo by Arthur Morris.





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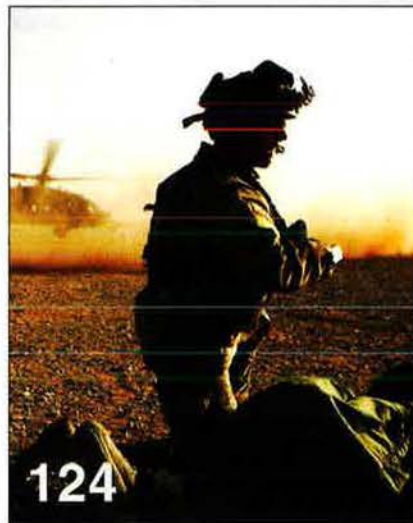
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## Records You Don't Want To Set

**A** DECADE ago, the Air Force was at war and fielded a Total Force fleet of 2,526 fighters, 182 bombers, 637 tankers, and 976 transports.

Ten years later, USAF is still at war and operates 514 fewer fighters, 23 fewer bombers, 136 fewer tankers, and 193 fewer transports.

In 2004, the force was already feeling the effects of the 1990s "procurement holiday." B-1 bombers averaged 16 years old, F-15s were 19, the A-10 fleet averaged 22 years old, the T-38 trainer was 36, and USAF's B-52 bombers and KC-135 tankers were both 42.

Ten years later, through the magic of not buying aircraft, each of those fleets is exactly 10 years older. In the intervening decade, USAF bought zero bombers, retired more than twice as many fighters as it purchased, just recently got the KC-46 tanker program started, and is still mulling a new bomber and a T-38 replacement.

The Air Force is older and smaller than ever, and things might get much worse. The Fiscal 2015 budget, for example, proposes retiring the A-10 and U-2 fleets to help make ends meet.

The US is now a military spending outlier. The Stockholm International Peace Research Institute recently studied military expenditures worldwide. By SIPRI's accounting, US military spending declined by 7.8 percent in 2013.

This should not be shrugged off as inconsequential. In 2013, China's military spending was almost the mirror image of America's, rising 7.4 percent in one year.

"Military spending in the rest of the world excluding the United States increased by 1.8 percent," SIPRI noted. "The next three highest spenders—China, Russia, and Saudi Arabia—all made substantial increases."

In fact, "China, Russia, and Saudi Arabia are among the 23 countries around the world that have more than doubled their military expenditure since 2004," SIPRI wrote.

The US also saw large increases in defense spending after 2004, but those increases were largely consumed by the wars in Iraq and Afghanistan. The past decade of defense spending did very

little to deliver the nation a next generation Air Force—and now the money is quickly drying up.

In mid-April came DOD's "Estimated Impacts of Sequestration-Level Funding" report. If Congress does not end the sequester, it will hit readiness and modernization hard. One-third of the cuts would come from operations and maintenance accounts, and two-thirds from modernization. Personnel cost growth would slow, but we'll have more on that assumption later.

### Will the smallest and oldest US Air Force wither away?

The Air Force is already dealing with a years-long decline in readiness, brought on in part by the heavy use its aircraft have endured in the War on Terror.

According to DOD, a return to sequestration funding in 2016 will reduce "readiness funding by \$16 billion [through 2019] to include approximately \$9 billion ... in maintenance, which would further increase service maintenance backlogs." For the Air Force, this would mean weapon systems sustainment accounts would be cut to just 67 percent of requirements.

The modernization cuts would be more dramatic, if only because they are easier to visualize. According to the report, from 2016 through 2019, a return to sequestration will bring:

- Five fewer KC-46 tankers
- A three-year delay in the Combat Rescue Helicopter
- 38 fewer MQ-9 Reapers
- 10 fewer MC-130J special operations transports
- One less GPS III satellite
- An end to the Adaptive Engine technology program
- 531 fewer AIM-120 missiles
- Eliminating the KC-10 tanker
- Retiring the Block 40 Global Hawk
- Divesting the MQ-1 Predator fleet

Adding insult to injury, DOD predicts sequestration would force the Air Force to give up 15 F-35 strike fighters. The other partners in the triservice program would give up two airplanes (the Navy) and no airplanes (the Marine Corps).

DOD also assumes Congress will approve "compensation savings." This will

be a hard sell: In recent years, lawmakers have eagerly ordered the Defense Department to increase military pay and benefits, even with recruiting and retention at or near all-time highs. But if Congress does not go along with DOD proposals such as a one percent military pay raise in 2015, the Pentagon will have to come up with another \$31.2 billion through 2019. "DOD must also train and equip those we send into harm's way to meet the national security challenges of the future," the report dryly notes.

A decade ago, the Air Force was strained. Today the combat forces are smaller and older. Recent modernization was concentrated in space, mobility, and intelligence, surveillance, and reconnaissance accounts.

"The Air Force is now spending about five percent of its [budget] to buy new aircraft"—another record low, wrote Mark A. Gunzinger, senior fellow at the Center for Strategic and Budgetary Assessments, and David A. Deptula, dear of the Air Force Association's Mitchell Institute for Aerospace Studies, in a recent CSBA report, "Toward a Balanced Combat Air Force."

During the later years of the Cold War, USAF offset the Warsaw Pact's huge numerical advantages by fielding a technologically advanced force operated by highly trained airmen. Many of the same aircraft are still in service, and it is ever harder to keep up the maintenance and training that allow the Air Force to be the world's best.

Something needs to change or USAF will soon have too few aircraft and too old an inventory to defeat advanced threats. The Air Force could soon lack both capacity and capability. Without those, it will also lack credibility against the Russias, Chinas, North Koreas, and Syrias of the world.

Gunzinger and Deptula offer a partial way out this mess: by rebalancing the defense budget. Even if there were a reason for it, the notion that the Army, Navy, and Air Force receive roughly equal shares of Pentagon spending is false, they note.

When "pass through" funding the Air Force never actually controls is factored out, USAF only receives about 22 percent of the DOD budget.





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## Gates: Fans and Fans Not So Much

Regarding Mr. Tirpak's article, "Gates Versus the Air Force," March [p. 54], I am quite certain I am not alone in wholeheartedly agreeing with General Moseley's assertion that the nation expects our Air Force to be prepared to fight/conduct more than just today's fight. As the general so aptly put it, "It's not either-or." Everything we were taught in War College tells us that (to think beyond "this-war-itis"). And Mr. Gates' weaker excuse for chopping the F-22, that we'll just build more F-35s, was completely off the mark. Anyone who knows anything about these two aircraft knows the F-35 is no substitute, with capabilities so dissimilar. We simply do not have enough Raptors today to meet the national strategy. Current events in the Crimea may be the beginnings of a re-emerging Soviet Union, which should make us think about what Gates did to the F-22.

Col. Frank Alfter,  
USAF (Ret.)  
Beavercreek, Ohio

Your article was not very convincing. The Air Force has been in need of a trip to the woodshed for many years and, in Gates, they found the man to do it. The Air Force got dragged into the 21st century. Fighter pilots are an endangered species, and they don't like it. Too bad! Fifty years from now, there may be no pilots. And what is all this about F-35 fighters? Air superiority against whom? The Chinese? The Russians? The Cubans? Some of those guys in South America? Put your money into developing "combat drones" and reduce the defense budget.

I notice also the article fails to mention the nuclear force major general who was fired recently for misconduct and those 90-some folks in Minot and Malmstrom who were, what, suspended? Fired? For cheating on their tests.

And you have problems with Gates? Get serious. You look foolish. We need a lot more like him.

John Thompson  
Centreville, Va.

How dare the Secretary of Defense try to lead the Defense Department in the midst of two troubling wars, and all the while rejecting the views of the fighter pilots in charge of the Air Force. And the affront of supporting a non-fighter pilot (and worse, a guy who flew transports) for Air Force Chief. At least that is how the unbalanced and unprofessional article by editor John Tirpak comes across. It appears that the Air Force Association is so taken with its self-appointed role as cheerleader for the Air Force that it can't produce a more nuanced review of how things soured between a former Air Force officer (alas, not a fighter pilot) who amassed a distinguished record of public service—including leading the US military as SecDef. Your March centerpiece is an embarrassment to the Air Force and the association.

Col. Michael R. Gallagher,  
USAF (Ret.)  
Hillsboro, Ore.

■ *The article illustrated Gates' determination to steer the Air Force in a very different direction—a direction subsequently rejected by both Secretary Hagel and President Obama. It was in no way a criticism of General Schwartz or of his selection to be Chief of Staff.*—THE EDITORS

I read your article on former Secretary of Defense Robert Gates with interest. From all that I have read and heard about Secretary Gates, I concluded some time ago that he is a very conflicted man. His own book gives testimony to that fact.

It is unfortunate how Gates appears to have had a vendetta against USAF. When the head of any organization,

government or private sector, allows matters or groups to become "personal," they have lost their effectiveness as a leader. That said, I do not see Gates as a leader.

M. Vincent Turner  
Silver Spring, Md.

## Keeper File

George Kennan was a true strategic thinker and a master of the English language, a species probably extinct in Washington today [*"Keeper File: The Long Telegram," March, p. 68*]. When General Marshal became Secretary of State he created a policy planning staff in 1947, with Kennan as director.

In 1953 Secretary of State John Foster Dulles decided there was no place in the State Department for George Kennan, which has astonished historians ever since. Given events in Russia and the Ukraine, who in the US government today is capable of writing a new containment letter?

Sherman N. Mullin,  
Retired President,  
Lockheed Skunk Works  
Oxnard, Calif.

## An Honor and a Privilege

Your fine article on the critical role played by the mortuary affairs operations at Dover Air Force Base brought back

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



powerful memories [*"Coming Home," March, p. 48*].

In 2009 I was part of an Air Mobility Command inspection team evaluating air traffic control and airfield operations at Dover. Part of my responsibility was visiting with various airfield operations customers of which AFMAO proved to be most unique.

I and a small cadre of inspectors toured the port mortuary facility, from the unloading dock where warrior remains entered, through the various staging areas, to the final waiting area where warriors were postured for pick-up for their trip to a final resting place. Once the director escorted us through the big double doors from the lobby area, the mood quickly got somber. During the tour some in my party were moved to tears by the sobering aspects of AFMAO's critical mission. The experience made a profound and lasting impact on us all. "There, but for the grace of God, go I."

Each time a designated aircraft arrives at Dover with remains onboard special procedures are initiated on the airfield. Once the dignified transfer begins all operations on the airfield cease for the duration with the freeze including aircraft, vehicle, and personnel movements. I'd previously witnessed such strict airfield controls only at Andrews Air Force Base, home of Air Force One.

From the Dover control tower cab I watched from above as everything below me came to a standstill. This included a large commercial cargo aircraft which sat idle on one of the taxiways. The aircraft held its position for 15 to 20 minutes until the transfer process was complete and the vehicle carrying the remains had departed the airfield. In this age where time is money it's heartening to see that human values can still prevail.

Likewise, the same freeze procedures go into effect when remains are departing by air. This is occasionally accomplished by a military aircraft sent specifically for the task, but most often contracted aircraft are used for delivery purposes. A small fleet of these aircraft sits on the airfield in a 24/7 alert status.

Mortuary related events could potentially cause disruptions to the day-to-day business at one of the Air Force's largest airlift hubs. That's not the primary concern. It speaks to the degree of respect earned by those who made the ultimate sacrifice in the service to their nation.

Events depicted in the old Kevin Bacon movie, "Taking Chance," where the actor plays a Marine lieutenant colonel tasked to escort the body of a fallen marine via commercial aircraft back to his hometown for burial, are a thing of the past. Transportation by air is now dedicated specifically to support this important mission. Corporate-size jets now carry the coffin, military escort, and

immediate family members. The smaller jets provide a degree of privacy while simplifying and expediting deliveries because they're capable of landing at smaller airports much closer to the final destination of the fallen warrior.

I was blessed and dodged the bullet. I was left with a high degree of confidence that if I hadn't, AFMAO would be there to do all the right things for my family and me.

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

### Peashooter Classic

Your March 2014 Classic is really a CLASSIC! The Boeing P-26 Peashooter is/was really one of a kind! Even today it stands as the epitome of classic [*"Airpower Classics: The P-26 Peashooter," p. 76!*]

And the notables of fliers reads like the history of flying!

The Thunderbird painted on the fuselage caught my eye. As an aviation cadet in pilot training, Class 43-K, I trained in the Stearman at Thunderbird Field II, east of Phoenix, Ariz. That inscription was our logo.

Many thanks for a really GREAT CLASSIC!

Karl Haeuser  
Cayucos, Calif.

### Whence Wheels?

[*In reference to "Lady Be Good," February, p. 70*], I have a question concerning a paragraph stating: "The team then made random sweeps to the northwest and found the wheel tracks of five large, heavy vehicles, heading northwest." Where would these "wheel tracks" come from if the airmen parachuted from the B-24 and would be walking to the northwest?

SMSgt. David Hegy,  
USAF (Ret.)  
Crystal Lake, Ill.

■ *Author note: The five large vehicle tracks were heading northwest and could have been made by British or German military trucks. By this time I'm sure the crew didn't care who made them as they desperately needed water. Since this is the second question about the wheel tracks, perhaps people don't realize that during the World War II period, and later, there were vehicles driving all over the hardpan of the Libyan Sahara. There was also an active postwar effort by the British to recover their disabled military vehicles from the desert. They were being made serviceable at a depot located on Tripoli's main airport. I once passed an Arab in flowing robes driving a Nazi ambulance that he'd recovered from the desert after the war. Hope this helps explain it.—John Lowery*

### Leave It to the Next Guy

As I read the article about rated management I quickly remembered the days when I was chief, operations and distribution management, at the Air Force Military Personnel Center from 1988 to 1991, fondly called rated management [*"How Many Aircrew?" January, p. 42*].

When I arrived in July 1988 we were beginning the initial implementation of the pilot bonus program. We were losing too many pilots and the program was designed to hand out bonuses to keep aviators in the Air Force until they had 13 years of service, designated as the retirement capture zone—thinking pilots would stay at least until 20 years of Active service before leaving the force. Just three short years later, I was one of two AF personnel reps who went out to the UPT bases to brief the "bank pilot" program. We had too many pilots in the pipeline, due to the strong reduction in force structure or as the programmers called it the "peace dividend" due to the collapse of the Soviet empire. Now, UPT graduates would not necessarily go to weapon system training; they would be assigned to a nonflying job for up to three years before getting a chance to fly. These assignments were made based on order of merit within each graduating class. Each class would have a few flying assignments, but a majority went to desk jobs and entered a holding pattern for weapon system training. That was my three years in rated management, beginning with not enough pilots to having too many.

In between these two major rated management programs were countless hours spent evaluating the right mix for unit experience levels, major weapon system absorption rates, interacting with Reserve/Guard forces to help mature our force experience levels. All along was the constant demand for experienced aviators to fill needed staff positions at all levels. We constantly scrubbed manpower billets and made staff organizations justify why each rated position required an aviator. If it was a fighter pilot-required billet, even more scrutiny was given to the review process.

I remember providing a rated management talking paper up my chain of command about the ramifications of reducing pilot training rates to match current force structure absorption constraints and how that would impact down the rated force in year group management by not having enough field grade officers to fill the squadron flying billets as well as the higher majcom staff requirements. The reply? That's the next Chief's problem. I hope these annual reviews can smooth out the pendulum swings within the rated force because

eventually there will be no can to kick down the road.

Col. Jeff Cain,  
USAF (Ret.)  
Fairfax Station, Va.

**It Ain't Them**

I've always been satisfied with AFA's coverage of nuclear weapons issues and with the ICBM community in general [*"Systemic Problems," March, p. 44*].

I was disappointed, however, with this article including a picture of technicians working on-site. The maintenance teams at Malmstrom and the ICBM force in general have not been implicated in any issues brought to light over the past year. To include these technicians under this headline is a disservice to them and all the men and women that keep the ICBM force on alert 24/7/365. Please be more careful how you choose to fill an issue's open space in the future.

Mike Todaro  
Redondo Beach, Calif.

**Speed It Up or Lose It**

Benjamin Lambeth does an excellent job of explaining the important reversal of roles that began to transform how we fought enemy land forces in recent high intensity wars [*"AirLand Reversal," February, p. 60*]. At the same time, he fails to call attention to the important reality that this reversal of roles is not only incomplete, but also is taking far too long, making it likely the US will experience unnecessary losses in lives and treasure in a future war because of inadequate doctrine and force structure. The failure to anticipate the transformation in how we fight and defeat opposing mechanized land forces is in stark contrast to the reversal of roles that has occurred between airpower and surface naval forces. Well before World War II many US naval officers, anticipating the reversal of roles between air and surface forces, began to explore this reversal through wargames and exercises.

The forward thinking of naval officers did much to accelerate critical changes in naval doctrine and force structure, greatly contributing to our success in the Pacific during World War II. In comparison, few airmen seem to have understood how developments in technology that made it possible to see and target enemy vehicles could transform the role of airpower in the defeat of opposing land forces. The lack of emphasis airmen put on military theory and history helps explain why they did not appreciate fully the central role that vehicles play in land combat by providing armies with mobility, firepower, armored protection, supplies, and engineering support. Their lack of attention to human

factors like fear may also explain why they did not recognize the immense effect the targeting of vehicles could have on the behavior of enemy soldiers. Targeting vehicles has proven to create such overwhelming fear that soldiers become unwilling to risk occupying their vehicles, quickly creating widespread paralysis with relatively few attacks.

As a result of these shortcomings airmen have not strongly supported the further procurement and enhancement of systems like JSTARS that are necessary for the reversal of roles. They have also been surprisingly slow to learn how to exploit its revolutionary capabilities, often having to relearn old lessons. Nor have airmen been energetically exploiting the use of wargames and exercises to explore the future developments in doctrine and force structure that will be necessary to complete the reversal of roles needed to transform US military capabilities. Until we see airmen finally taking the lead, it is unlikely that the changes in joint doctrine and education necessary to make role reversal a reality will occur, let alone the required changes in Army and Marine Corps force structure.

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

**Stop Outsourcing**

Your editorial, "Compensation Controversies" [*February, p. 4*] noted the cost of 329,000 Active Duty airmen and 800,000 DOD civilian employees. But you ignored a key part of the compensation equation: 650,000 private contractors on DOD's payroll. They do jobs that GIs or civilian employees can do cheaper, better, and with more accountability. The nut who shot up the Navy's D.C. shipyard was a Hewlett Packard contractor who passed a background check run by another private firm. Other large defense contractors devouring a huge chunk of the DOD's budget include Science Applications International Corp. (Air Force Secretary Deborah Lee James' former employer) and Booz Allen Hamilton, which hired Air Force General and CIA Director Michael Hayden after he retired from military life. Booz Allen also paid high school dropout Edward Snowden \$122,000 a year to work for the NSA. Uncle Sam needed specialists with unique skills right after 9/11 to fight the war on terror. But we no longer have to outsource our country's defense. DOD has had 13 years to get its personnel up to speed. Save military and civilian jobs. Tell the hired guns to take a hike.

Richard Reif  
Flushing, N.Y.



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**Pilotless futures; Modular airplanes; Strategic agility; Invisible jammers .....**

## SEEING VISIONS

The Air Force will soon roll out a series of roadmaps and “visions,” Chief of Staff Gen. Mark A. Welsh III said in March. They will all connect to a guiding single master plan due to be released next month.

The master plan will be called “Strategic Agility” and will govern hardware and operations concepts ranging from remotely piloted aircraft to mobility to fighter recapitalization to intelligence, surveillance, and reconnaissance, and many others. Such a unifying strategy is something USAF hasn’t had “for nine years,” Welsh said in a speech at the Center for Strategic and International Studies in Washington, D.C.

The new document is urgently needed and has been in the works for a year, Welsh said. During the wars in Iraq and Afghanistan, the Air Force was awash in cash earmarked for capabilities specific to those conflicts. Now, the spigot has been turned off—abruptly and forcibly—and USAF finds itself ill-practiced and ill-prepared for “full-spectrum conflict,” Welsh said. USAF must align its capabilities with the expected funds available to achieve them, he added.

The existing plan “for the mid-20s and beyond is a pipe dream; we can’t afford it,” Welsh told CSIS attendees. The service has to get busy defining its top priorities so that nothing the Air Force knows it will have to be able to do in 2023 falls to budget cuts or inattention, he said. The new plan will be “fiscally informed,” and anything new will have to displace something else within a servicewide portfolio.

“If you go above that line, you can’t add it,” he said. Even so, it will still be “threat-based ... rather than resource-based.”

A 30-year “call to the future,” Strategic Agility is the next logical step in the continuum of Air Force guiding concepts stretching from strategic bombardment in the 1940s through nuclear deterrence, AirLand, counterinsurgency, parallel warfare, and global vigilance, reach, and power, Welsh explained. The new name means flexibility in decision-making, resourcing, and acquisitions; how USAF will respond to both

conflicts and disasters; and “how you deliver weapons on the battlefield.”

The plan will include a prominent threat assessment and explain how the Air Force will cope with those challenges. It will also explain how USAF fits in with the other services—specifically, the core functions that it alone masters and provides to the overall strategic picture and that the other services depend on USAF to provide. Other aspects will include “human capital development, training, and education” and a research and development component that will be a roadmap to get USAF to the hardware it must have circa 2030-50. There will be 13 smaller roadmaps in all.

Rather than a document that is put on a shelf and ignored “until the next one comes out,” Welsh envisions Strategic Agility as “something that lives and breathes” and is constantly debated and revised. There will be an update every two years and a total rewrite every four, he said.

## THE RISE OF BLACKTRON

One of the things that likely won’t get a long page count in the publicly releasable version of Strategic Agility, however, is the electronic warfare/electronic attack element. At a Pentagon press roundtable shortly after the Fiscal 2015 budget request was forwarded to Congress, USAF’s top planner, Maj. Gen. James J. Jones, brushed away most questions about EW/EA, a contest that Pentagon acquisition, technology, and logistics chief Frank Kendall recently said was virtually a dead heat among the US, China, and other countries.

Jones repeated the Air Force’s oft-stated assertion that it will mostly rely on the stealth of its fifth generation aircraft and the Navy’s EA-18G Growlers to survive the intense electromagnetic battlespace of the future. The Air Force will also up its inventory of Miniature Air Launched Decoys and their MALD-J jamming variant, he said, and conduct an upgrade of the ALQ-131 self-protection pods and other such gear. He was silent, however, on the subject of USAF’s own plans for large-scale, theater jamming and EW/EA.

While he did allow that the F-35 will include “sophisticated” EW/EA features in the initial and subsequent blocks, Jones would not elaborate on them.

Asked about an EW/EA roadmap, Jones admitted, “There are things in the black world”—top secret—that will have a bearing on it.

The Air Force has in recent years held Industry Days to discuss the future of its EW/EA capabilities, but these have been closed to the public. On the agenda for some of these meetings, however, has been a “Penetrating Stand-In Airborne platform.”

## NO MAN’S PLAN

The “United States Air Force RPA Vector,” which spells out the service’s vision for remotely piloted aircraft through 2038, boils down to this: Unmanned vehicle technology is moving really fast, and the service needs to hurry up and



*Global Hawks figure in USAF's future.*





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develop operational concepts that can take advantage of it. At the same time, though, it's clear that unmanned systems are going to be a huge part of USAF's future, and certain enabling concepts and technologies must be developed right away to ride the crest of this new wave.

The state of RPAs today—their technology and operational concepts—“are like where airpower was in World War I,” said Col. Kenneth Callahan, director of USAF's RPA Capabilities Office. At an April press conference to roll out the 100-page document, subtitled “Vision and Enabling Concepts 2013-2038,” Callahan said the military “has this new capability ... and now we have to figure out what to do with it.”

Of course, USAF has been employing the MQ-1 Predator RPA and others like it for nearly 20 years, but today's versions have far more endurance, are armed, and have greater capability in terms of sensors and range. The next generation, though—and it will be needed quickly—will have to operate in contested airspace. Air Force RPAs will have to be stealthy and capable of swift autonomous reaction to pop-up threats using artificial intelligence and without necessarily relying on human operators.

The vision encompasses large RPAs, such as Predator, Reaper, and Global Hawk, smaller vehicles that can be launched out of a backpack, and even micro-RPAs for use at the squad level up to the national level. These micro-UAVs will operate “inside buildings, canyons, and caves” and on the battlefield.

The roadmap is the second the Air Force has released on this topic; the first was unveiled in 2009, and future updates are promised every two years or so. This version only obliquely mentions the RQ-170 Sentinel, a stealthy flying wing-type aircraft that has been used in Southwest Asia (and one of which crashed in Iran) acknowledging only that it is, in fact, a remotely piloted aircraft and not an autonomous, i.e., self-directed, platform. Callahan would not discuss the RQ-170, saying that while it is an Air Force system, it is “not in our portfolio” at the RPA Capabilities Office.

Callahan described the roadmap as “our strategic enterprise vision” of what has to happen not only in RPA design but in the support and enabling technologies that need to be developed, such as reducing the number of personnel needed to launch, fly, and recover the aircraft and accelerating the rate the data they gather can be analyzed and applied in a rapidly unfolding mission. Similarly, strides must be made in reducing or compressing the bandwidth RPAs need to communicate across a broad network of unmanned and manned craft and to be more capable of action on their own if data links are lost through jamming or communication equipment failure.

“People focus too much on the platforms,” Callahan said, observing that the actual shapes and characteristics of the RPAs themselves will be secondary to the communications and network “architecture ... that makes it possible” to employ them. The underlying structure will be the first priority. USAF will build on the existing structure, but it will also go beyond it, because the existing RPA architecture grew up during wartime and in the most expedient manner—not necessarily optimized for institutional use, according to the report.

## MIX 'N MATCH

That said, RPA vector clearly spells out that the next generation of RPAs will likely be modular, with interchangeable payloads to take on roles in intelligence, surveillance, and reconnaissance; attack and interdiction; suppression/

destruction of enemy air defenses; electronic warfare/electronic attack; delivery of cargo; and even dogfighting. In short, everything now done by manned platforms.

Callahan wouldn't speculate on the future ratio of manned-to-unmanned platforms in the Air Force of 10, 20, or 30 years from now, but said RPAs will increasingly be an adjunct to all missions. The vector describes a vision of the “loyal wingman,” an RPA that flies near or alongside a manned aircraft, providing additional capabilities in the form of jamming or extra weapons. F-22 pilots have said they could be even more dominant in air combat, but they just run out of missiles too quickly. Callahan said there are no plans on the books yet for an aircraft that would actually escort an F-22 and match its aerodynamic capabilities, but a definite possibility could be a stealthy aircraft, flying well ahead of a flight of Raptors, that could launch weapons cued by the F-22s, he said.

A similar escort capability could conceivably be applied to a nonstealthy RPA like the MQ-9 Reaper, he added.

“The technology to do that is here,” he said. “We just don't have the conops [concept of operations] yet.”

He also said the MQ-9 will probably be “continually updated” and evolve with different configurations of wings, fuel tanks, weapons, and sensors. Emphasizing the need for modularity in the next generation, the report notes that, to meet urgent combat needs, “more than 20 uniquely configured MQ-9 aircraft” were built—a pattern that is “logistically unsupportable” in the future.

Modular interfaces are already being developed that will make sensors, payloads, and weapons alike interchangeable between RPAs and combat aircraft, according to the RPA vector. This, it is hoped, will save on integration costs and speed the development of new machines that must make use of existing payloads. The next generation of RPAs will also have to be able to fly in adverse weather, at least to the degree that manned aircraft can today, and function as well in “day or night conditions, jamming, areas of dense foliage/vegetation, [and] enemy obscurity.”

For high altitude applications, enabling technologies could include “regenerative and energy-harvesting ... technologies,” such as solar power, that would allow relay craft or ISR platforms to remain on station for “several weeks or even multiple years of endurance.” Such motor and energy technologies are a priority, as is developing the ability for “station-keeping in winds.”

Near-term objectives, according to the roadmap, will include development of common control stations—to the extent possible—to streamline the training of RPA pilots and sensor operators, regardless of the platforms. Another near-term goal is to develop concepts of operation for “swarming” action, where multiple RPAs would conduct a mission, digitally linked and acting collaboratively. In parallel, work is going on to make it possible for a single operator to control such a swarm without having to watch the speed, altitude, and attitude of each individual aircraft.

The Air Force vector also indicates that, like it or not, RPAs represent a technology that will only escalate, and the enemy will include not just national peers but “state and nonstate actors” with the technology and wits to make them.

“By no means is it certain that the United States and its allies will maintain their overall lead” in technology, according to the report. Enemies of the US “recognize the advantages of UA [unmanned aircraft] and will seek ways to mitigate and defeat such capabilities. Adversaries will continue developing formidable remotely piloted technologies” for use as “weapons of mass destruction, suicide bombers, long-range and precise weapons,” and for “advanced cyberattack capabilities,” requiring the US in turn to develop counter-RPA measures. ■





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## F-35 Tops the Savings Charts

The F-35 strike fighter's total acquisition cost dropped by an estimated \$11.5 billion since last year, achieving the "most significant" savings of any DOD acquisition program, according to a Government Accountability Office report.

The 3.3 percent drop was "due solely to efficiencies found within the program" since the total number of F-35s on order did not change, states GAO in its annual assessment of selected weapon programs, released March 31.

DOD was due shortly to publish its own cost assessment—the annual Selected Acquisition Report—for the same period.

## EELVated Costs

DOD's overall acquisition portfolio grew by \$12.6 billion between 2012 and 2013, most of which "can be attributed to a single program," according to a recent Government Accountability Office report.

The Air Force's Evolved Expendable Launch Vehicle purchase ballooned by 78 percent over the previous year, GAO stated in its assessment of selected weapon programs, published March 31.

However, most of the cost growth—an estimated \$28.1 billion—was due to the Air Force buying an additional 60 boosters. The remaining \$6 billion was due to other factors, including extending the program's life cycle by 10 years, according to GAO.

The EELV program was restructured after breaching cost-growth limits under the Nunn-McCurdy Act for the second time in 2012, GAO noted. The breach prompted service officials to seek additional launch providers, including SpaceX, which was still awaiting Air Force national security launch certification at press time.

## AFNET Migration Complete

The Air Force completed its five-year project transferring all Air Force user accounts and workstations to a single computer network, officials announced in April.

"This is truly a significant milestone for Air Force cyberspace," said Gen. William L. Shelton, commander of Air Force Space Command, in a news release.

The Air Force Network Integration Center at Scott AFB, Ill., transferred 646,000 email boxes and 12,318 servers at 275 Air Force-related sites, creating a "centrally managed standardized structure under the operational control of the 24th Air Force commander," according to the April 1 release.

## First Quick Reaction Satellite Delivered

The Air Force recently received its first revolutionary new satellite designed to be quickly configurable for missions ranging from communications and weather to surveillance, Northrop Grumman announced.

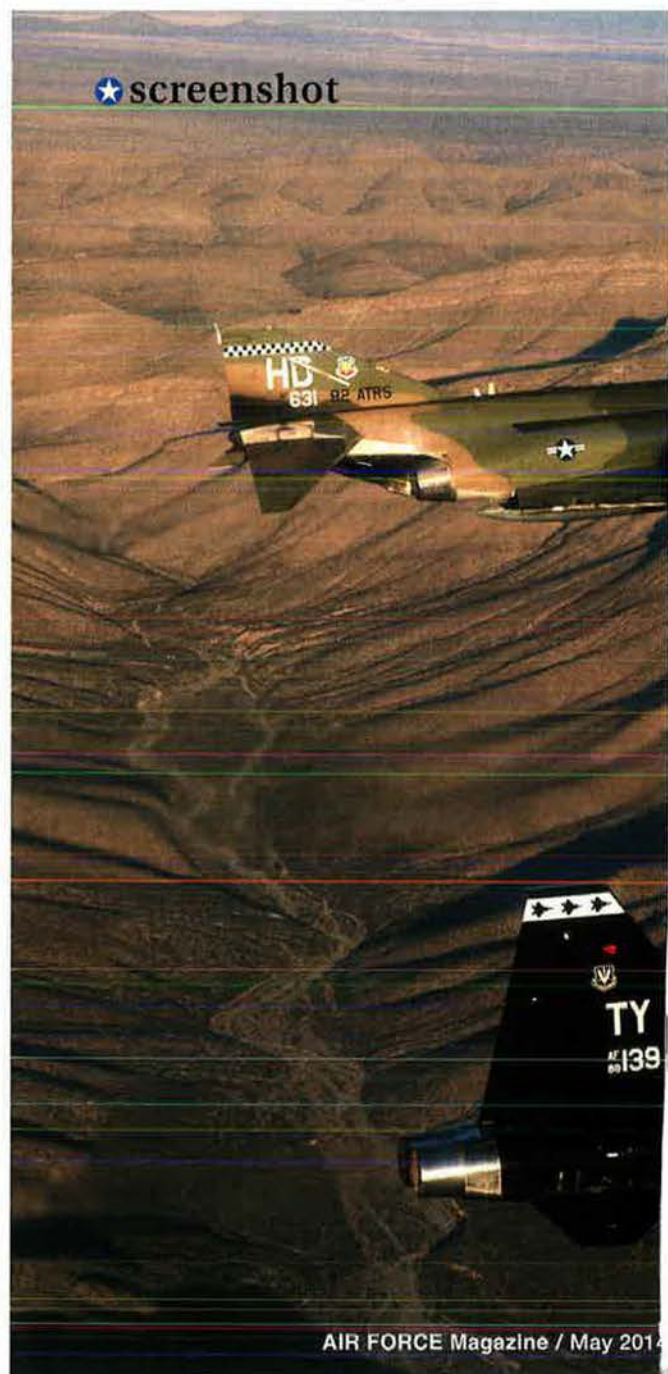
Dubbed Modular Space Vehicle, the satellite will allow payloads to be prepared and launched to support specific operational needs in a matter of weeks, instead of years, according to the company. "MSV provides ways for future development of rapid response space capabilities that will be timely, cost-efficient, and flexible," said Doug Young, Northrop Grumman's vice president for missile defense and advanced missions.

MSV can be launched on a number of different boosters, including the Minotaur I and IV, Evolved Expendable Launch Vehicle class boosters, and the Falcon 9.

The satellite can also operate from low and medium Earth orbits, as well as from geosynchronous orbit. The first MSV was delivered Feb. 25.

## Lightning Strikes the Thunderbolts

The first F-35A strike fighter assigned to the 56th Fighter





Wing touched down at Luke AFB, Ariz., early this spring, opening a new chapter in flight training at the base.

"This is the first-ever international weapon system program, and Luke will be the future home of its first-ever international flying training unit," said Air Force spokesman Maj. Matt Hesson in a statement ahead of the aircraft's March 10 arrival.

All F-35 pilots currently train at the joint-service F-35 schoolhouse at Eglin AFB, Fla. "Upon completion of the programmed aircraft delivery, Luke will be home to 144 F-35A aircraft belonging to eight partner nations" for the training, said Hesson.

Luke's first F-35A is the 100th F-35 airframe to roll off Lockheed Martin's production line at Fort Worth, Tex.

#### **Mechanical, Human Error Blamed in Kyrgyzstan Crash**

A flight-control malfunction exacerbated by the crew's response caused the midair breakup of the KC-135 that exploded over Kyrgyzstan last year, investigators determined.

The Accident Investigation Board stated that the tanker's light-control augmentation system malfunctioned, causing

lateral oscillations shortly after takeoff from the Transit Center at Manas on May 3, 2013.

Recordings revealed the aircrew noted the problem, but did not disengage the yaw damper or boosted rudder control, leading to a combined lateral and horizontal oscillation, known as "Dutch roll," according to the report's executive statement, released in March. The pilot responded with rudder input, which intensified the oscillations, overstressing the tanker and breaking it into three sections. The three crew members aboard died.

The AIB stated that insufficient crew training, inexperience, and "cumbersome procedural guidance" contributed to the mishap. Loss of the aircraft is estimated at a \$66.3 million.

#### **ROKAF Selects F-35A**

South Korea declared the F-35A the winner of its F-X fighter competition, becoming the Lightning II's third foreign military sales customer alongside Israel and Japan, Lockheed Martin revealed.

"We are honored by and appreciate the trust and confidence the Republic of Korea has placed in the fifth generation F-35 to



02.06.2014

*A four-ship formation flies over New Mexico, led by an F-16 just assigned to Holloman AFB, N.M., including an F-22 and T-38 that are moving from Holloman to Tyndall AFB, Fla., and a QF-4.*

Photo by Jim Haseltine



meet its demanding security requirements," said Lockheed Martin Aeronautics Executive Vice President Orlando Carvalho in a March 24 release.

The F-35 beat out both the Eurofighter EF-2000 and Boeing's F-15SE Silent Eagle after the Republic of Korea Air Force relaunched its F-X competition last summer.

"This decision strengthens and extends our long-standing security partnership while enhancing regional stability across the greater Asia-Pacific Theater," added Carvalho.

South Korea is seeking to buy 60 F-35s under a proposed \$10.8 billion package, including training, support, and parts, according to the Defense Security Cooperation Agency.

South Korea is looking to replace its elderly F-4 and F-5s with an indigenously produced aircraft under the separate KF-X competition.

**Boom Time in the Baltic**

The US is sending additional forces to reassure NATO Allies in the Baltic in light of Russia's military annexation of Crimea, Vice President Joseph Biden said during a recent visit to the region.

"We stand resolutely with our Baltic allies in support of the Ukrainian people and against Russian aggression," said Biden, speaking alongside Latvia's and Lithuania's heads of state in Vilnius, Lithuania, March 19.

On top of six more F-15s sent to buttress Baltic air policing in March, "we're exploring a number of additional steps to increase the pace and scope of our military cooperation" with the Baltic States, he said.

US efforts would include "rotating US forces of the Baltic region to conduct ground and naval exercises and training missions," explained Biden.

**How's That Working For Ya? A B-1B takes off from Edwards AFB, Calif., to begin testing sustainment Block 16A software upgrades that will work in conjunction with the aircraft's new glass cockpit, added to the Lancer as part of an integrated battlefield modification. Testing is anticipated to go through four phases, ending in early 2015.**



He said the Administration has reached out to other NATO Allies to provide "additional contributions" as well.

British Defense Minister Philip A. Hammond announced that the Royal Air Force would send several Typhoon fighters to augment Poland's fighter contingent when it took over Baltic air policing from the US in April.

**A Ride Without the Ruskies**

The Defense Department is reassessing its use of Russian-made rocket motors to launch US military satellites, Defense Secretary Chuck Hagel told members of the House Appropriations defense subcommittee in March.

Russia's military intervention in Ukraine highlighted the tenuous long-term viability of the Air Force's rocket engine supply chain, said Hagel. Air Force Secretary Deborah Lee James the next day told the House Armed Services Committee that the partnerships should be reviewed.

USAF photo by Ethan Wagner





## By the Numbers

# 2 Years

The length of time the Air Force would need to stop flying to pay one year's sequestration cuts (\$12.5 billion).

The US has a two-year supply of the motors and has spent "hundreds of millions of dollars to prove that we have the capability to demonstrate our ability to build that same engine," said United Launch Alliance President Michael Gass at a Senate Appropriations defense subcommittee hearing, March 5.

Elon Musk, owner of Space Exploration Technologies Corp. (SpaceX), which has been trying to break into the launch business, said at the same hearing, "It would make sense ... for the long-term security interest of the country to probably phase out the Atlas V, which depends on the Russian engine, and have ULA upgrade the Delta family."

That, combined with SpaceX's Falcon rocket, would give "the Defense Department assured access to space," said Musk.

### Then There Were '16s

The 54th Fighter Group activated in March and will host F-16 pilot training at Holloman AFB, N.M.

Holloman is slated to receive two F-16 squadrons from Luke AFB, Ariz., as compensation for the loss of its combat-coded F-22s to Tyndall AFB, Fla., earlier this year. Under the 54th, the F-16 squadrons will continue as a detachment of

### Nuclear Lightning

NATO partners buying the F-35 want the Air Force to pick up the development tab to make the aircraft nuclear capable, Chief of Staff Gen. Mark A. Welsh III told House legislators.

Speaking before the House Armed Services Committee March 14, Welsh said the Air Force has "committed to making the F-35 dual-capable"—i.e., able to carry both conventional and nuclear weapons. "There is discussion ongoing" with NATO F-35 partners who "don't believe they can afford" a nuclear capability on their F-35s without US support, he said.

However, these countries are "responsible for paying the cost to integrate capability on their aircraft," he said. Rep. Richard R. Larsen (D-Wash.) questioned Welsh as to what USAF would do if NATO partners do not replace their nuclear-capable aircraft in the 2020s and beyond.

Welsh said the cost is "not insignificant," but if some Allies cannot afford it, the other NATO nations that have those capabilities "will pick up the load." Talks are underway, and "we do have the capacity to pick up the load," Welsh reported.

USAF requested \$15.6 million in the Fiscal 2015 budget to refine F-35 dual-capable requirements. By 2024, the Block 4B aircraft is supposed to be able to carry two B61 nuclear shapes internally, according to budget documents. The B61 is also being modernized and given a life extension modification to keep it viable.

—John A. Tirpak

Luke's 56th Fighter Wing, which trains approximately 285 F-16 pilots and 350 crew chiefs annually, according to officials.

Holloman "will undoubtedly be a great fit for this new F-16 training mission, and we're looking forward to a great partnership between the 49th Wing and the 54th Fighter Group," said 54th FG Commander Col. Rodney J. Petithomme at the March 11 ceremony.

The 311th Fighter Squadron simultaneously activated along with the 54th Aircraft Maintenance Squadron and the 54th Operations Support Squadron to support the training mission.

### Predator's Sea Bed in the Med

A power converter failure doomed an MQ-1B Predator remotely piloted aircraft that crashed into the Mediterranean Sea on Sept. 17, 2013, after a mission supporting US Africa Command, officials revealed.

Flight controllers were preparing to hand the RPA off to the launch and recovery controllers after a 20-hour surveillance mission when they lost communication with the Predator, an Air Combat Command press release stated April 2.

Two seconds before losing contact, the RPA transmitted engine, electrical, and flight-control warnings that the abbreviated accident investigation board determined "were a direct result of a power converter malfunction in the aircraft's control module," according to the press release.

The Predator spiraled out of control and impacted the sea, resulting in the loss of the aircraft and a communications pod valued at approximately \$5.3 million.

The RPA was deployed from Creech AFB, Nev., at the time of the incident.

### Auditioning for NATO?

Two Air Force F-15s practiced scrambling with Swedish JAS-39 Gripen fighters from Siauliai AB, Lithuania, as part of a NATO-hosted exercise in April.

### James R. Schlesinger, 1929-2014

James R. Schlesinger, who served as Defense Secretary under Presidents Richard Nixon and Gerald Ford from 1973 to 1975, died in Baltimore on March 27. He was 85.

He counseled three different Presidents as chairman of the United States Atomic Energy Commission, director of the Central Intelligence Agency, Secretary of Defense, and as the nation's first Secretary of Energy.

Schlesinger "was a brilliant economist and had a keen understanding of defense budgeting. ... I relied on his counsel when I was a United States Senator and as Secretary of Defense have benefitted enormously from ... his guidance ... as a member of the Defense Policy Board," said Defense Secretary Chuck Hagel in a statement.

Schlesinger "devoted his career to ensuring that the American military had the resources it needed to defend against, and ultimately defeat, the Soviet Union," House Armed Services Committee Chairman Howard P. "Buck" McKeon (R-Calif.) said in a statement.

He was "the foremost intellectual architect of the policy of nuclear deterrence," added McKeon. Schlesinger was a big proponent of the A-10 and the F-16 and lobbied hard for a stronger NATO.

He promoted the idea of "burden-sharing" amongst NATO members and sought to standardize equipment within the Alliance. He also promoted the idea of increasing defense spending by NATO governments by up to five percent of each country's gross national product, according to his official DOD bio.



Tensions with Russia recently prompted Sweden's Deputy Prime Minister Jan Björklund to call for a break with the country's historic nonalignment to "set the wheels in motion" to potentially join NATO, the German newspaper *Deutsche Welle* reported.

USAF Capt. Tyler Clark, in an April NATO press release, said, "NATO's airspace borders that of Sweden and Finland and we have to work together to ensure safety of all our airways."

Though Sweden is not a NATO member, Swedish forces regularly train alongside Alliance forces as part of NATO's Partnership for Peace program.

During the Baltic regional training event, held several times a year, F-15s deployed from RAF Lakenheath, Britain, practiced jointly intercepting a Lithuanian C-27J with the Swedes, guided by a NATO AWACS.

**C-5Ms Dover and Done**

Airmen at Dover AFB, Del., welcomed the 18th and final upgraded C-5M Super Galaxy into the 436th Airlift Wing on April 2, Delaware's *News Journal* reported. Serial No. 87-0040 completes the base's transition from the legacy C-5 to the made-over C-5M.

"Completing our fleet marks a significant milestone for Team Dover and for the C-5M program," said 436th AW Commander Col. Richard G. Moore Jr.

Upgraded C-5s incorporate new digital flight controls, navigation systems, and updated and efficient new engines as well as numerous structural and reliability enhancements.

**Giving the Army a Little Boost: Four Reserve C-17s moved four M1A1SA Abrams tanks and personnel from Wright Army Airfield, Ga., to McEntire JNGB S.C., for the US Army in April. C-17s generally move loads of that weight only in combat situations, such as in Afghanistan. Here, TSgt. Catherine Desilles grabs a tie-down chain as she and other airmen secure a tank. Below, one of the massive Abrams tanks is slowly loaded into a C-17 for transport.**

**Liberty's Convolted Comeback**

Air Force Special Operations Command—not the Army—will take over the bulk of the MC-12 Liberty intelligence gathering fleet, according to AFSOC.

The 51-strong MC-12W fleet had been divided between Air Combat Command, which operates 41 aircraft, and US Special Operations Command, which operates 10 airframes—dubbed "Javaman," said AFSOC spokeswoman Lt. Col. Kristi Beckman.

The Fiscal 2014 defense authorization bill called on the Air Force to draft a plan for "potential transfer" of its MC-12s to the Army.

The plan now is for the Army to get eight airframes. USSOCOM will take the rest of the Liberty fleet, as well as its Javamen, and pass them on to AFSOC.

"AFSOC will get those 33, plus an additional 10 MC-12s from USSOCOM that they currently own," explained Beckman. "That's a total of 43 aircraft for AFSOC."

The bulk of those aircraft will be assigned to Active Duty units at Cannon AFB, N.M., and Hurlburt Field, Fla., replacing the U-28A special operations surveillance aircraft.

Thirteen will be assigned to the Air National Guard to create a new special operations mission at Will Rogers ANGB, Okla. "We will begin about a three-year transition to the MC-12 in FY '15 starting with the ANG wing and finishing with the Active Duty units," said Beckman.

*Aaron M. U. Church*

USAF photos by SSgt. Rashard Coaxum





# The War on Terrorism

## Operation Enduring Freedom

### Casualties

By April 22, 2014, a total of 2,314 Americans had died in Operation Enduring Freedom. The total includes 2,311 troops and three Department of Defense civilians. Of these deaths, 1,815 were killed in action with the enemy while 496 died in noncombat incidents.

There have been 19,701 troops wounded in action during OEF.

### Best Month in a Dozen Years

March was the first casualty-free month since July 2002 for US combat forces worldwide, according to DOD's Defense Casualty Analysis System.

Since the start of Operation Enduring Freedom in October 2001, March 2014 was only the third month that no combat related deaths occurred in Afghanistan. The other two months were January 2007 and July 2002.

As of March, 2,312 US military members had died in Afghanistan, including 14 to that point in 2014. According to Pentagon statistics, 19,693 troops were wounded in action over the same span.

Two coalition soldiers died in Afghanistan in March, though neither was a combat-related fatality.

The US plans to withdraw all combat forces from Afghanistan by the end of the year, though it is still not clear how many—if any—will remain in country in the future.

President Barack Obama ordered military planners to

draw up contingency plans earlier this year in case Afghan leaders fail to sign a bilateral security agreement to allow US troops to continue training and advisory missions after the end of combat ops.

### Russian Trouble and Afghanistan

DOD officials are worried tension with Russia may threaten the US northern supply routes in and out of Afghanistan at a critical juncture as NATO forces are drawing down.

The massive Northern Distribution Network winds through Russia and Central Asia and serves as an alternate to Pakistan for moving supplies into and out of Afghanistan. "If the Russians were to take action, ... we have other options [to the Russian section of the NDN] to move that cargo in and out," Gen. Paul J. Selva, commander of Air Mobility Command, recently told legislators.

Speaking during his confirmation hearing to lead US Transportation Command, Selva said this would require rerouting some 20 percent of subsistence cargo, such as food and noncombat materiel that moves through that supply route. Assuming Afghan officials do not sign a bilateral security agreement, Selva said there is enough capacity through several other networks to redeploy cargo out of Afghanistan through the "early fall," but beyond that he would need to consult with US Central Command leadership.

"As each day passes [without a BSA], our options decrease" though, warned Selva.

—Marc V. Schanz

### Back to Clark?

The US reached a tentative agreement with the Philippines to open greater US access to its military bases amid Chinese actions in disputed parts of the South China Sea, reported Reuters.

The deal would allow for the sharing of "defined areas within certain [Philippine armed forces] facilities with elements of the US military," on a rotational basis, within parameters consistent with the Philippine constitution, said Pio Lorenzo Batino, the country's defense undersecretary, during a March 14 press conference in Manila.

The two countries aimed to finalize the agreement during President Barack Obama's planned April visit to Manila. With the Philippine senate's blessing, the agreement would allow US forces access to facilities including the former Clark Air

Base, as well as bases in Palawan, Cebu, and Nueva Ecija, among others.

According to the *Philippine Star*, Batino said the agreement takes into account the Philippines' historical experiences, laws, and desire for "non-permanence of US troops."

### F-35 IOC Won't Slip

Air Force Chief of Staff Gen. Mark A. Welsh III said he is "more confident" than ever that the F-35A will achieve initial operational capability in 2016, but that development issues with software will have to be watched closely for full operational capability.

Welsh told the House Appropriations Committee's defense panel that he is closely tracking the progress of software integration with Lockheed Martin and its subcontractors.

The strike fighter achieved several recent milestones, including the F-35A's first night flight on March 24. "The flight went fantastic," he said.

F-35 program director USAF Lt. Gen. Christopher C. Bogdan echoed Welsh's assessment in separate testimony on March 26. Bogdan told the House Armed Services Committee's tactical air and land forces panel that software remains the biggest technical concern, though he is "moderately confident" the program will successfully release Block 2B and 3I software capability as planned in 2015 and 2016.

More risk looms, however, with regard to Block 3F, the full combat capability software, which has a 2017 deadline. The contractors "need to improve both the speed and quality of software development" to catch up from previous delays, he said.

### Space Eagle

Boeing is designing a new rocket to affordably launch microsatellites into space from an F-15E, the company recently announced.

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The Defense Advanced Research Projects Agency awarded Boeing's Phantom Works an 11-month, \$30.6 million contract to test its Airborne Launch Assist Space Access vehicle, Boeing stated in a March 28 news release. The contract also has options for Boeing to build as many as 12 ALASA vehicles.

The 24-foot-long rocket is designed to propel a 100-pound payload into low Earth orbit from the belly of an F-15E flying at 40,000 feet in altitude. "With our design, the first and second stages are powered by the same engines, reducing weight and complexity," said Steve Johnston, the company's director for advanced space exploration.

The DARPA-led ALASA project aims to reduce microsatellite launch costs by as much as 66 percent.

### Empire State Reapers

The New York Air National Guard's 107th Airlift Wing at Niagara Falls Arpt./Air Reserve Station recently began transitioning from the C-130 to the MQ-9 Reaper remotely piloted aircraft.

The wing has already certified its first MQ-9 pilot and under a new manning document, effective April 1, will lose about 200 personnel billets, including its entire maintenance group, since no Reapers will be located at Niagara Falls.

The wing's 107th Operations Group, however, will grow from 90 personnel to more than 220, and the base is slated for a new operations facility by 2017, according to officials.

Col. Robert Kilgore, 107th AW vice commander, said wing

## Senior Staff Changes

**CHANGES:** Brig. Gen. Casey D. **Blake**, from AF Instl. Contracting Agency, Office of the Asst. SECAF, Acq., Wright-Patterson AFB, Ohio, to Dep. Asst. SECAF, Contracting, Office of the Asst. SECAF, Acq., OSAF, Pentagon ... Maj. Gen. (sel.) Jack L. **Briggs II**, from Vice Cmdr., 1st AF, Air Forces Northern, ACC, Tyndall AFB, Fla., to Dir., Ops., NORTHCOM, Peterson AFB, Colo. ... Maj. Gen. (sel.) Stephen A. **Clark**, from Dep. Commanding General, Jt. Spec. Ops. Command, SOCOM, Fort Bragg, N.C., to Dir., Center for Force Structure, Rqmts., Resources & Strat. Assessments, SOCOM, MacDill AFB, Fla. ... Maj. Gen. (sel.) John L. **Dolan**, from Asst. Dep. Cmdr., USAFCENT, ACC, Shaw AFB, S.C., to C/S, PACOM, Camp H. M. Smith, Hawaii ... Brig. Gen. Albert M. **Eiton II**, from Dir., Plans, Rqmts., & Prgms., AFSOC, Hurlburt Field, Fla., to Dep. Commanding General, Jt. Spec. Ops. Command, SOCOM, Fort Bragg, N.C. ... Maj. Gen. Jeffrey L. **Harrigian**, from Dep. Dir., Ops., CENTCOM, MacDill AFB, Fla., to Asst. DCS, Ops., Plans, & Rqmts., USAF, Pentagon ... Lt. Gen. Bradley A. **Heithold**, from Vice Cmdr., SOCOM, Pentagon, to Cmdr., AFSOC, Hurlburt Field, Fla. ... Gen. (sel.) Darren W. **McDew**, from Cmdr., 18th AF, AMC, Scott AFB, Ill., to Cmdr., AMC, Scott AFB, Ill. ... Maj. Gen. Paul H. **McGillicuddy**, from Dir., Ops., Plans, & Prgms., PACAF, JB Pearl Harbor-Hickam, Hawaii, to Vice Cmdr., PACAF, JB Pearl Harbor-Hickam, Hawaii ... Brig. Gen. Jon A. **Norman**, from Cmdr., 31st FW, USAF, Aviano AB, Italy, to Dir., Ops., Plans, & Prgms., PACAF, JB Pearl Harbor-Hickam, Hawaii ... Brig. Gen. John T. **Quintas**, from Sr. Defense Official, UK, DIA, London, to Cmdr., 380th AEW, ACC, Southwest Asia ... Lt. Gen. (sel.) Anthony J. **Rock**, from Vice Dir., Strat. Plans & Policy, Jt. Staff, Pentagon, to Chief, Office of the Defense Rep.-Pakistan, CENTCOM, US Embassy, Islamabad, Pakistan ... Brig. Gen. Kevin B. **Schneider**, from Cmdr., 380th AEW, ACC, Southwest Asia, to Asst. Dep. Cmdr., USAFCENT, ACC, Shaw AFB, S.C. ... Brig. Gen. Barre R. **Seguin**, from IG, ACC, JB Langley-Eustis, Va., to Cmdr., 31st FW, USAF, Aviano AB, Italy ... Maj. Gen. Thomas J. **Trask**, from Dir., Center for Force Structure, Rqmts., Resources, & Strat. Assessments, SOCOM, MacDill AFB, Fla., to Vice Cmdr., SOCOM, Pentagon.

**SENIOR EXECUTIVE SERVICE CHANGES:** Jeffrey C. **Allen**, to Exec. Dir., AF Sustainment Center, AFMC, Tinker AFB, Okla. ... Randall G. **Walden**, to Dir., AF Rapid Capabilities Office, Office of the Admin. Asst. to the SECAF, JB Anacostia-Bolling, D.C. ■

leadership realizes that wing personnel are "dealing with a lot of stress in the conversion to the new mission," but added that the change "sets us on a clear path to the future," according to a March 7 press release.

### Overdue Aussie Star

Royal Australian Air Force Flying Officer Edward T. Mobsby was awarded the US Defense Department's third highest award for valor, 72 years after he was killed in combat during World War II.

USAF's Pacific Air Forces Commander Gen. Herbert J. "Hawk" Carlisle presented the Silver Star to Mobsby's family in a ceremony at the Australian War Memorial in Canberra on March 14, according to a PACAF news release.

Mobsby was copilot of a combined US-Australian crew on a B-25 Mitchell on July 26, 1942, when the aircraft was shot down over the Pacific near Papua New Guinea, killing all five crew members.

His squadron officer put in a recommendation for the crew to receive the Silver Star and the US Army Air Corps awarded four of the crewmembers in the 1940s, but Mobsby's paperwork was delayed.

There was an "administrative oversight," an Air Force spokeswoman told the *Canberra Times*. Since 1943, Mobsby's family fought to get this issue resolved.

"Today, we right a wrong," Carlisle said at the ceremony. "We correct an oversight that is nearly three-quarters of a century old by properly honoring the gallantry and courage of Royal Australian Air Force Flying Officer Edward Thompson Mobsby," he said. ■

### Mending Missileers

The Air Force is significantly changing its ICBM training, development, and leadership in the wake of a recent cheating scandal in the nuclear community.

Although the standards will remain high, Air Force Global Strike Command boss Lt. Gen. Stephen W. "Seve" Wilson said, perfection will no longer be required 100 percent of the time. The command-directed investigation, launched following widespread cheating allegations at Malmstrom AFB, Mont., found that the line of "separation between training and evaluation" in the ICBM community had been completely lost. The Air Force will now place "greater emphasis" on how missileers are trained in addition to improving field evaluations to "better assess crew performance in the operational environment," said Wilson.

Wilson said AFGSC leadership is taking cues from its bomber community to address this problem. "An aircrew member takes a monthly test ... called Bold Face. It's something that they have to be able to do, no matter how stressful the situation. ... Missile crew members don't have that, so we're [going] to develop what we call Bold Face for missile crew members," said Wilson. "In most every flying weapons system, you get issued what we call a master question file. And it's a series of questions on the important things [you need to know] to operate that weapons system," said Wilson. "That's a model we also think we could follow."

Finally, AFGSC is looking to mimic the 17-month evaluation cycle that is typical for flying crew members. "The execution of the ICBM mission has gone largely unchanged since its first missileers ... started pulling alert in 1959," said Wilson. "We're not just putting a fresh coat of paint on these problems. ... We're taking bold action."

—Amy McCullough



By Robert S. Dudley

## Chairman Speaks

"This is not a profession in crisis, though it could become that way if [problems are] left unaddressed."—**Army Gen. Martin E. Dempsey, Chairman of Joint Chiefs of Staff, on sexual assault and other discipline problems in the US armed forces, USA Today, April 2.**

## The SECDEF Looks at China

"This visit was not a visit to contain China. ... I consider the Chinese as friends. We have differences. We are competitors. We disagree in areas. But we're certainly not enemies."—**Secretary of Defense Chuck Hagel, remarks after meeting of ASEAN nations in Honolulu, April 3.**

## Triad Forever

"I'm a firm believer in the triad. I think the triad has served us well in the past and it will continue to serve us well in the future precisely because of the flexible nature of all three legs. And so long as countries either have these weapons or are trying to develop these weapons of mass destruction, I think it's important that the United States maintain that triad and maintain it strongly."—**Secretary of the Air Force Deborah Lee James, interview broadcast on National Public Radio, March 31.**

## Close to You

"The development of Russian armed forces [shows] two big trends—first, strengthening of strategic nuclear forces, giving a guarantee that no one country in this world will try to attack Russia [and] second, the development of these rapid deployment forces to deal with any kind of local conflict, such as the war against Georgia, or this operation in Ukraine, or anywhere. As a result of these reforms, Russia now has absolute superiority over any country in the post-Soviet space."—**Aleksandr Golts, an independent military analyst based in Moscow, New York Times, April 2.**

## Oh, You Again

"I would certainly consider a pardon, yes, but I can't say what I would do, because I don't have the informa-

tion that President Obama has."—**Former President James Earl Carter, on the question of pardoning NSA turncoat Edward Snowden, remarks to the Washington Post, New York Times, March 26.**

## Best of a Bad Lot

"The results very clearly show that cutting the A-10 fleet was the lowest-risk option from an operational perspective—a bunch of bad options. And while no one is happy, especially me, about recommending divestiture of this great old friend, from a military perspective, it's the right decision."—**Gen. Mark A. Welsh III, USAF Chief of Staff, testimony before a House subcommittee, March 26.**

## Extended Deployment

"I believe it's testing some kind of experimental sensor for the National Reconnaissance Office—for example, a hyperspectral imager, or some new kind of signals intelligence package. The sensor was more successful than expected, so the payload customer asked the X-37 folks to keep the spacecraft in orbit longer."—**Astrophysicist Jonathan McDowell, speculating on the long, long flight of USAF's X-37B spaceplane, IDG News Service, April 1.**

## Throw Away the Key

"This is a man who received a lot of money for taking, literally, suitcases of [classified US] material and trying to sell it not only to Israel but other countries as well. And I think the Intelligence Community views it as a massive, massive betrayal."—**Sen. Dianne Feinstein (D-Calif.), Senate Intelligence Committee, opposing early release of imprisoned spy Jonathan Jay Pollard as part of Mideast peace negotiations, The Hill newspaper, April 1.**

## Among Schoolchildren

"The low-IQ US President and his country's Secretary of State John Kerry speak of the effectiveness of 'the US options on the table' on Iran while this phrase is mocked at and has become a joke among the Iranian nation, especially the children."—**Iranian Gen. Masoud Jazayeri, commenting on**

**US threat to use military force against Iran, Wall Street Journal, March 31.**

## March of Folly

"We are standing down the US military to pre-1940 levels at a time when the United States is facing huge potential aggression problems around the world. ... This is folly, and I assure you, if we continue on this path, we will regret it."—**Retired Army Gen. Barry R. McCaffrey, quoted in breakingdefense.com, March 26.**

## Cool, Calm, Relaxed

"Russia is a regional power that is threatening some of its immediate neighbors—not out of strength but out of weakness. ... They don't pose the No. 1 national security threat to the United States. I continue to be much more concerned when it comes to our security with the prospect of a nuclear weapon going off in Manhattan."—**President Obama, press conference at the Hague in the Netherlands, March 25.**

## A Mission, Not an Aircraft

"Close air support is not an afterthought to me, and it is not going to be a secondary mission in the United States Air Force. But close air support is not an aircraft. It's a mission, and we do it very, very well with a number of airplanes today."—**Gen. Mark A. Welsh III, USAF Chief of Staff, remarks on planned A-10 divestment, House Armed Services Committee, March 14.**

## Putin on the Couch

"Mr. Putin aspires to restore Russia's global power and influence and to bring the now-independent states that were once part of the Soviet Union back into Moscow's orbit. While he has no apparent desire to recreate the Soviet Union (which would include responsibility for a number of economic basket cases), he is determined to create a Russian sphere of influence—political, economic, and security—and dominance. There is no grand plan or strategy to do this, just opportunistic and ruthless aspiration. And patience."—**Former Secretary of Defense Robert M. Gates, op-ed in the Wall Street Journal, March 25.**



# USAF Almanac



## About the Almanac

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



# mac 2014





# The Air Force in Facts and Figures

■ 2014 USAF Almanac

## Structure of the Force

### How the Air Force Is Organized

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

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

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

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

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

The predominant command entity within USAF is the **wing**. A standard wing contains four groups: **operations**

(operates primary mission equipment and includes such functions as intelligence), **maintenance** (provides weapon system maintenance), **mission support** (provides base support and services, including civil engineer, logistics readiness, and security forces), and **medical**.

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

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

#### Air and Space Expeditionary Force

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

USAF grouped its power projection and support forces into 10 AEF "buckets of capability" operating in five pairs. Initially, combat air forces (**CAF**)

deployed for a 90-day AEF rotation, with mobility air forces (**MAF**) and low-density, high-demand (**LD/HD**) forces operating on longer deployments as needed. In 2004, USAF went to a basic 120-day rotation, while LD/HD forces, including battle management, battlefield airmen, and reconnaissance assets, normally deployed for 180 days.

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

In November 2011, USAF announced plans to change to a new construct, dubbed **AEF Next**, that would abandon the confusing tempo band approach. Under AEF Next, now slated for initial operational capability in October 2014, airmen will deploy with their unit commanders, serving as one of six airpower teams that usually deploy on six-month rotations, followed by 12 months at home station. ■

### Current Air Force Leaders

### Date in Position

Secretary of the Air Force

Deborah Lee James

Dec. 20, 2013

Air Force Chief of Staff

Gen. Mark A. Welsh III

Aug. 10, 2012

Chief Master Sergeant of the Air Force

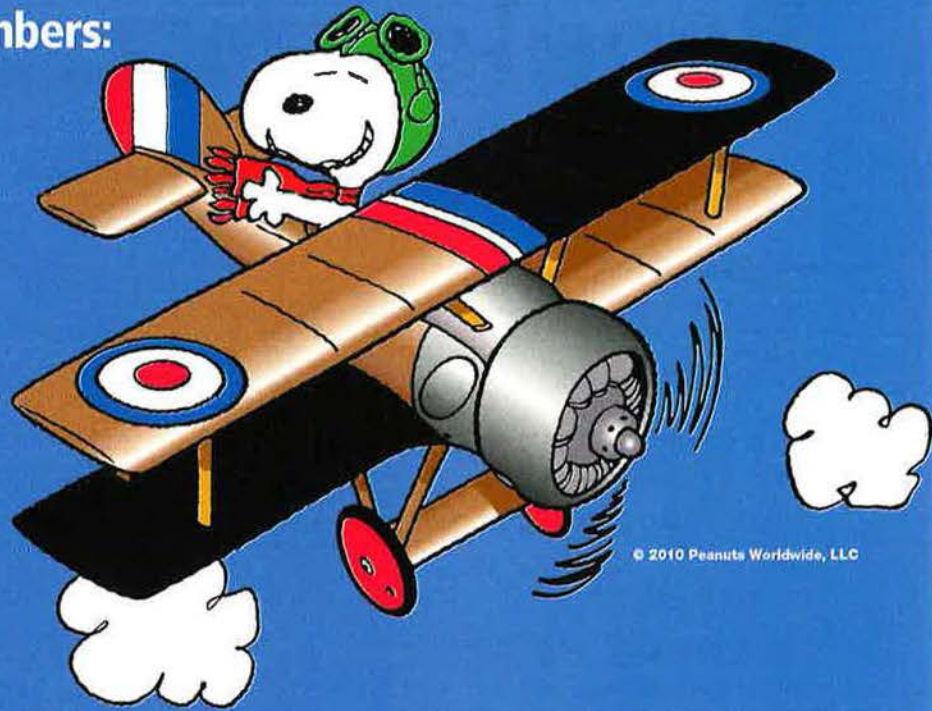
CMSAF James A. Cody

Jan. 24, 2013



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### USAF Total Force

(As of Sept. 30, 2013)

	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Estimate FY14
<b>Air Force Active Duty</b>										
Officers	73,252	70,539	65,722	64,805	65,496	66,201	65,487	64,932	64,806	62,884
Enlisted	276,117	273,990	263,372	258,092	263,351	263,437	263,542	263,964	261,976	255,289
Cadets	4,327	4,424	4,401	4,482	4,561	4,558	4,341	4,022	3,912	4,000
<b>Total Air Force Active Duty</b>	<b>353,696</b>	<b>348,953</b>	<b>333,495</b>	<b>327,379</b>	<b>333,408</b>	<b>334,196</b>	<b>333,370</b>	<b>332,918</b>	<b>330,694</b>	<b>322,173</b>
<b>Civilian personnel</b>										
Direct hire (excluding technicians)	124,534	128,475	125,636	124,698	123,106	134,183	145,407	142,047	141,496	140,840
ANG technicians	22,731	21,997	22,409	22,353	22,391	22,657	22,139	22,859	22,568	22,225
AFRC technicians	9,407	9,427	9,127	8,857	9,147	10,068	9,397	10,366	9,277	9,360
<b>Total direct hire</b>	<b>156,672</b>	<b>159,899</b>	<b>157,172</b>	<b>155,908</b>	<b>154,644</b>	<b>166,908</b>	<b>176,943</b>	<b>175,272</b>	<b>173,341</b>	<b>172,425</b>
Indirect hire	6,571	6,833	6,212	6,515	6,346	6,564	6,776	6,714	6,501	7,809
<b>Total civilian personnel</b>	<b>163,243</b>	<b>166,732</b>	<b>163,384</b>	<b>162,423</b>	<b>160,990</b>	<b>173,472</b>	<b>183,719</b>	<b>181,986</b>	<b>179,842</b>	<b>180,234</b>
<b>Air National Guard</b>										
Selected Reserve Officers	13,672	13,782	13,992	14,115	14,326	14,389	14,418	14,598	14,731	14,615
Selected Reserve Enlisted	92,758	91,876	92,162	93,564	94,870	93,287	91,267	90,791	90,977	90,785
<b>Total ANG</b>	<b>106,430</b>	<b>105,658</b>	<b>106,154</b>	<b>107,679</b>	<b>109,196</b>	<b>107,676</b>	<b>105,685</b>	<b>105,389</b>	<b>105,708</b>	<b>105,400</b>
<b>Air Force Reserve Command</b>										
Selected Reserve Officers	16,676	16,678	16,199	15,169	14,753	14,560	14,535	14,303	14,060	15,712
Selected Reserve Enlisted	59,126	57,397	54,083	52,396	53,233	55,559	56,786	57,125	56,853	54,688
<b>Total AFRC Selected Reserve</b>	<b>75,802</b>	<b>74,075</b>	<b>70,282</b>	<b>67,565</b>	<b>67,986</b>	<b>70,119</b>	<b>71,321</b>	<b>71,428</b>	<b>70,913</b>	<b>70,400</b>
Individual Ready Reserve Officers	9,942	11,356	13,018	13,633	12,833	11,692	11,692	11,222	11,222	11,392
IRR Enlisted	31,377	33,548	36,831	35,668	30,349	28,863	28,863	24,271	24,271	27,482
<b>Total AFRC IRR</b>	<b>41,319</b>	<b>44,904</b>	<b>49,849</b>	<b>49,301</b>	<b>43,182</b>	<b>40,555</b>	<b>40,555</b>	<b>35,493</b>	<b>35,493</b>	<b>38,874</b>
<b>Total AFRC</b>	<b>117,121</b>	<b>118,979</b>	<b>120,131</b>	<b>116,866</b>	<b>111,168</b>	<b>110,674</b>	<b>111,876</b>	<b>106,921</b>	<b>106,406</b>	<b>109,274</b>
<b>Total Ready Reserve</b>	<b>223,551</b>	<b>224,637</b>	<b>226,285</b>	<b>224,545</b>	<b>220,364</b>	<b>218,350</b>	<b>217,561</b>	<b>212,310</b>	<b>212,114</b>	<b>214,674</b>

### Armed Forces Manpower Trends, End Strength (in Thousands)

(As of Sept. 30, 2013)

	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Estimate FY14
<b>Active Duty military</b>										
Air Force	354	349	334	327	333	334	333	333	331	322
Army	493	505	522	544	553	566	566	550	532	510
Marine Corps	180	180	187	199	203	202	201	198	196	189
Navy	363	350	338	332	329	328	325	318	324	324
<b>Total</b>	<b>1,390</b>	<b>1,384</b>	<b>1,381</b>	<b>1,402</b>	<b>1,418</b>	<b>1,430</b>	<b>1,425</b>	<b>1,399</b>	<b>1,383</b>	<b>1,345</b>
<b>Guard and Reserve (selected reserve)</b>										
Air National Guard	106	106	106	108	109	108	107	105	106	105
AFRC	76	74	71	68	68	70	71	71	71	70
Army National Guard	333	346	353	360	358	362	358	358	358	354
Army Reserve	189	190	190	197	205	205	205	201	198	202
Marine Corps Reserve	40	40	39	38	39	39	40	40	40	40
Naval Reserve	76	71	70	68	67	65	66	65	62	59
<b>Total</b>	<b>820</b>	<b>827</b>	<b>829</b>	<b>839</b>	<b>846</b>	<b>849</b>	<b>847</b>	<b>840</b>	<b>835</b>	<b>830</b>
<b>Direct-hire civilian (full-time equivalents)</b>										
Air Force	157	160	157	156	155	167	177	175	173	172
Army	213	220	221	230	247	260	269	250	242	250
Navy/Marine Corps	179	174	176	178	186	195	201	201	197	201
Defense agencies	105	104	105	108	115	120	125	133	127	132
<b>Total</b>	<b>654</b>	<b>658</b>	<b>659</b>	<b>672</b>	<b>703</b>	<b>742</b>	<b>772</b>	<b>759</b>	<b>739</b>	<b>755</b>



## Active Duty Airmen by Rank

(As of Sept. 30, 2013)

Rank	Men	Women	Total
<b>Officers</b>			
General	11	1	12
Lieutenant General	40	5	45
Major General	90	11	101
Brigadier General	137	10	147
Colonel	3,128	473	3,601
Lieutenant Colonel	8,591	1,426	10,017
Major	11,647	2,395	14,042
Captain	17,768	4,980	22,748
First Lieutenant	5,411	1,783	7,194
Second Lieutenant	5,291	1,608	6,899
<b>Total</b>	<b>52,114</b>	<b>12,692</b>	<b>64,806</b>
<b>Enlisted</b>			
CMSAF	1	0	1
Chief Master Sergeant	2,289	295	2,584
Senior Master Sergeant	4,218	918	5,136
Master Sergeant	21,833	4,908	26,741
Technical Sergeant	32,976	8,261	41,237
Staff Sergeant	54,543	13,128	67,671
Senior Airman	45,502	10,292	55,794
Airman First Class	41,947	9,338	51,285
Airman	2,894	596	3,490
Airman Basic	6,662	1,375	8,037
<b>Total</b>	<b>212,865</b>	<b>49,111</b>	<b>261,976</b>
Academy Cadets	3,022	890	3,912
<b>Total Personnel</b>	<b>268,001</b>	<b>62,693</b>	<b>330,694</b>



USAF photo by SMSgt. George Thompson

Security forces airmen receive a briefing in Southwest Asia.

## Number and Percentage of Active Duty Airmen by Gender

	1950	1960	1970	1980	1990	2000	2010	2013
<b>Officers</b>								
Male	55,474	126,014	125,136	89,156	86,714	57,204	53,838	52,114
Percentage	97.3%	97.2%	96.4%	91.3%	86.7%	82.9%	81.3%	80.4%
Female	1,532	3,675	4,667	8,493	13,331	11,819	12,363	12,692
Percentage	2.7%	2.8%	3.6%	8.7%	13.3%	17.1%	18.7%	19.6%
<b>Total Officers</b>	<b>57,006</b>	<b>129,689</b>	<b>129,803</b>	<b>97,649</b>	<b>100,045</b>	<b>69,023</b>	<b>66,201</b>	<b>64,806</b>
<b>Enlisted</b>								
Male	350,489	679,412	652,559	399,517	374,385	231,620	212,491	212,865
Percentage	98.9%	99.2%	98.6%	86.8%	86.0%	80.8%	80.7%	81.3%
Female	3,782	5,651	8,987	60,803	60,803	55,011	50,946	49,111
Percentage	1.1%	0.8%	1.4%	13.2%	14.0%	19.2%	19.3%	18.7%
<b>Total Enlisted</b>	<b>354,271</b>	<b>685,063</b>	<b>661,546</b>	<b>460,320</b>	<b>435,188</b>	<b>286,631</b>	<b>263,437</b>	<b>261,976</b>
<b>Cadets</b>								
Male	0	1,949	4,144	3,907	3,817	3,617	3,592	3,022
Percentage	0.0%	100.0%	100.0%	88.6%	87.3%	84.6%	78.8%	77.2%
Female	0	0	0	504	553	658	966	890
Percentage	0.0%	0.0%	0.0%	11.4%	12.7%	15.4%	21.2%	22.8%
<b>Total Cadets</b>	<b>0</b>	<b>1,949</b>	<b>4,144</b>	<b>4,411</b>	<b>4,370</b>	<b>4,275</b>	<b>4,558</b>	<b>3,912</b>

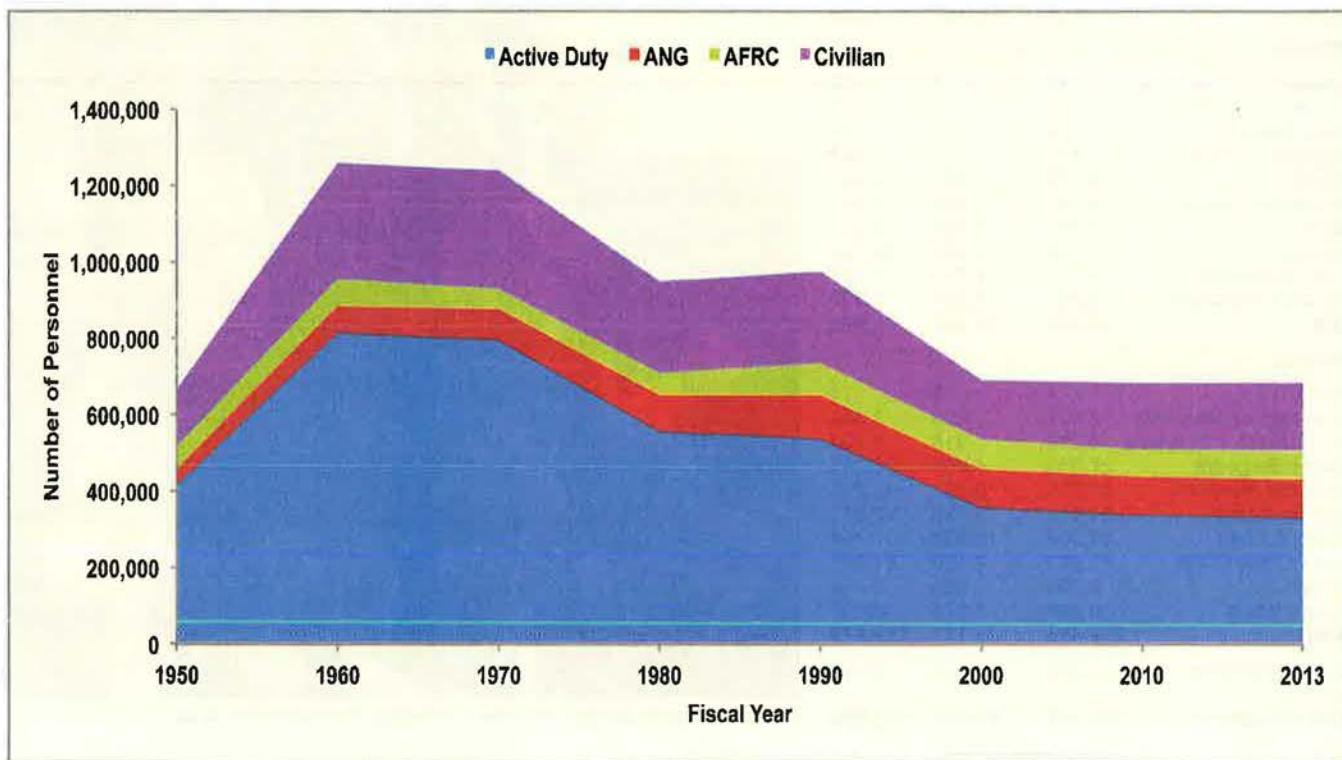
## Active Duty Airmen by Region

Regions	1950	1960	1970	1980	1990	2000	2010	2013
JS and its territories	342,437	633,327	565,098	445,886	418,027	291,260	277,123	278,107
Europe	24,531	104,899	72,937	76,788	69,296	32,901	30,963	30,089
East Asia, Pacific	36,412	50,679	139,666	32,263	33,558	22,030	12,649	12,521
Africa, Mideast, South Asia	1,491	11,160	608	674	376	8,972	891	604
Western Hemisphere	6,266	14,106	5,348	2,211	2,356	345	339	299
Other	140	581	7,692	147	11,620	146	12,231	9,074
<b>Total</b>	<b>411,277</b>	<b>814,752</b>	<b>791,349</b>	<b>557,969</b>	<b>535,233</b>	<b>355,654</b>	<b>334,196</b>	<b>330,694</b>

Note: Airmen deployed for operations in Afghanistan are included in home station regions or under other.

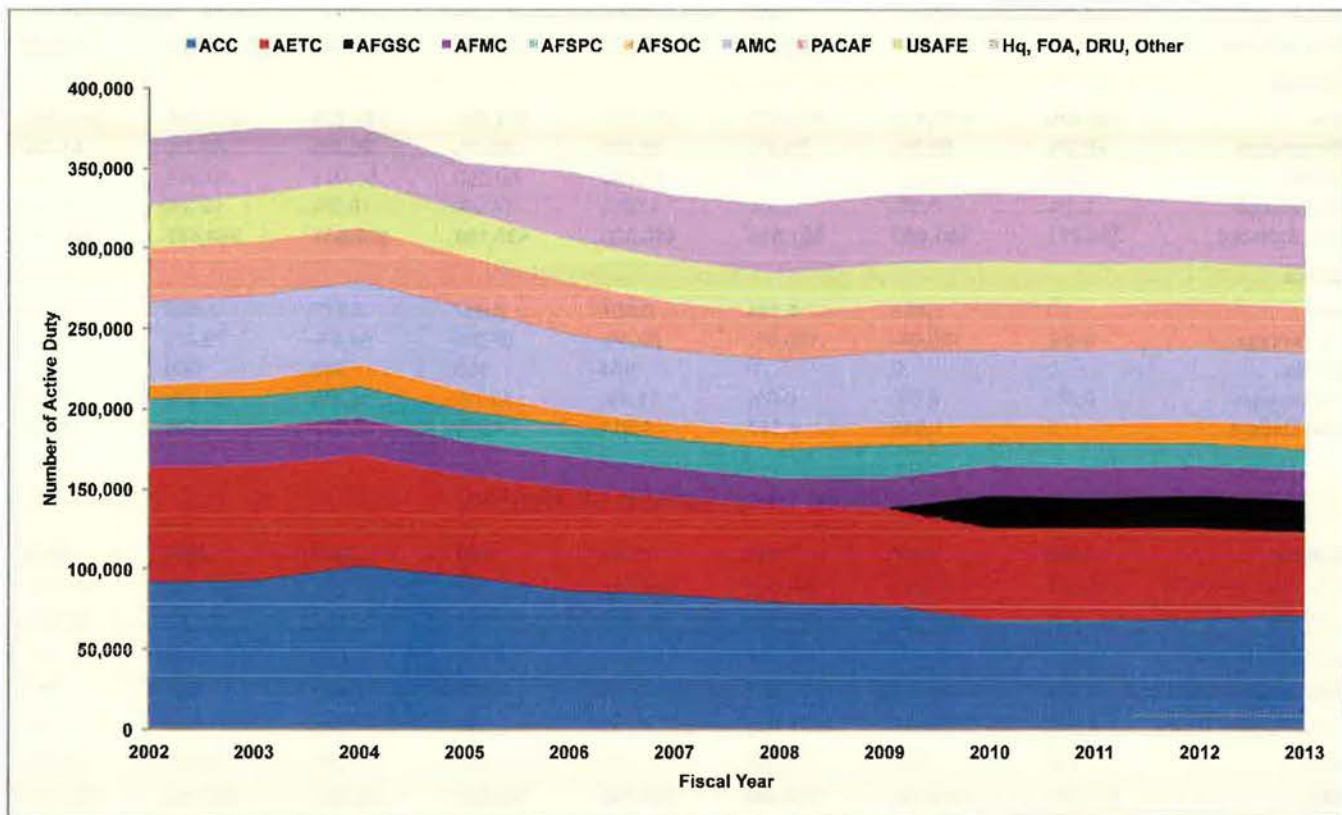


### Total Force Over Time



Note: Data for 1950 and 1960 as of June 30; data for other years as of Sept. 30, 2013. Sources: *Air Force Magazine's "USAF Almanac,"* various years; US Census Bureau, "Statistical Abstract of the United States"; "Department of Defense Selected Manpower Statistics," various years.

### Active Duty Airmen by Active Duty Major Command



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



## Personnel Strength by Commands, FOAs, and DRUs

(As of Sept. 30, 2013)

	Military	Civilian	Total
<b>Active Duty Major Commands</b>			
Air Combat Command	71,138	10,298	81,436
Air Education and Training Command	52,052	14,843	66,895
Air Force Global Strike Command	20,161	2,456	22,617
Air Force Materiel Command	18,592	60,182	78,774
Air Force Space Command	13,249	7,435	20,684
Air Force Special Operations Command	14,587	964	15,551
Air Mobility Command	45,540	8,591	54,131
Pacific Air Forces	29,187	7,765	36,952
US Air Forces Europe-Air Forces Africa	23,937	5,948	29,885
<b>Total Major Commands</b>	<b>288,443</b>	<b>118,482</b>	<b>406,925</b>
<b>Field Operating Agencies (FOAs)</b>			
Air Force Agency for Modeling and Simulation	8	16	24
Air Force Audit Agency	0	642	642
Air Force Civil Engineer Center	121	901	1,022
Air Force Cost Analysis Agency	30	106	136
Air Force Financial Services Center	0	130	130
Air Force Flight Standards Agency	99	49	148
Air Force Historical Research Agency	0	48	48
Air Force Inspection Agency	95	24	119
Air Force Intelligence Analysis Agency	55	69	124
Air Force ISR Agency	13,718	2,793	16,511
Air Force Legal Operations Agency	527	253	780
Air Force Medical Operations Agency	196	149	345
Air Force Medical Support Agency	238	118	356
Air Force Office of Special Investigations	1,567	781	2,348
Air Force Operations Group	43	2	45
Air Force Personnel Center	846	1,757	2,603
Air Force Personnel Operations Agency	13	256	269
Air Force Petroleum Agency	38	63	101
Air Force Public Affairs Agency	255	43	298
Air Force Review Boards Agency	14	74	88
Air Force Safety Center	49	68	117
Air Force Security Forces Center	273	51	324
Air Force Weather Agency	1,156	324	1,480
Air National Guard Readiness Center	80	723	803
<b>Total FOAs</b>	<b>19,421</b>	<b>9,440</b>	<b>28,861</b>
<b>Direct Reporting Units (DRUs)</b>			
Air Force District of Washington	3,763	999	4,762
Air Force Operational Test & Evaluation Center	354	219	573
US Air Force Academy (excluding cadets)	2,046	1,365	3,411
<b>Total DRUs</b>	<b>6,163</b>	<b>2,583</b>	<b>8,746</b>
<b>Other</b>			
Hq. USAF	1,919	1,975	3,894
Other	10,836	43,115	53,951
USAF Cadets	3,912	0	3,912
<b>Total Other</b>	<b>16,667</b>	<b>45,090</b>	<b>61,757</b>
<b>Total Strength</b>	<b>330,694</b>	<b>175,595</b>	<b>506,289</b>



Academy cadets practice for a cyber competition.

## Active Duty Personnel Strength

(As of Sept. 30, 2013)

Year	Number	Year	Number
1907	3	1973	691,182
1908	13	1974	643,970
1909	27	1975	612,751
1910	11	1976	585,416
1911	23	1977	570,695
1912	51	1978	569,712
1913	114	1979	559,455
1914	122	1980	557,969
1915	208	1981	570,302
1916	311	1982	582,845
1917	1,218	1983	592,044
1918	195,023	1984	597,125
1919	25,603	1985	601,515
1920	9,050	1986	608,199
1921	11,649	1987	607,035
1922	9,642	1988	576,446
1923	9,441	1989	570,880
1924	10,547	1990	535,233
1925	9,670	1991	510,432
1926	9,674	1992	470,315
1927	10,078	1993	444,351
1928	10,549	1994	426,327
1929	12,131	1995	400,409
1930	13,531	1996	389,001
1931	14,780	1997	377,385
1932	15,028	1998	367,470
1933	15,099	1999	360,590
1934	15,861	2000	355,654
1935	16,247	2001	353,571
1936	17,233	2002	368,251
1937	19,147	2003	375,062
1938	21,089	2004	376,616
1939	23,455	2005	353,696
1940	51,165	2006	348,953
1941	152,125	2007	333,495
1942	764,415	2008	327,379
1943	2,197,114	2009	333,408
1944	2,372,292	2010	334,196
1945	2,282,259	2011	333,370
1946	455,515	2012	332,918
1947	305,827	2013	330,694
1948	387,730	2014	322,173
1949	419,347		
1950	411,277		
1951	788,381		
1952	983,261		
1953	977,593		
1954	947,918		
1955	959,946		
1956	909,958		
1957	919,835		
1958	871,156		
1959	840,435		
1960	814,752		
1961	821,151		
1962	884,025		
1963	869,431		
1964	856,798		
1965	824,662		
1966	887,353		
1967	897,494		
1968	904,850		
1969	862,353		
1970	791,349		
1971	755,300		
1972	725,838		

2014 number is an estimate.



# Budgets

## 2014 USAF Almanac

### Terms Explained

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

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

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

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

### Air Force Budget—A 10-Year Perspective

(Budget authority in millions of current and constant FY15 dollars; excludes costs of the Global War on Terror.)

Current dollars	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Military personnel	\$28,744	\$29,548	\$30,163	\$30,677	\$31,847	\$33,614	\$34,235	\$35,131	\$34,990	\$35,022
O&M	33,925	38,036	38,584	40,957	44,353	42,267	45,820	47,007	45,152	\$43,012
Procurement	32,244	33,603	31,490	35,136	35,938	35,830	36,277	36,020	36,609	\$31,325
RDT&E	20,408	21,813	24,342	26,262	26,305	27,700	26,982	26,113	26,642	\$23,533
Milcon	1,358	1,964	2,285	2,507	1,404	2,317	1,416	1,468	1,468	\$1,291
Housing	1,669	1,761	1,900	1,001	990	569	591	490	493	\$465
Rev. & mgmt.	1	213	43	60	61	64	67	65	66	\$62
<b>Total</b>	<b>\$118,349</b>	<b>\$126,938</b>	<b>\$128,807</b>	<b>\$136,600</b>	<b>\$140,900</b>	<b>\$142,361</b>	<b>\$145,386</b>	<b>\$146,295</b>	<b>\$145,420</b>	<b>\$134,709</b>

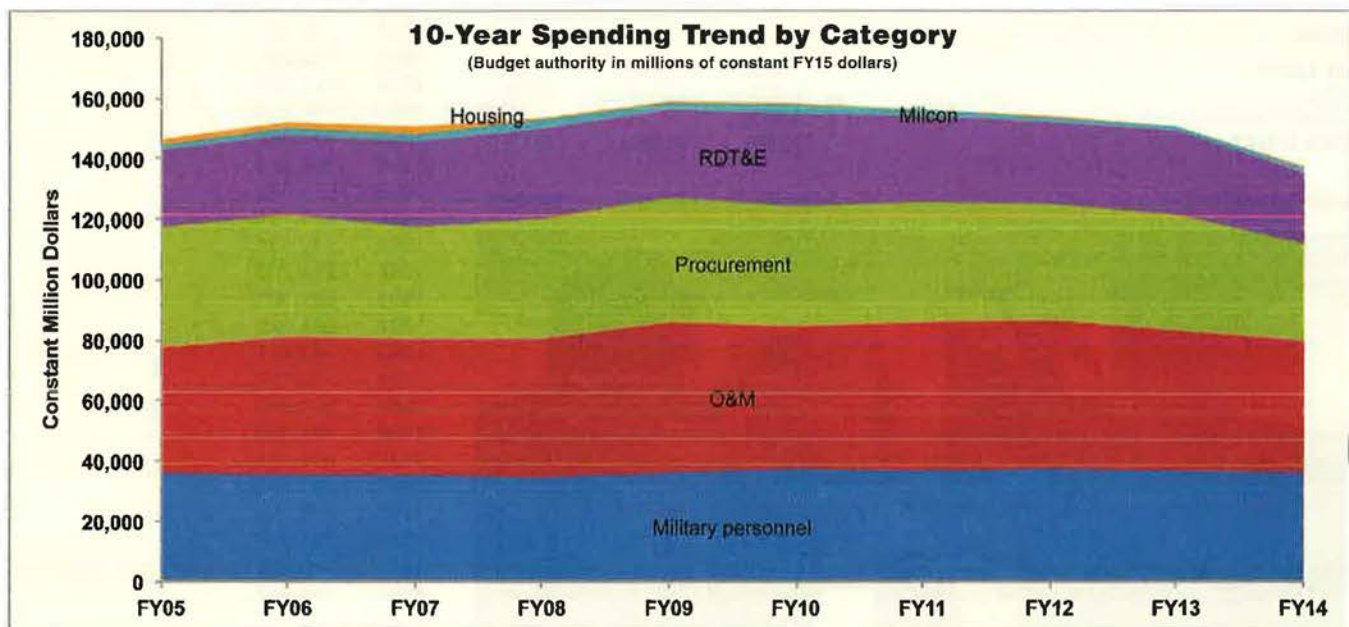
  

Constant dollars	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Military personnel	\$35,640	\$35,501	\$35,253	\$34,541	\$36,003	\$37,402	\$36,912	\$37,099	\$36,404	\$35,757
O&M	\$42,064	\$45,699	\$45,095	\$46,116	\$50,140	\$47,030	\$49,402	\$49,640	\$46,976	\$43,915
Procurement	\$39,980	\$40,373	\$36,804	\$39,562	\$40,627	\$39,867	\$39,113	\$38,037	\$38,088	\$31,983
RDT&E	\$25,304	\$26,208	\$28,450	\$29,570	\$29,737	\$30,821	\$29,091	\$27,575	\$27,718	\$24,027
Milcon	\$1,684	\$2,360	\$2,671	\$2,823	\$1,587	\$2,578	\$1,527	\$1,550	\$1,527	\$1,318
Housing	\$2,069	\$2,116	\$2,221	\$1,127	\$1,119	\$633	\$637	\$517	\$513	\$475
Rev. & mgmt.	\$1	\$256	\$50	\$68	\$69	\$71	\$72	\$69	\$69	\$63
<b>Total</b>	<b>\$146,744</b>	<b>\$152,513</b>	<b>\$150,543</b>	<b>\$153,807</b>	<b>\$159,285</b>	<b>\$158,403</b>	<b>\$156,752</b>	<b>\$154,488</b>	<b>\$151,295</b>	<b>\$137,538</b>

Percentage real growth	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Military personnel	6.0%	-0.4%	-0.7%	-2.0%	4.2%	3.9%	-1.3%	0.5%	-1.9%	-1.8%
O&M	-0.5%	8.6%	-1.3%	2.3%	8.7%	-6.2%	5.0%	0.5%	-5.4%	-6.5%
Procurement	8.1%	1.0%	-8.8%	7.5%	2.7%	-1.9%	-1.9%	-2.8%	0.1%	-16.0%
RDT&E	-2.5%	3.6%	8.6%	3.9%	0.6%	3.6%	-5.6%	-5.2%	0.5%	-13.3%
Milcon	-14.6%	40.1%	13.2%	5.7%	-43.8%	62.4%	-40.8%	1.5%	-1.5%	-13.7%
Housing	12.6%	2.2%	5.0%	-49.2%	-0.7%	-43.4%	0.6%	-18.8%	-0.9%	-7.4%
<b>Total</b>	<b>2.9%</b>	<b>3.9%</b>	<b>-1.3%</b>	<b>2.2%</b>	<b>3.6%</b>	<b>-0.6%</b>	<b>-1.0%</b>	<b>-1.4%</b>	<b>-2.1%</b>	<b>-9.1%</b>

Numbers do not add due to rounding.





## Defense Budget Authority

(\$ billions)

	2013	2014	2015	Planned 2016	2017	2018	2019
<b>No War Costs, Current Dollars</b>							
	\$495.5	\$496.0	\$495.6	\$535.1	\$543.7	\$551.4	\$559.0
<b>No War Costs, Constant FY 2015 Dollars</b>							
	\$515.5	\$506.4	\$495.6	\$523.9	\$521.1	\$516.3	\$510.9
<b>With War Costs, Current Dollars</b>							
	\$577.6	\$581.2	\$575.0	\$565.0	\$574.0	\$581.0	\$589.0
<b>With War Costs, Constant FY 2015 Dollars</b>							
	\$600.9	\$593.4	\$575.0	\$553.1	\$550.1	\$544.0	\$538.3

## Defense Outlays

(\$ billions)

	2013	2014	2015	Planned 2016	2017	2018	2019
<b>Current Dollars</b>							
	\$607.8	\$593.3	\$584.3	\$557.3	\$547.8	\$549.4	\$556.4
<b>Constant FY 2015 Dollars</b>							
	\$632.4	\$605.8	\$584.3	\$545.6	\$525.0	\$514.5	\$508.5

## Service and Agency Shares of Total DOD Budget

(Budget authority in billions of constant FY15 dollars)

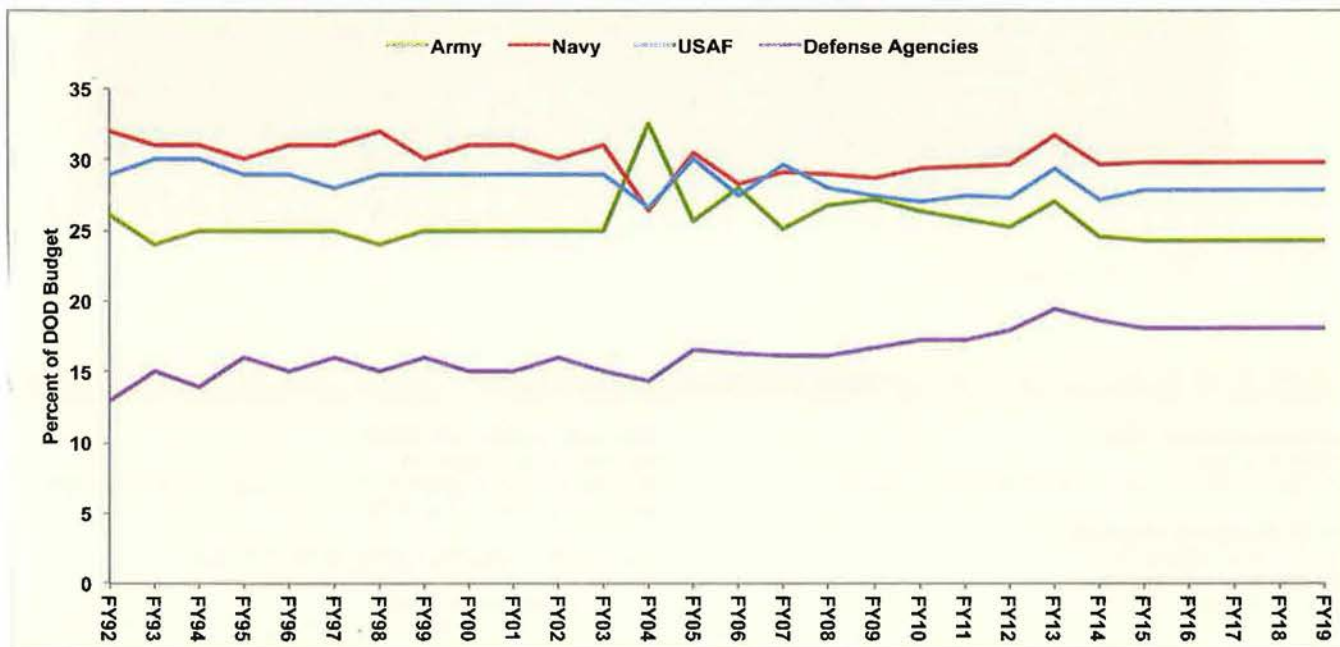
	2013	2014	2015	Planned 2016	2017	2018	2019
<b>Dollars</b>							
Air Force	\$151.3	\$137.5	\$137.8	\$145.7	\$144.9	\$143.6	\$142.0
Army	139.3	124.3	120.3	127.2	126.5	125.3	124.0
Navy/Marine Corps	163.6	150.4	147.7	156.1	155.3	153.9	152.3
Defense agencies	99.8	94.2	89.8	94.9	94.4	93.6	92.6
<b>Total</b>	<b>\$515.5</b>	<b>\$506.4</b>	<b>\$495.6</b>	<b>\$523.9</b>	<b>\$521.1</b>	<b>\$516.3</b>	<b>\$510.9</b>
<b>Percentages</b>							
Air Force	29.3%	27.2%	27.8%	27.8%	27.8%	27.8%	27.8%
Army	27.0%	24.5%	24.3%	24.3%	24.3%	24.3%	24.3%
Navy/Marine Corps	31.7%	29.7%	29.8%	29.8%	29.8%	29.8%	29.8%
Defense agencies	19.4%	18.6%	18.1%	18.1%	18.1%	18.1%	18.1%

Note: USAF shares above include non-Blue funding. Outyears estimates based on FY 2015 shares.

### USAF's Blue-only share

<b>Dollars</b>	\$104.7	\$106.0	\$109.3
<b>Percentages</b>	21.1%	21.4%	22.1%

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

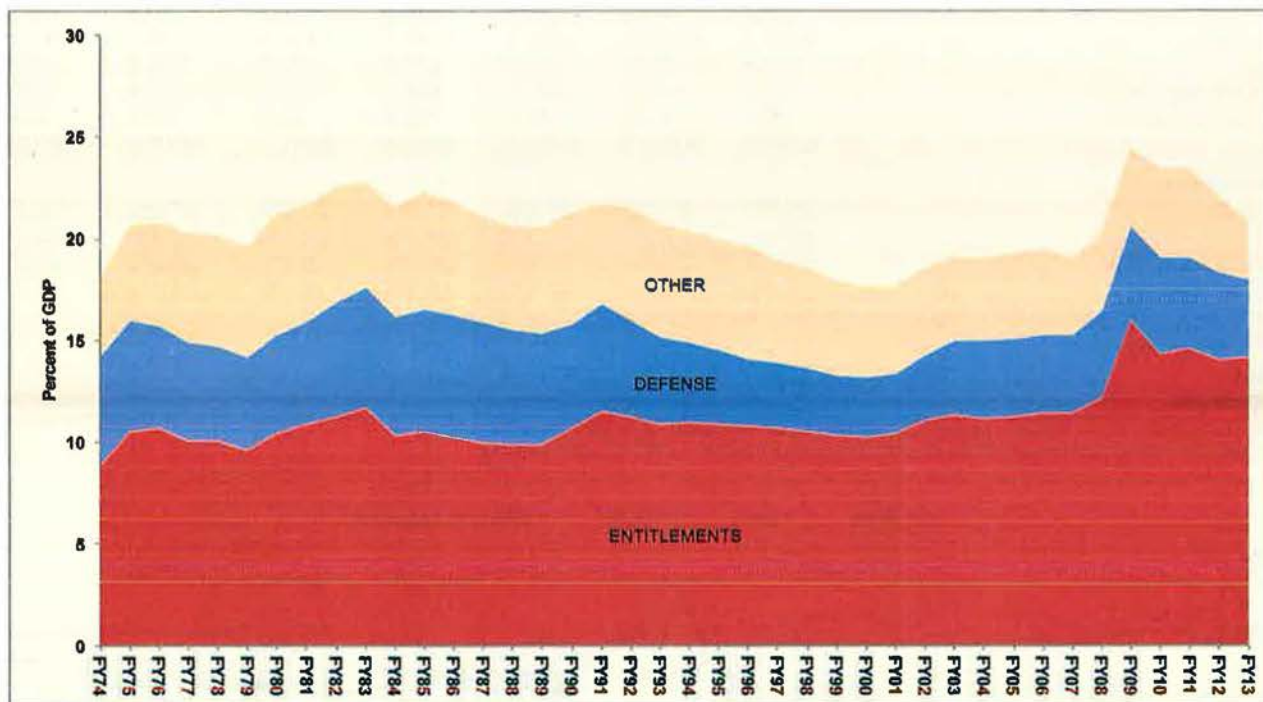




## Federal Budget Outlay Categories

### Percentages of GDP

Year	Total Outlays	Deficit/Surplus	Entitlements	Defense	Year	Total Outlays	Deficit/Surplus	Entitlements	Defense
1974	18.1	0.5	8.8	5.4	1994	20.3	3.6	10.9	3.9
1975	20.6	3.4	10.5	5.4	1995	20.0	3	10.8	3.6
1976	20.8	3.9	10.6	5.0	1996	19.6	2.2	10.7	3.3
1977	20.2	2.5	10.0	4.8	1997	18.9	1.2	10.6	3.2
1978	20.1	2.4	10.0	4.6	1998	18.5	0.3	10.5	3.0
1979	19.6	1.5	9.6	4.5	1999	17.9	0.0	10.3	2.9
1980	21.1	2.6	10.4	4.8	2000	17.6	0.9	10.2	2.9
1981	21.6	2.4	10.8	5.0	2001	17.6	0.3	10.4	2.9
1982	22.5	3.6	11.2	5.6	2002	18.5	2.9	11.0	3.2
1983	22.8	5.9	11.6	5.9	2003	19.1	4.8	11.3	3.6
1984	21.5	4.7	10.3	5.8	2004	19.0	4.7	11.1	3.8
1985	22.2	5.2	10.5	5.9	2005	19.2	3.8	11.2	3.8
1986	21.8	5.2	10.2	6.0	2006	19.4	3.2	11.4	3.8
1987	21.0	3.5	9.9	5.9	2007	19.0	2.4	11.4	3.8
1988	20.6	3.7	9.8	5.6	2008	20.2	4.3	12.1	4.2
1989	20.5	3.7	9.8	5.5	2009	24.4	10.8	15.9	4.6
1990	21.2	4.7	10.6	5.1	2010	23.4	9.3	14.3	4.7
1991	21.7	5.3	11.5	5.2	2011	23.4	8.9	14.5	4.5
1992	21.5	5.3	11.2	4.7	2012	22.0	7.1	14.0	4.2
1993	20.7	4.4	10.8	4.3	2013	20.8	4.3	14.1	3.8



Source: "The Budget and Economic Outlook: Fiscal Years 2014-2024," Congressional Budget Office, February 2014.

## Where To Find Budget Data

### Congressional Budget Office

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

- Topics>>Budget>>Budget and Economic Outlook>>Reports

### Defense Department Comptroller

<http://comptroller.defense.gov>

- Budget materials by fiscal year
- Links to budget pages for each service

### Office of Management and Budget

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

- The Budget (current fiscal year, including appendices and historical tables)
- Links to past budgets (via GPO Access)

### Government Printing Office (GPO) Access to Budget

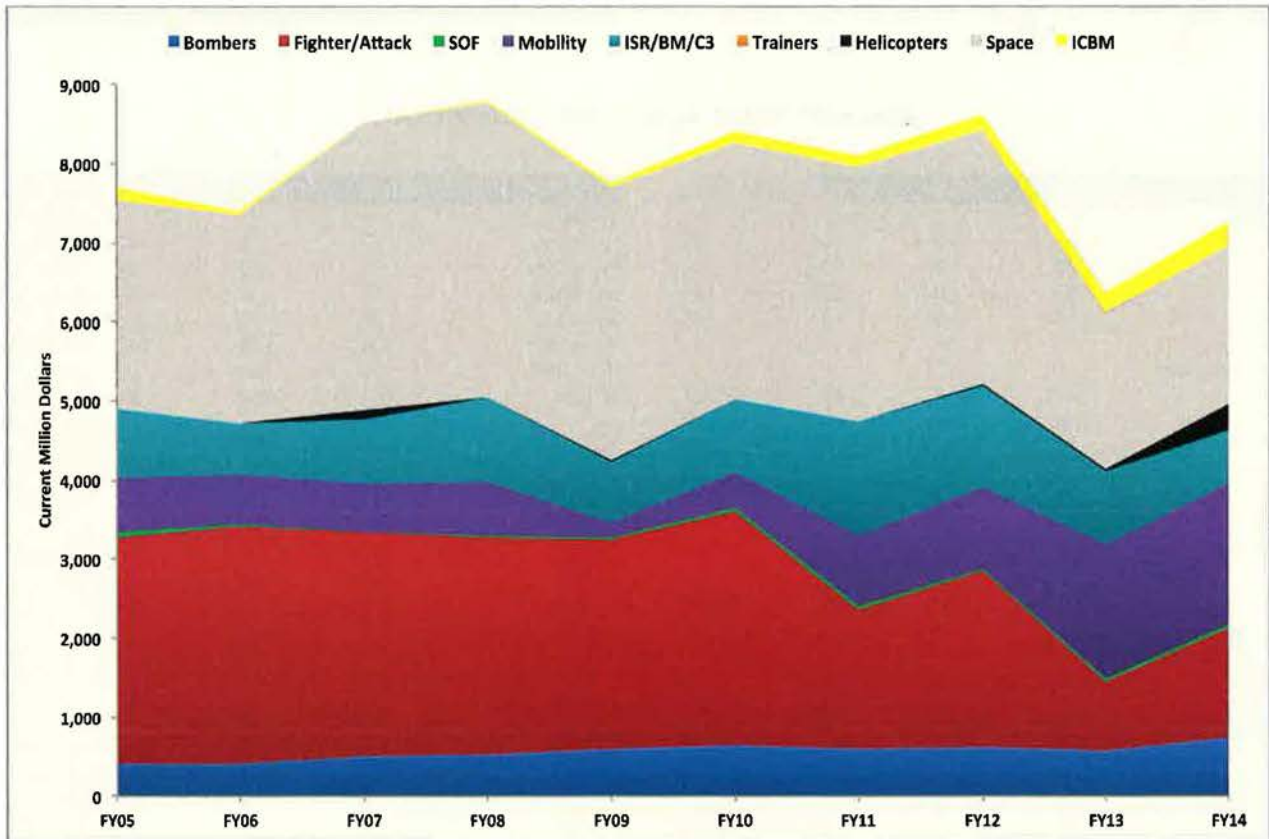
<http://www.gpo.gov/fdsys/browse/collectionGPO.action?collectionCode=BUDGET>

- Current and historical budget documents through Clinton Administration



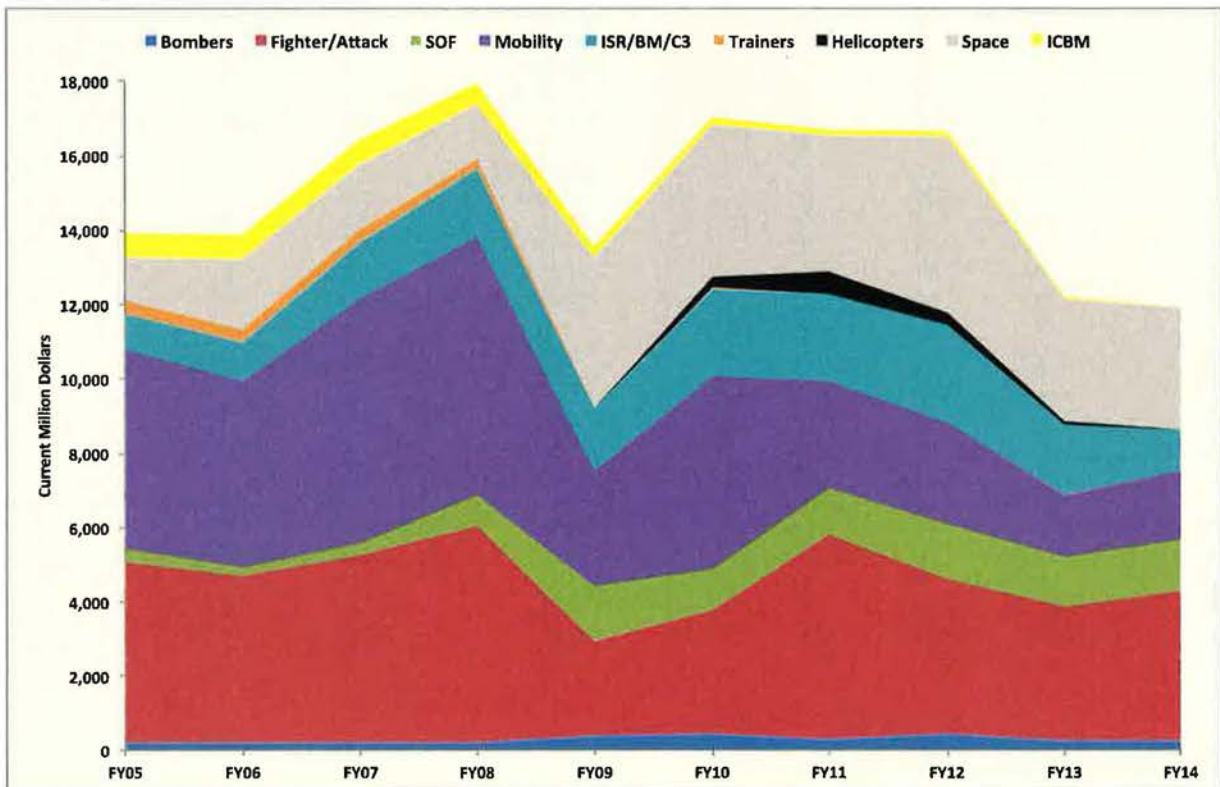
### 10 Years of RDT&E Funding for USAF Major Programs by Category

(Based on current million dollars)



### 10 Years of Procurement Funding for USAF Major Programs by Category

(Based on current million dollars)





### Aircraft Total Active Inventory (TAI)

(As of Sept. 30, 2013)

	Active	ANG	AFRC	Total Force		Active	ANG	AFRC	Total Force
<b>Bomber</b>					<b>Tanker</b>				
B-1	63	0	0	63	HC-130J	7	0	0	7
B-2	20	0	0	20	HC-130N	2	6	1	9
B-52	58	0	18	76	HC-130P	11	3	4	18
<b>Total</b>	<b>141</b>	<b>0</b>	<b>18</b>	<b>159</b>	KC-10	59	0	0	59
<b>Fighter/Attack</b>					<b>Transport</b>				
A-10C	187	106	41	334	KC-135R	134	154	66	354
F-15C	106	108	0	214	KC-135T	30	24	0	54
F-15D	13	22	0	35	<b>Total</b>	<b>243</b>	<b>187</b>	<b>71</b>	<b>501</b>
F-15E	218	0	0	218	<b>Trainer</b>				
F-16C	467	329	50	846	C-5A	0	16	15	31
F-16D	112	45	4	161	C-5B	13	0	16	29
F-22A	162	20	0	182	C-5C	2	0	0	2
F-35	22	0	0	22	C-5M	10	0	0	10
<b>Total</b>	<b>1,287</b>	<b>630</b>	<b>95</b>	<b>2,012</b>	C-12C	13	0	0	13
<b>Special Ops Forces</b>					<b>Helicopter</b>				
AC-130H	8	0	0	8	C-12D	3	0	0	3
AC-130U	17	0	0	17	C-12F	2	0	0	2
AC-130W	12	0	0	12	C-12J	4	0	0	4
CV-22	32	0	0	32	C-17	180	20	18	218
MC-130E	1	0	4	5	C-20B	5	0	0	5
MC-130H	20	0	0	20	C-20C	3	0	0	3
MC-130J	13	0	0	13	C-20H	2	0	0	2
MC-130P	19	4	0	23	C-21	29	18	0	47
<b>Total</b>	<b>122</b>	<b>4</b>	<b>4</b>	<b>130</b>	C-27J	0	13	0	13
<b>ISR/BM/C3</b>					<b>Trainer</b>				
E-3B	22	0	0	22	C-32A	4	0	0	4
E-3C	6	0	0	6	C-37A	8	0	0	8
E-3G	3	0	0	3	C-37B	3	0	0	3
E-4	4	0	0	4	C-38A	0	2	0	2
(T)E-8A	0	1	0	1	C-40B	4	0	0	4
E-8C	0	16	0	16	C-40C	0	3	4	7
EC-130H	14	0	0	14	C-130E	3	3	0	6
EC-130J	0	7	0	7	C-130H	57	122	84	263
MC-12W	41	0	0	41	C-130J	66	16	10	92
MQ-1	120	36	0	156	LC-130H	0	10	0	10
MQ-9	97	7	0	104	VC-25 "Air Force One"	2	0	0	2
OC-135	2	0	0	2	<b>Total</b>	<b>413</b>	<b>223</b>	<b>147</b>	<b>783</b>
RC-26	0	11	0	11	<b>Helicopter</b>				
RC-135S	3	0	0	3	HH-60G	67	17	15	99
RC-135U	2	0	0	2	TH-1H	25	0	0	25
RC-135V	8	0	0	8	UH-1H	3	0	0	3
RC-135W	9	0	0	9	UH-1N	43	0	0	43
RQ-4B	25	0	0	25	<b>Total</b>	<b>138</b>	<b>17</b>	<b>15</b>	<b>170</b>
TC-130H	1	0	0	1	<b>Trainer</b>				
TC-135W	3	0	0	3	T-1	178	0	0	178
TU-2	5	0	0	5	T-6	445	0	0	445
U-2	27	0	0	27	T-38A	54	0	0	54
WC-130H	0	8	1	9	(A)T-38B	6	0	0	6
WC-130J	0	0	10	10	T-38C	448	0	0	448
WC-135C	1	0	0	1	T-41	4	0	0	4
WC-135W	1	0	0	1	T-51	3	0	0	3
<b>Total</b>	<b>394</b>	<b>86</b>	<b>11</b>	<b>491</b>	T-53	24	0	0	24
					<b>Gliders</b>				
					UV-18				
					3				
					Gliders				
					24				
					<b>Total</b>				
					1,189				
					0				
					0				
					1,189				

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



## Total Number of Aircraft in Service Over Time

(As of Sept. 30, 2013)

Type of Aircraft—Active	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Bomber	172	173	172	173	153	154	150	144	144	141
Fighter/Attack	1,627	1,622	1,619	1,552	1,496	1,468	1,256	1,287	1,289	1,287
Special Ops Forces	99	98	103	100	94	89	98	105	117	122
ISR/BM/C3	132	134	137	266	292	320	362	381	413	394
Tanker	301	285	278	277	262	260	263	247	246	243
Transport	516	525	529	454	449	452	458	429	425	413
Helicopter	160	169	160	160	170	159	160	151	170	138
Trainer	1,277	1,267	1,284	1,111	1,074	1,114	1,000	1,190	1,213	1,189
<b>Total Active Duty</b>	<b>4,284</b>	<b>4,273</b>	<b>4,282</b>	<b>4,093</b>	<b>3,990</b>	<b>4,016</b>	<b>3,747</b>	<b>3,934</b>	<b>4,017</b>	<b>3,927</b>

### Type of Aircraft—ANG

Bomber	0	0	0	0	0	0	0	0	0	0
Fighter/Attack	771	764	765	746	687	664	614	639	635	630
Special Ops Forces	4	4	4	4	4	4	4	4	4	4
ISR/BM/C3	24	26	29	28	45	45	80	80	87	86
Tanker	243	252	260	235	215	182	179	189	189	187
Transport	266	249	245	258	244	241	240	242	232	223
Helicopter	18	18	18	18	18	17	17	17	17	17
<b>Total ANG</b>	<b>1,326</b>	<b>1,313</b>	<b>1,321</b>	<b>1,289</b>	<b>1,213</b>	<b>1,153</b>	<b>1,134</b>	<b>1,171</b>	<b>1,164</b>	<b>1,147</b>

### Type of Aircraft—AFRC

Bomber	9	9	9	9	9	9	9	18	18	18
Fighter/Attack	120	120	120	104	103	108	97	100	101	95
Special Ops Forces	14	14	14	14	14	14	10	10	5	4
ISR/BM/C3	20	20	17	17	11	11	14	12	11	11
Tanker	81	89	89	85	69	69	69	72	72	71
Transport	149	133	146	152	149	149	149	152	148	147
Helicopter	15	15	15	15	15	15	15	15	15	15
<b>Total AFRC</b>	<b>408</b>	<b>400</b>	<b>410</b>	<b>396</b>	<b>370</b>	<b>375</b>	<b>363</b>	<b>379</b>	<b>370</b>	<b>361</b>

**Total Force** **6,018** **5,986** **6,013** **5,778** **5,573** **5,544** **5,244** **5,484** **5,551** **5,435**

## ICBMs and Spacecraft in Service Over Time

(As of Sept. 30, 2013)

Type of System	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Minuteman III	500	500	450	450	450	450	450	450	450	450
Peacekeeper	6	0	0	0	0	0	0	0	0	0
<b>Total ICBMs</b>	<b>506</b>	<b>500</b>	<b>450</b>	<b>450</b>	<b>450</b>	<b>450</b>	<b>450</b>	<b>450</b>	<b>450</b>	<b>450</b>
AEHF							1	1	2	2
ATRR									1	1
DMSP	4	4	4	6	6	6	6	6	4	4
DSCS	11	9	9	9	9	9	8	8	8	8
DSP (classified)										
GPS	30	29	30	30	30	30	36	34	30	31
Milstar	5	5	5	5	5	5	5	5	5	5
SBIRS						2	2	2	2	2
SBSS							1	1	1	1
WGS						2	3	3	3	4
<b>Total Satellites</b>	<b>50</b>	<b>47</b>	<b>48</b>	<b>50</b>	<b>50</b>	<b>54</b>	<b>62</b>	<b>60</b>	<b>56</b>	<b>58</b>

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

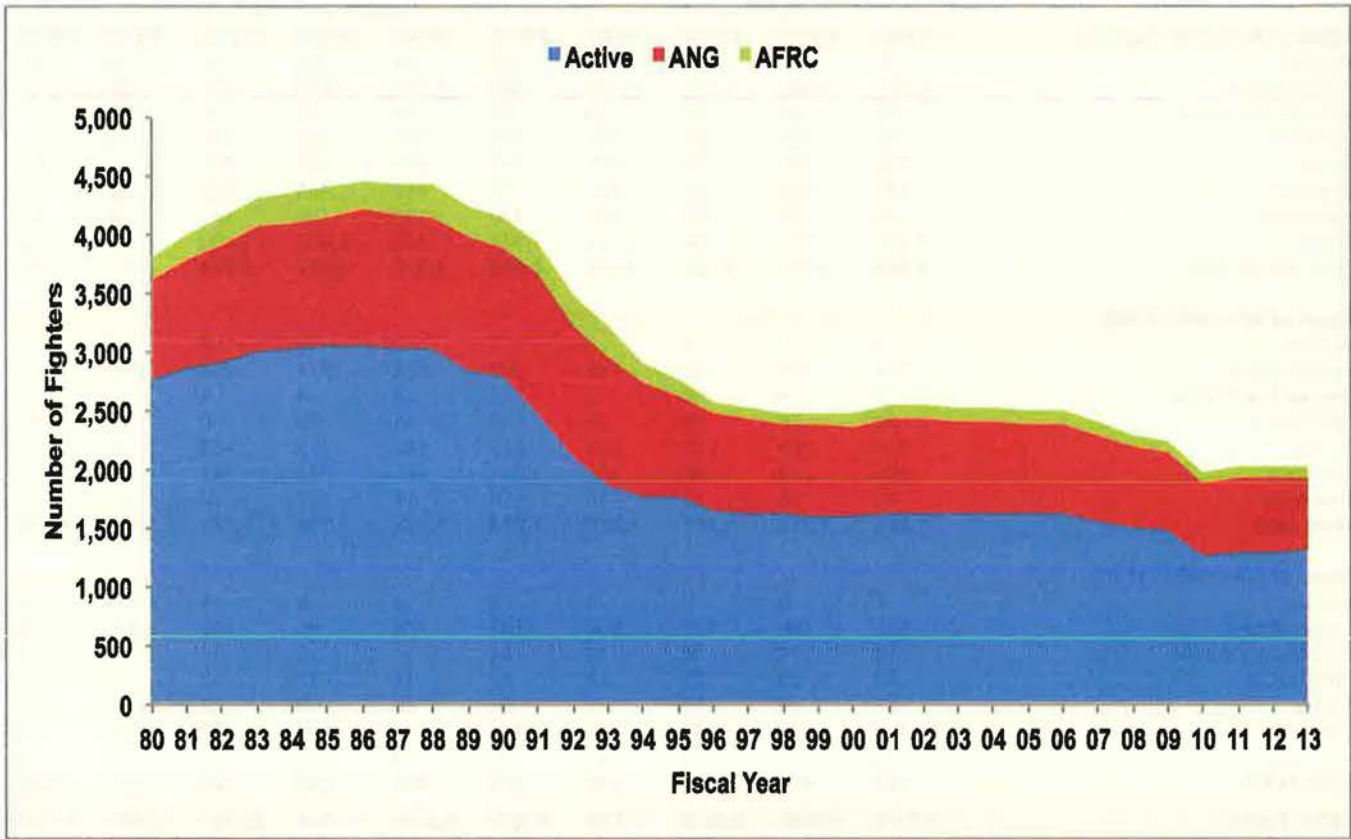
## Tactical Aircraft Flying Hours per Crew per Month

(As of Sept. 30, 2013)

	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
<b>Active Duty</b>	16.9	15.3	16.0	15.9	14.4	17.0	19.4	17.7	13.5	14.8
<b>ANG</b>	10.6	10.6	10.6	10.0	9.0	9.0	8.5	7.8	7.1	9.6
<b>AFRC</b>	10.9	11.6	17.5	12.5	14.4	14.1	14.9	16.5	15.8	12.3

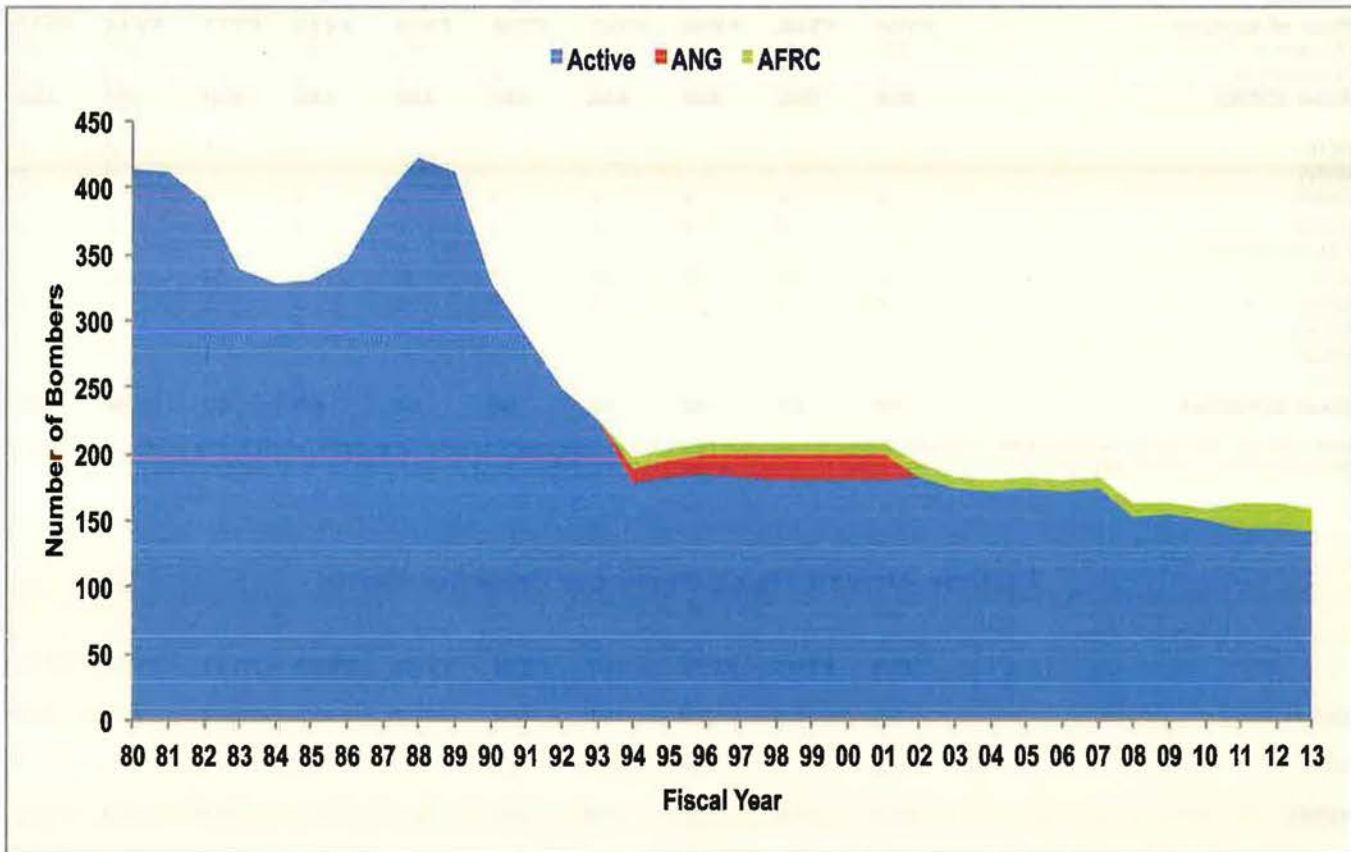


### Fighters Over Time



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

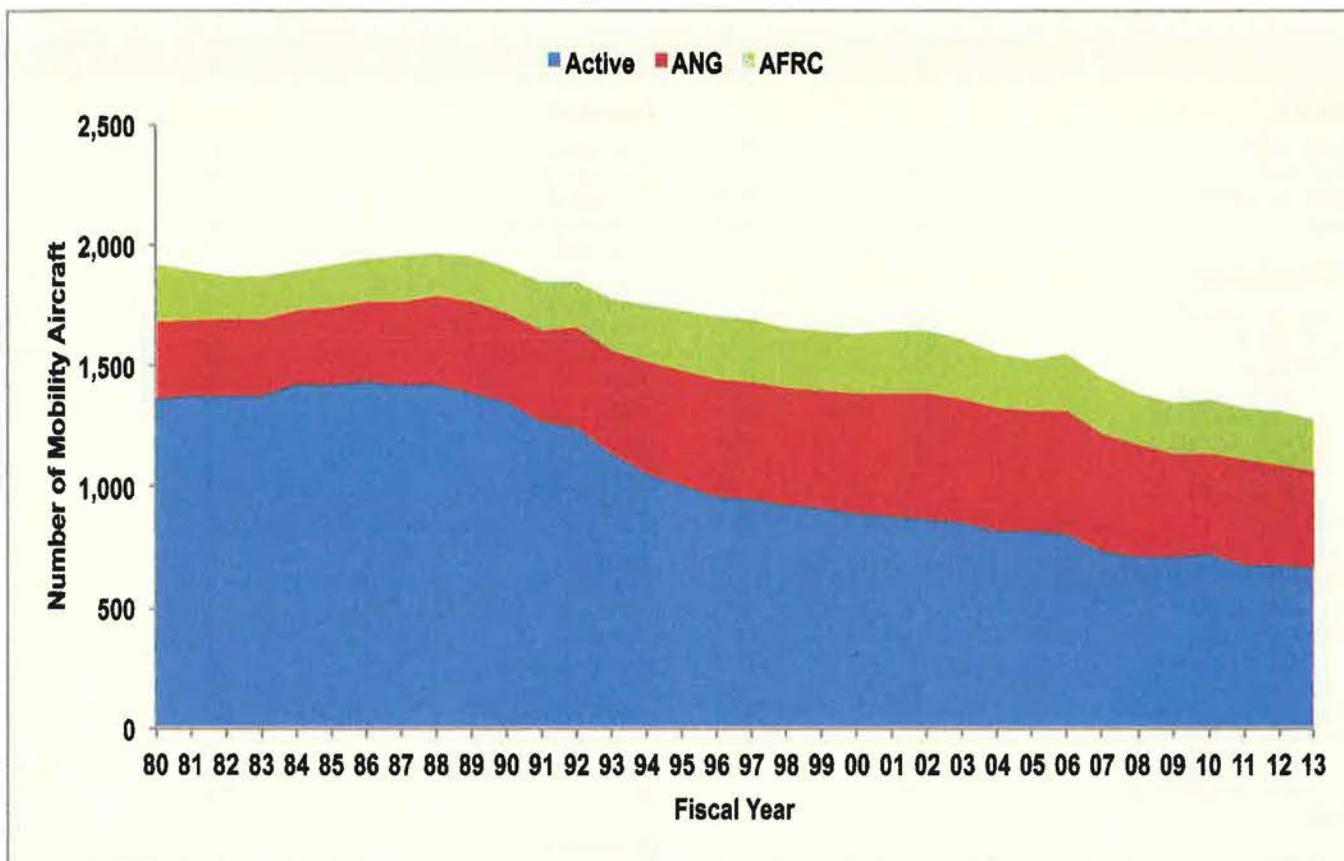
### Bombers Over Time



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

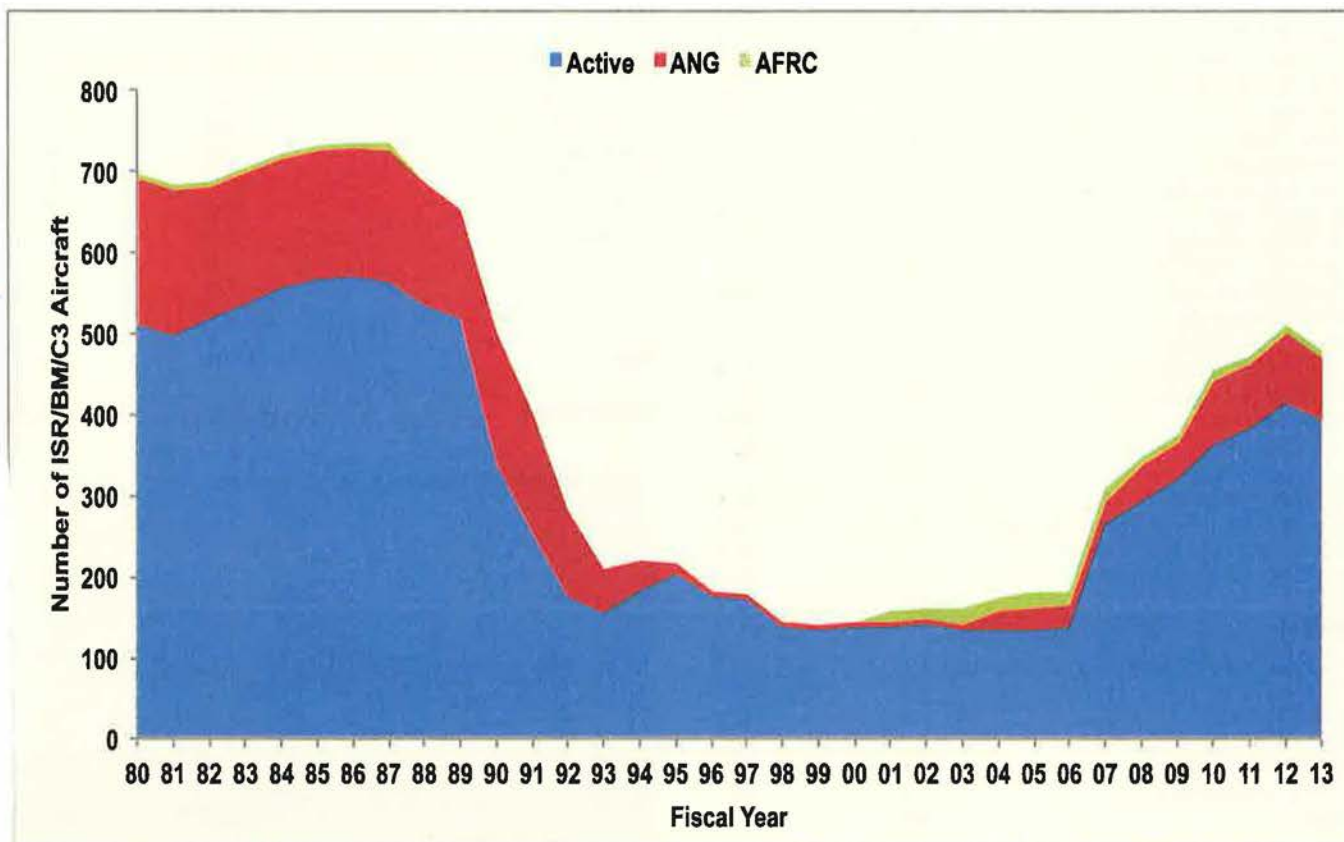


### Mobility Aircraft Over Time



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

### 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.

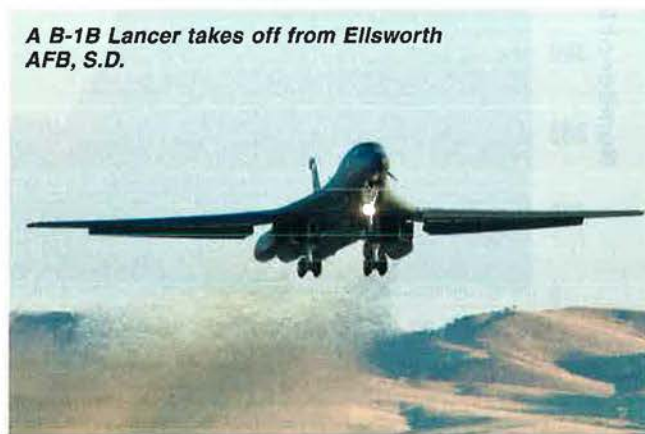


## Total Force Aircraft Age

(As of Sept. 30, 2013)

	Total Force TAI	Average Age		Total Force TAI	Average Age
<b>Bomber</b>			<b>Transport</b>		
B-1B Lancer	63	26.1	C-5A Galaxy	31	42.1
B-2A Spirit	20	19.2	C-5B Galaxy	29	25.6
B-52H Stratofortress	76	51.8	C-5C Galaxy	2	43.3
<b>Total</b>	<b>159</b>	<b>37.5</b>	C-5M Super Galaxy	10	27.6
<b>Fighter/Attack</b>			C-12C Huron	13	37.2
A-10C Thunderbolt II	334	32.3	C-12D Huron	3	29.4
F-15C Eagle	214	29.4	C-12F Huron	2	29.3
F-15D Eagle	35	30.0	C-12J Huron	4	25.7
F-15E Strike Eagle	218	21.5	C-17 Globemaster III	218	10.0
F-16C Fighting Falcon	846	22.8	C-20B	5	26.4
F-16D Fighting Falcon	161	23.4	C-20C	3	26.4
F-22A Raptor	182	6.0	C-20H	2	18.5
F-35A Lightning II	22	0.9	C-21	47	28.5
<b>Total</b>	<b>2,012</b>	<b>23.2</b>	C-27J Spartan	13	1.7
<b>Special Ops Forces</b>			C-32A	4	15.0
AC-130H Spectre	8	44.0	C-37A	8	12.7
AC-130U Spooky	17	22.7	C-37B	3	3.6
AC-130W Stinger II	12	24.3	C-38A	2	15.5
CV-22 Osprey	32	3.2	C-40B	4	9.7
MC-130E Combat Talon	5	48.5	C-40C	7	7.4
MC-130H Combat Talon II	20	25.2	C-130E Hercules	6	50.0
MC-130J Commando II	13	1.2	C-130H Hercules	263	26.0
MC-130P Combat Shadow	23	45.7	C-130J Hercules	92	5.9
<b>Total</b>	<b>130</b>	<b>26.9</b>	LC-130H Hercules	10	28.1
<b>ISR/BM/C3</b>			VC-25 "Air Force One"	2	23.0
E-3B Sentry (AWACS)	22	35.2	<b>Total</b>	<b>783</b>	<b>22.7</b>
E-3C Sentry (AWACS)	6	30.7	<b>Helicopter</b>		
E-3G Sentry (AWACS)	3	31.3	HH-60G Pave Hawk	99	23.3
E-4 NAOC	4	39.3	TH-1H Iroquois	25	35.0
E-8C JSTARS	16	12.8	UH-1H Iroquois	3	40.2
EC-130H Compass Call	14	40.3	UH-1N Iroquois	43	40.7
EC-130J Commando Solo	7	13.2	<b>Total</b>	<b>170</b>	<b>34.8</b>
MC-12W	41	5.2	<b>Trainer</b>		
MQ-1 Predator	156	6.5	T-1 Jayhawk	178	18.9
MQ-9 Reaper	104	3.2	T-6 Texan II	445	8.0
OC-135 Open Skies	2	51.4	T-38A Talon	54	46.9
RC-26B Condor	11	19.4	(A)T-38B Talon	6	50.1
RC-135S Cobra Ball	3	51.5	T-38C Talon	448	46.2
RC-135U Combat Sent	2	48.7	T-41 Mescalero	4	44.1
RC-135V Rivet Joint	8	48.9	T-51	3	8.2
RC-135W Rivet Joint	9	51.2	T-53	24	1.6
RQ-4B Global Hawk	25	3.0	UV-18 Twin Otter	3	29.5
TC-130H (C2 trainer)	1	47.9	Gliders	24	7.1
TC-135W (C2 trainer)	3	51.3	<b>Total</b>	<b>1,189</b>	<b>26.1</b>
TE-8A JSTARS	1	22.7	<b>Grand Total</b>		
TU-2 (trainer)	5	29.4	<b>5,435</b>	<b>25.2</b>	
U-2 Dragon Lady	27	30.7	<b>Tanker</b>		
WC-130H Hercules	9	47.8	HC-130J Combat King II	7	1.0
WC-130J Hercules (Hurricane Hunter)	10	12.4	HC-130N King	9	27.7
WC-135C Constant Phoenix	1	49.3	HC-130P King	18	47.9
WC-135W Constant Phoenix	1	51.4	KC-10 Extender	59	28.7
<b>Total</b>	<b>491</b>	<b>32.1</b>	KC-135R Stratotanker	354	51.9
<b>Tanker</b>			KC-135T Stratotanker	54	53.6
HC-130J Combat King II	7	1.0	<b>Total</b>	<b>501</b>	<b>35.1</b>
HC-130N King	9	27.7			
HC-130P King	18	47.9			
KC-10 Extender	59	28.7			
KC-135R Stratotanker	354	51.9			
KC-135T Stratotanker	54	53.6			
<b>Total</b>	<b>501</b>	<b>35.1</b>			

*A B-1B Lancer takes off from Ellsworth AFB, S.D.*







*These F-15Es bear the MO tailcode for the 366th Fighter Wing, Mountain Home AFB, Idaho.*

USAF photo by Lorenz Crespo

## USAF Aircraft Tail Markings

Code	Unit and Location	Code	Unit and Location
AC	177th FW (ANG), Atlantic City Arpt., N.J.	LF	56th FW (ACC), Luke AFB, Ariz.
AF	USAF Academy, Colo.	LI	106th RQW (ANG), F. S. Gabreski Arpt., N.Y.
AK	3rd Wing (PACAF), JB Elmendorf-Richardson, Alaska 354th FW (PACAF), Eielson AFB, Alaska 176th Wing (ANG), JB Elmendorf-Richardson, Alaska	LN	48th FW (USAFE-AFAFRICA), RAF Lakenheath, UK
AL	187th FW (ANG), Montgomery Regional Arpt., Ala.	MA	104th FW (ANG), Barnes Arpt., Mass.
AP	12th FTW (AETC), NAS Pensacola, Fla.	MD	175th Wing (ANG), Martin State Arpt., Md.
AV	31st FW (USAFE-AFAFRICA), Aviano AB, Italy	MI	127th Wing (ANG), Selfridge ANGB, Mich.
AZ	162nd FW (ANG), Tucson Arpt., Ariz.	MM	341st MW (AFGSC), Malmstrom AFB, Mont.
BB	9th RW (ACC), Beale AFB, Calif. Det. 2, 53rd Wing (ACC), Beale AFB, Calif.	MN	133rd AW (ANG), Minn.-St. Paul Arpt./ARS 148th FW (ANG), Duluth Arpt., Minn.
BD	917th FG (AFRC), Barksdale AFB, La.	MO	366th FW (ACC), Mountain Home AFB, Idaho
CA	129th RQW (ANG), Moffett Field, Calif. 144th FW (ANG), Fresno Yosemite Arpt., Calif. 163rd RW (ANG), March ARB, Calif.	MT	5th BW (AFGSC), Minot AFB, N.D. 91st MW (AFGSC), Minot AFB, N.D.
CB	14th FTW (AETC), Columbus AFB, Miss.	NY	174th ATKW (ANG), Hancock Fld., N.Y.
CH	432nd Wing (ACC), Creech AFB, Nev.	OF	55th Wing (ACC), Offutt AFB, Neb.
CO	140th Wing (ANG), Buckley AFB, Colo.	OH	179th AW (ANG), Mansfield Lahm Arpt., Ohio 180th FW (ANG), Toledo Express Arpt., Ohio
CT	103rd AW (ANG), Bradley Arpt., Conn.	OK	137th ARW (ANG), Will Rogers World Arpt., Okla. 138th FW (ANG), Tulsa Arpt., Okla. 552nd ACW (ACC), Tinker AFB, Okla.
D	100th ARW (USAFE-AFAFRICA), RAF Mildenhall, UK	OS	51st FW (PACAF), Osan AB, South Korea
DC	113th Wing (ANG), JB Andrews, Md.	OT	31st TES (ACC), Edwards AFB, Calif. 49th TES (ACC), Barksdale AFB, La. 53rd Wing (ACC), Eglin AFB, Fla. 88th TES (ACC), Nellis AFB, Nev. 337th TES (ACC), Dyess AFB, Tex. 422nd TES (ACC), Nellis AFB, Nev. 556th TES (ACC), Creech AFB, Nev. Det. 4, 53rd Wing (ACC), Creech AFB, Nev.
DM	355th FW (ACC), Davis-Monthan AFB, Ariz.	RA	12th FTW (AETC), JBSA-Randolph AFB, Tex.
DR	943rd RQG (AFRC), Davis-Monthan AFB, Ariz.	RS	86th AW (USAFE-AFAFRICA), Ramstein AB, Germany
DY	7th BW (ACC), Dyess AFB, Tex.	SA	149th FW (ANG), JBSA-Lackland AFB, Tex.
ED	412th TW (AFMC), Edwards AFB, Calif.	SC	169th FW (ANG), McEntire JNGB, S.C.
EG	33rd FW (AETC), Eglin AFB, Fla.	SD	114th FW (ANG), Joe Foss Fld., S.D.
EL	28th BW (ACC), Ellsworth AFB, S.D.	SJ	4th FW (ACC), Seymour Johnson AFB, N.C.
EN	80th FTW (AETC), Sheppard AFB, Tex.	SP	52nd FW (USAFE-AFAFRICA), Spangdahlem AB, Germany
ET	96th TW (AFMC), Eglin AFB, Fla.	SW	20th FW (ACC), Shaw AFB, S.C.
FC	336th TRG (AETC), Fairchild AFB, Wash.	TD	53rd WEG (ACC), Tyndall AFB, Fla.
FE	90th MW (AFGSC), F. E. Warren AFB, Wyo.	TX	147th RW (ANG), Ellington Fld., Tex. 301st FW (AFRC), NAS JRB Fort Worth, Tex.
FF	1st FW (ACC), JB Langley-Eustis, Va. 192nd FW (ANG), JB Langley-Eustis, Va.	TY	325th FW (AETC), Tyndall AFB, Fla.
FL	920th RQW (AFRC), Patrick AFB, Fla.	VN	71st FTW (AETC), Vance AFB, Okla.
FM	482nd FW (AFRC), Homestead ARB, Fla.	WA	57th Wing (ACC), Nellis AFB, Nev.
FS	188th FW (ANG), Fort Smith Arpt., Ark.	WI	115th FW (ANG), Truax Fld., Wis.
FT	23rd Wing (ACC), Moody AFB, Ga.	WM	72nd TES (ACC), Whiteman AFB, Mo. 509th BW (AFGSC), Whiteman AFB, Mo.
GA	116th ACW (ANG), Robins AFB, Ga. 165th AW (ANG), Savannah Hilton Head Arpt., Ga.	WP	8th FW (PACAF), Kunsan AB, South Korea
ID	Det. 1, 53rd Wing (ACC), Holloman AFB, N.M.	WV	130th AW (ANG), Yeager Arpt., W.Va.
IH	15th Wing (PACAF), JB Pearl Harbor-Hickam, Hawaii 154th Wing (ANG), JB Pearl Harbor-Hickam, Hawaii	WW	35th FW (PACAF), Misawa AB, Japan
L	388th FW (ACC), Hill AFB, Utah 419th FW (AFRC), Hill AFB, Utah	XL	47th FTW (AETC), Laughlin AFB, Tex.
O	49th Wing (ACC), Holloman AFB, N.M.	YJ	374th AW (PACAF), Yokota AB, Japan
I	132nd FW (ANG), Des Moines Arpt., Iowa	ZZ	18th Wing (PACAF), Kadena AB, Japan
J	124th FW (ANG), Boise Air Terminal, Idaho		
I	122nd FW (ANG), Fort Wayne, Ind.		
Z	159th FW (ANG), NAS JRB New Orleans		
C	442nd FW (AFRC), Whiteman AFB, Mo.		
A	2nd BW (AFGSC), Barksdale AFB, La.		



# 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



Master Sergeant  
(E-7)



Airman  
(E-2)



Senior Master Sergeant  
(E-8)



Airman First Class  
(E-3)



Chief Master Sergeant  
(E-9)



Senior Airman  
(E-4)



Staff Sergeant  
(E-5)



Chief Master Sergeant of  
the Air Force



Technical Sergeant  
(E-6)



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



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



# Awards and Decorations

Shown in order of precedence.



Medal of Honor (AF)



Air Force Cross



Defense Distinguished Service Medal



Distinguished Service Medal (AF)



Silver Star



Defense Superior Service Medal



Legion of Merit



Distinguished Flying Cross



Airman's Medal



Bronze Star Medal



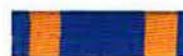
Purple Heart



Defense Meritorious Service Medal



Meritorious Service Medal (AF)



Air Medal



Aerial Achievement Medal



Joint Service Commendation Medal



Air Force Commendation Medal



Joint Service Achievement Medal



Air Force Achievement Medal



Air Force Combat Action Medal



Presidential Unit Citation (AF)



Joint Meritorious Unit Award



Gallant Unit Citation



Air Force Meritorious Unit Award



Air Force Outstanding Unit Award



Air Force Organizational Excellence Award



Prisoner of War Medal



Combat Readiness Medal



Air Force Good Conduct Medal



Good Conduct Medal



Air Reserve Forces Meritorious Service Medal



Outstanding Airman of the Year Ribbon



Air Force Recognition Ribbon



American Defense Service Medal



American Campaign Medal



Asiatic-Pacific Campaign Medal



European-African-Middle Eastern Campaign Medal



World War II Victory Medal



Army of Occupation Medal



Medal for Humane Action



National Defense Service Medal



Korean Service Medal



Antarctica Service Medal



Armed Forces Expeditionary Medal



Vietnam Service Medal



Southwest Asia Service Medal



Kosovo Campaign Medal



Afghanistan Campaign Medal



Iraq Campaign Medal



Global War on Terrorism Expeditionary Medal



Global War on Terrorism Service Medal



Korean Defense Service Medal



Armed Forces Service Medal



Humanitarian Service Medal



Military Outstanding Volunteer Service Medal



Air & Space Campaign Medal



Air Force Overseas Ribbon-Short



Air Force Overseas Ribbon-Long



Air Force Expeditionary Service Ribbon



Air Force Longevity Service Award Ribbon



USAF Basic Military Training Instructor Ribbon



Air Force Recruiter Ribbon



Armed Forces Reserve Medal



USAF NCO PME Graduate Ribbon



USAF Basic Military Training Honor Graduate Ribbon



Small Arms Expert Marksmanship Ribbon



Air Force Training Ribbon



Philippine Defense Ribbon



Philippine Liberation Ribbon



Philippine Independence Ribbon



## Awards and Decorations Continued



Philippine Presidential Unit Citation



ROK Presidential Unit Citation



RVN Gallantry Cross with Palm



United Nations Service Medal



United Nations Medal



NATO Meritorious Service Medal



NATO Medal for Yugoslavia



NATO Medal for Kosovo



Article 5 NATO Medal-Eagle Assist



Article 5 NATO Medal-Active Endeavor



Non-Article 5 NATO Medal-Balkans



Non-Article 5 NATO Medal-ISAF



Republic of Vietnam Campaign Medal



Kuwait Liberation Medal, Kingdom of Saudi Arabia



Kuwait Liberation Medal, Government of Kuwait



Republic of Korea Korean War Service Medal

## Devices



### Bronze Star

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



### Silver and Bronze Stars

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



### Mobility Device

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



### A Device

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



### Silver Star

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



### Silver and Bronze OLCs

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



### Hourglass Device

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



### Arrowhead Device

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



### Silver Oak Leaf Cluster

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



### Valor Device

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



### Plane Device

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



### "Wintered Over" Device

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



### Bronze Oak Leaf Cluster

For second and subsequent awards.

## USAF Specialty Berets

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



Combat Controller/Special Tactics Officer



Pararescue/Combat Rescue Officer



Security Forces



Survival, Evasion, Resistance, and Escape



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



Air Liaison Officer  
(TACP flash and rank)



Weather Parachutist



# Major Commands and Reserve Components

■ 2014 USAF Almanac

Note: All data as of Sept. 30, 2013

## Organization

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

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

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

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

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

### 10 Major Commands

- Air Combat Command
- Air Education & Training Command
- Air Force Global Strike Command
- Air Force Materiel Command
- Air Force Reserve Command
- Air Force Space Command
- Air Force Special Operations Command
- Air Mobility Command
- Pacific Air Forces
- US Air Forces in Europe-Air Forces Africa

### Two Air Reserve Components

- Air Force Reserve Command
- Air National Guard

*C-Majcoms.*) A C-Majcom is the USAF component to a unified combatant command. The commander of a C-Majcom is the commander of air forces and may function as a theater joint force air and space component commander (JFACC) when required. A C-Majcom has one or more component NAFs (C-NAFs) through which it presents its forces to the combatant commander.

### Numbered Air Force

A numbered air force, that level of command directly below a major command, provides operational leadership and supervision to its subordinate units (wings, groups, and squadrons). A C-NAF

supports the commander of air forces at the operational and tactical level. USAF has designated some C-NAFs, rather than a majcom, as the Air Force component to a unified combatant command. In that role, the C-NAF functions at the strategic level as well as the operational and tactical levels and will have a broader staff. (On the following pages, NAFs with "Air Forces" designations, such as Air Forces Southern, are C-NAFs.)



# ACC

## Air Combat Command



**Headquarters** JB Langley-Eustis, Va.

**Established** June 1, 1992

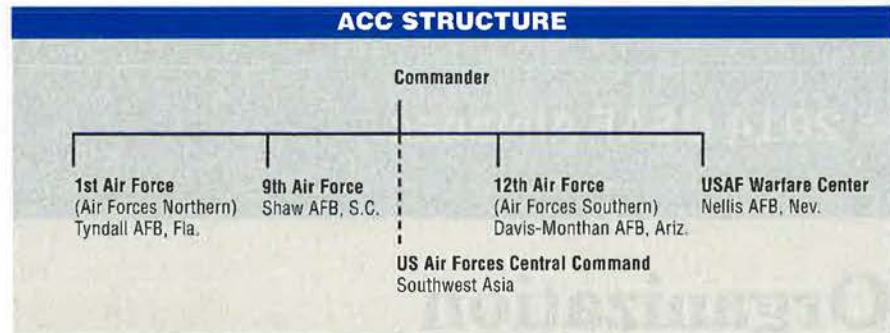
**Commander** Gen. Gilmary Michael Hostage III

### PRIMARY MISSION

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

### PERSONNEL

Active Duty	71,138
Civilian	10,298
<b>Total</b>	<b>81,436</b>



<b>EQUIPMENT</b> (Total active inventory)	Fighter/Attack	670	Helicopter	40
Bomber	ISR/BM/C3	331	Trainer	45
	Tanker	14		

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





# AETC

## Air Education and Training Command

**Headquarters** JBSA-Randolph, Tex.

**Established** July 1, 1993

**Commander** Gen. Robin Rand



### PRIMARY MISSION

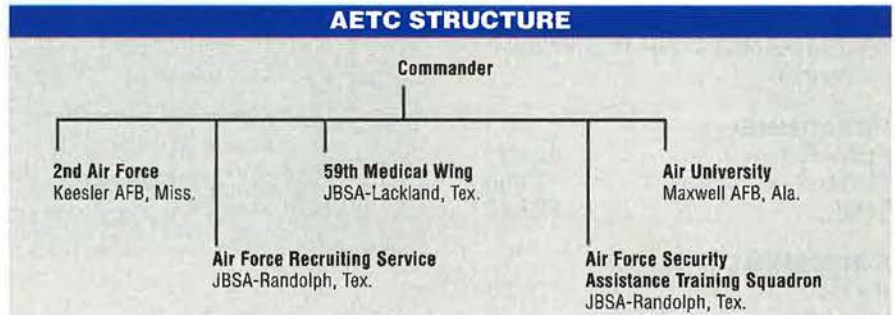
Recruit, train, and educate airmen through basic military training, initial and advanced technical training, and professional military education.

### PERSONNEL

Active Duty	52,052
Civilian	14,843
<b>Total</b>	<b>66,895</b>

### EQUIPMENT (TAI)

Fighter/Attack	124
Special operations forces	15
Tanker	26
Transport	27
Helicopter	49
Trainer	1,114



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

### MAJOR WINGS/CENTERS

12th Flying Training Wing  
14th FTW  
17th Training Wing (TRW)  
33rd Fighter Wing  
37th TRW  
42nd Air Base Wing  
47th FTW  
56th FW  
58th Special Operations Wing  
59th Medical Wing  
71st FTW  
80th FTW  
81st TRW  
82nd TRW  
97th Air Mobility Wing  
314th Airlift Wing  
502nd ABW  
Air Force Institute of Technology  
Air Force Research Institute  
Carl A. Spaatz Center for Officer Education  
Curtis E. LeMay Center for Doctrine Dev. & Education  
Ira C. Eaker Center for Professional Dev.  
Jeanne M. Holm Officer Accessions & Citizen Dev. Center  
Muir S. Fairchild Research Information Center  
Thomas N. Barnes Center for Enlisted Education

### LOCATION

JBSA-Randolph, Tex.  
Columbus AFB, Miss.  
Goodfellow AFB, Tex.  
Eglin AFB, Fla.  
JBSA-Lackland, Tex.  
Maxwell AFB, Ala.  
Laughlin AFB, Tex.  
Luke AFB, Ariz.  
Kirtland AFB, N.M.  
JBSA-Lackland, Tex.  
Vance AFB, Okla.  
Sheppard AFB, Tex.  
Keesler AFB, Miss.  
Sheppard AFB, Tex.  
Altus AFB, Okla.  
Little Rock AFB, Ark.  
JBSA-Fort Sam Houston, Tex.  
Wright-Patterson AFB, Ohio  
Maxwell AFB, Ala.  
Maxwell AFB, Ala.  
Maxwell AFB, Ala.  
Maxwell AFB, Ala.  
Maxwell AFB, Ala.  
Maxwell AFB, Ala.  
Maxwell AFB, Ala.

### AIRCRAFT/MISSION/WEAPON

T-1A, T-6A, T-38C (CSO at NAS Pensacola, Fla.)  
T-1A, T-6A, T-38C  
Technical training  
F-35  
Basic military and technical training  
Base support  
T-1A, T-6A, T-38C  
F-16  
CV-22, HC-130, HH-60, MC-130H, MC-130J, MC-130P  
Wilford Hall Ambulatory Surgical Center  
T-1A, T-6A, T-38C  
T-6A, T-38C  
Technical training  
Technical training  
C-17, KC-135R  
C-130H/J  
JBSA facilities support  
Postgraduate education  
Historical research  
Officer professional military education (PME)  
Air Force doctrine development  
Professional and technical continuing education  
Officer training, ROTC/JROTC oversight  
Information resources  
Enlisted PME



**A T-6A Texan prepares for takeoff at Laughlin AFB, Tex.**

USAF photo by SRA Scott Saikukas



# AFGSC Air Force Global Strike Command

**Headquarters** Barksdale AFB, La.

**Established** Aug. 7, 2009

**Commander** Lt. Gen. Stephen W. "Seve" Wilson



## PRIMARY MISSION

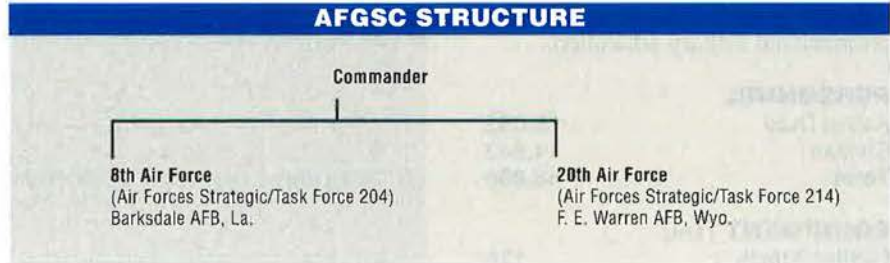
Organize, train, equip, maintain, and provide ICBM forces and nuclear-capable bomber forces to combatant commanders.

## PERSONNEL

Active Duty	20,161
Civilian	2,456
<b>Total</b>	<b>22,617</b>

## EQUIPMENT (TAI)

Bomber	75
Helicopter	27
Trainer	14
ICBM	450



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

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



*TSgt. Michael Zeigler and SSgt. Aaron McCullum prep a B-52 for takeoff at Barksdale AFB, La.*

ICAF photo by S.A. Mishan Anthony



# AFMCM

## Air Force Materiel Command

**Headquarters** Wright-Patterson AFB, Ohio

**Established** July 1, 1992

**Commander** Gen. Janet C. Wolfenbarger



### PRIMARY MISSION

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

### PERSONNEL

Active Duty	18,592
Civilian	60,182
<b>Total</b>	<b>78,774</b>

### EQUIPMENT (TAI)

Bomber	5
Fighter/Attack	58
SOF	1
ISR/BM/C3	17
Tanker	2
Transport	17
Helicopter	2
Trainer	16

### AFMC STRUCTURE

#### Commander

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

### MAJOR UNITS

### LOCATION

### AIRCRAFT/MISSION/WEAPON

#### AFLCMC

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

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

Base support  
 Base support

#### AFNWC

Air Force Nuclear Weapons Capability Directorate  
 377th ABW

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

Nuclear weapons sustainment  
 Nuclear operations, base support

#### AFRL

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

WPAFB, Ohio  
 Arlington, Va.  
 Kirtland AFB, N.M.  
 Rome, N.Y.  
 WPAFB, Ohio  
 Eglin AFB, Fla.  
 WPAFB, Ohio  
 Kirtland AFB, N.M.  
 WPAFB, Ohio

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

#### AFSC

Ogden Air Logistics Complex  
 Oklahoma City ALC  
 Warner Robins ALC  
 72nd ABW  
 75th ABW  
 78th ABW  
 309th Aerospace Maintenance & Regeneration Group  
 148th Supply Chain Management Wing  
 35th Supply Chain Operations Wing

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

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

#### AFTC

Arnold Engineering Development Complex  
 16th Test Wing  
 12th TW

Arnold AFB, Tenn.  
 Eglin AFB, Fla.  
 Edwards AFB, Calif.

Flight simulation test & evaluation (aircraft, missile, space)  
 A-10C, C-130, F-15, F-15E, F-16CG/CJ, UH-1N, base support  
 B-1, B-2, B-52, C-12, C-17, F-16, F-22, F-35A, RQ-4, T-38,  
 base support



# AFRC

## Air Force Reserve Command

**Headquarters** Robins AFB, Ga.

**Established** Feb. 17, 1997

**Commander** Lt. Gen. James "J. J." Jackson



### PRIMARY MISSION

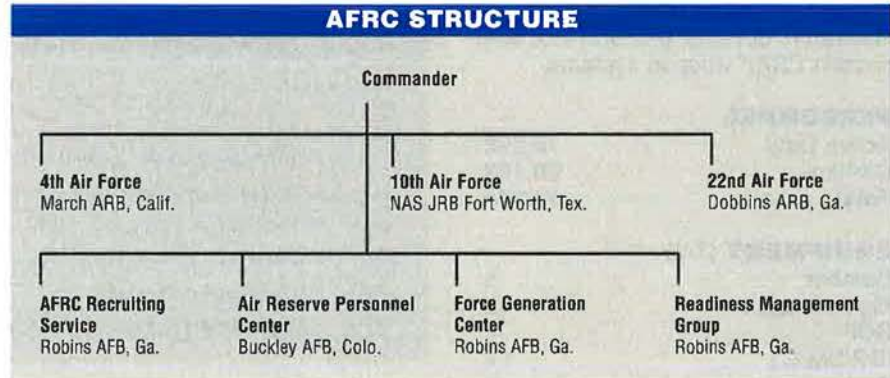
Provide strike, air mobility, special operations forces, rescue, aeromedical evacuation, aerial firefighting and spraying, weather reconnaissance, space, flying training, and other capabilities to support the Active Duty force and assist with domestic and foreign disaster relief.

### PERSONNEL

Total (selected reserve) 70,913  
 Active Duty 521  
 Civilian (includes technicians) 13,111  
**Total 84,545**

### EQUIPMENT (TAI)

Bomber 18  
 Fighter/Attack 95  
 SOF 4



ISR/BM/C3	11	Transport	147
Tanker	71	Helicopter	15

Abbreviations: AOC: Air & Space Operations Center; DCGS: Distributed Common Ground Station.

### MAJOR GROUPS/WINGS

### LOCATION

### AIRCRAFT/MISSION/WEAPON

44th Fighter Group*	Holloman AFB, N.M.	F-22 (Det. 2, Tyndall AFB, Fla.), MQ-1, MQ-9
94th Airlift Wing	Dobbins ARB, Ga.	C-130H
301st Fighter Wing	NAS JRB Fort Worth, Tex.	F-16
302nd AW	Peterson AFB, Colo.	C-130 (including Modular Airborne Firefighting System)
307th Bomb Wing	Barksdale AFB, La.	B-52
310th Space Wing	Schriever AFB, Colo.	Space control/operations/warning, information operations
315th AW*	JB Charleston, S.C.	C-17
340th Flying Training Group*	JBSA-Randolph, Tex.	AT-38B, T-1, T-6, T-38
349th Air Mobility Wing*	Travis AFB, Calif.	C-5A/B/C, C-17, KC-10
403rd Wing	Keesler AFB, Miss.	C-130J, WC-130H/J (Hurricane Hunters)
413th Flight Test Group	Robins AFB, Ga.	Depot flight test
414th FG*	Seymour Johnson AFB, N.C.	F-15E
419th FW*	Hill AFB, Utah	F-16
433rd AW*	JBSA-Lackland, Tex.	C-5A/B, formal training unit
434th Air Refueling Wing	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*	JB Lewis-McChord, Wash.	C-17
452nd AMW	March AFB, Calif.	C-17, KC-135R
459th ARW	JB Andrews, Md.	KC-135R
476th FG*	Moody AFB, Ga.	A-10C
477th FG*	JB Elmendorf-Richardson, Alaska	F-22
482nd FW	Homestead ARB, Fla.	F-16
507th ARW	Tinker AFB, Okla.	KC-135R
512th AW*	Dover AFB, Del.	C-5M, C-17
513th Air Control Group*	Tinker AFB, Okla.	E-3
514th AMW*	JB McGuire-Dix-Lakehurst, N.J.	C-17, KC-10
624th Regional Support Group	JB Pearl Harbor-Hickam, Hawaii	Contingency aerial port, civil engineer, medical combat support
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., N.Y.	C-130H
916th ARW	Seymour Johnson AFB, N.C.	KC-135R
917th FG	Barksdale AFB, La.	A-10C
919th Special Operations Wing	Duke Field, Fla.	MC-130E, MQ-1* (Cannon AFB, N.M.), U-28*
920th Rescue Wing	Patrick AFB, Fla.	HC-130N/P, HH-60G
924th FG	Davis-Monthan AFB, Ariz.	A-10C
926th Group*	Nellis AFB, Nev.	F-16 (Nellis), MQ-1 and MQ-9 (Creech AFB, Nev.)
927th ARW*	MacDill AFB, Fla.	KC-135R
931st Air Refueling Group*	McConnell AFB, Kan.	KC-135R
932nd AW	Scott AFB, Ill.	C-40
934th AW	Minneapolis-St. Paul Arpt., Minn.	C-130H
940th Wing*	Beale AFB, Calif.	AOC, DCGS, RQ-4
943rd Rescue Group	Davis-Monthan AFB, Ariz.	HH-60G
944th FW*	Luke AFB, Ariz.	F-16

\* classic associate (Active unit owns aircraft)



# AFSPC Air Force Space Command

**Headquarters** Peterson AFB, Colo.

**Established** Sept. 1, 1982

**Commander** Gen. William L. Shelton



## PRIMARY MISSION

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

## PERSONNEL

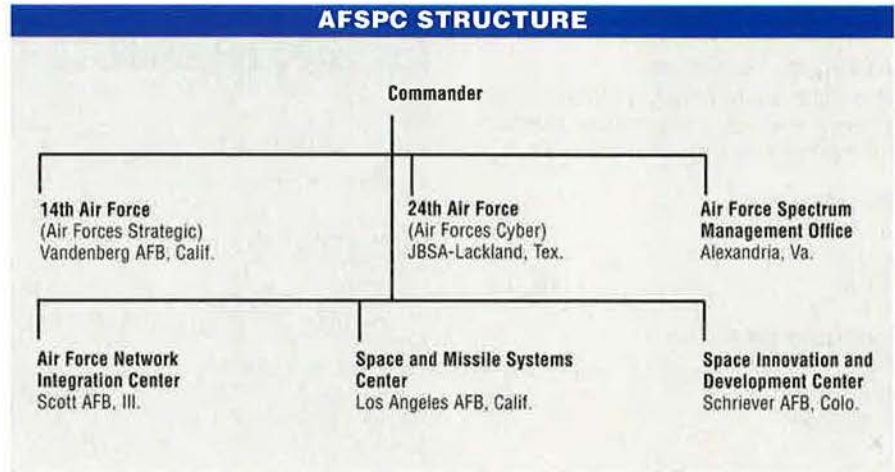
Active Duty	13,249
Civilian	7,435
<b>Total</b>	<b>20,684</b>

## EQUIPMENT

Air Force Satellite Control Network  
BMEWS  
GEODSS  
Launch/test ranges  
Pave PAWS  
PARCS  
Space surveillance radars

### Satellite systems (on orbit):

AEHF	2	Milstar	5
ATTR	1	SBIRS	2
DMSP	4	SBSS	1
DSCS	8	WGS	4
DSP	classified		
GPS	31		



**Abbreviations:** ATTR: Advanced Technology Risk Reduction; BMEWS: Ballistic Missile Early Warning System; GEODSS: Ground-based Electro-Optical Deep Space Surveillance System; PAWS: Phased Array Warning System; PARCS: Perimeter Acquisition Radar Attack Characterization System; for satellites, see Gallery of Weapons.

## MAJOR GROUPS/WINGS

## LOCATION

## AIRCRAFT/MISSION/WEAPON

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



*An Atlas V launches a military communication systems satellite from Cape Canaveral AFS, Fla.*

United Launch Alliance photo by Pat Corkery



# AFSOC

## Air Force Special Operations Command

**Headquarters** Hurlburt Field, Fla.

**Established** May 22, 1990

**Commander** Lt. Gen. Eric E. Fiel



### PRIMARY MISSION

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

### PERSONNEL

Active Duty 14,587  
 Civilian 964  
**Total 15,551**

### EQUIPMENT (TAI)

SOF 105  
 ISR/BM/C3 41  
 Helicopter 2



### MAJOR UNITS

1st Special Operations Wing  
 24th SOW  
 27th SOW  
 352nd Special Operations Group  
 353rd SOG  
 623rd Air & Space Operations Center  
 720th Special Tactics Group  
 724th STG

### LOCATION

Hurlburt Field, Fla.  
 Hurlburt Field, Fla.  
 Cannon AFB, N.M.  
 RAF Mildenhall, UK  
 Kadena AB, Japan  
 Hurlburt Field, Fla.  
 Hurlburt Field, Fla.  
 Pope Field, N.C.

### AIRCRAFT/MISSION/WEAPON

AC-130U, CV-22, MC-130H, MC-130P, U-28A  
 Special tactics operations  
 AC-130J, AC-130W, CV-22, MC-130J, MQ-1, MQ-9  
 MC-130H, MC-130P  
 MC-130H, MC-130P  
 Plan/direct airpower special operations  
 Special tactics operations  
 Special tactics operations



*Air crews from Hurlburt Field, Fla., secure a CV-22 at Cannon AFB, N.M., where the aircraft were sent to get them away from a tropical storm.*



# AMC

## Air Mobility Command

**Headquarters** Scott AFB, Ill.

**Established** June 1, 1992

**Commander** Gen. Paul J. Selva



### PRIMARY MISSION

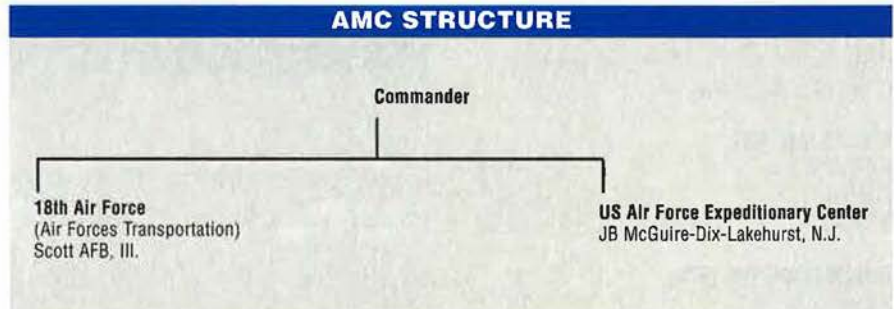
Organize, train, equip, maintain, and provide air mobility forces to sustain worldwide airpower operations.

### PERSONNEL

Active Duty	45,540
Civilian	8,591
<b>Total</b>	<b>54,131</b>

### EQUIPMENT (TAI)

Tanker	170
Transport	303



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

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
6th Air Mobility Wing	MacDill AFB, Fla.	C-37, KC-135R
19th Airlift Wing	Little Rock AFB, Ark.	C-130
22nd Air Refueling Wing	McConnell AFB, Kan.	KC-135R
43rd Airlift Group	Pope Field, N.C.	C-130 (active associate)
60th AMW	Travis AFB, Calif.	C-5, C-17, KC-10
62nd AW	JB Lewis-McChord, Wash.	C-17
87th Air Base Wing	JB McGuire-Dix-Lakehurst, N.J.	Joint base facilities support
89th AW	JB Andrews, Md.	C-20, C-32, C-37, C-40, VC-25
92nd ARW	Fairchild AFB, Wash.	KC-135
305th AMW	JB McGuire-Dix-Lakehurst, N.J.	C-17, KC-10
317th AG	Dyess AFB, Tex.	C-130
319th ABW	Grand Forks AFB, N.D.	Base support
375th AMW	Scott AFB, Ill.	C-21, C-40 (AA), KC-135R (AA)
436th AW	Dover AFB, Del.	C-5
437th AW	JB Charleston, S.C.	C-17
515th Air Mobility Operations Wing	JB Pearl Harbor-Hickam, Hawaii	Contingency airfield operations
521st AMOW	Ramstein AB, Germany	Contingency airfield operations
618th AOC (Tanker Airlift Control Center)	Scott AFB, Ill.	Tanker Airlift Control Center operations
621st Contingency Response Wing	JB McGuire-Dix-Lakehurst, N.J.	Rapidly deployable bare base operations
627th Air Base Group	JB Lewis-McChord, Wash.	Base support
628th ABW	JB Charleston, S.C.	Joint base facilities support



*Maj. Kathryn Veseth performs a preflight walk-around of a C-17 prior to a mission.*

USAF photo by S/A Nicole Leidholm



# PACAF Pacific Air Forces

**Headquarters** JB Pearl Harbor-Hickam, Hawaii

**Established** July 1, 1957

**Commander** Gen. Herbert J. "Hawk" Carlisle



## PRIMARY MISSION

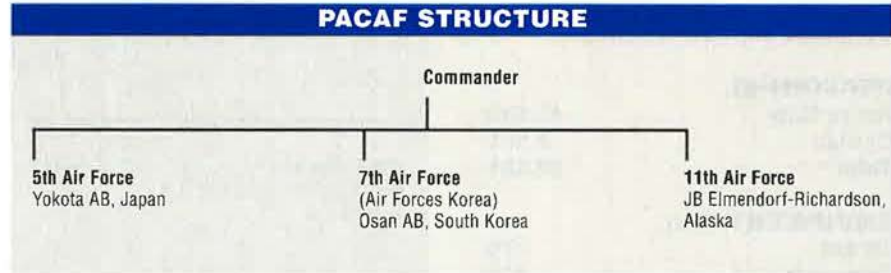
Provide US Pacific Command integrated expeditionary Air Force capabilities, including strike, air mobility, and rescue forces.

## PERSONNEL

Active Duty	29,187
Civilian	7,765
<b>Total</b>	<b>36,952</b>

## EQUIPMENT (TAI)

Fighter/Attack	261
ISR/BM/C3	5
Tanker	16
Transport	39
Helicopter	14



## MAJOR UNITS

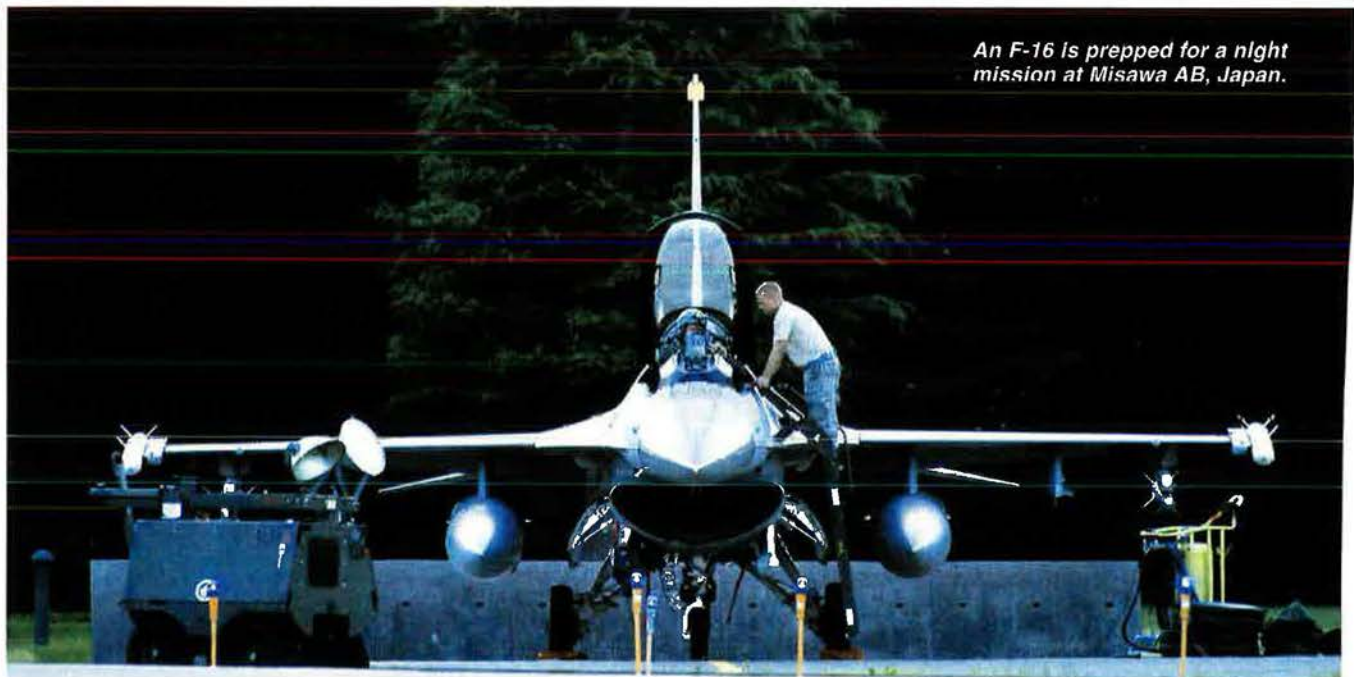
1st Air Support Operations Group  
3rd Wing  
8th Fighter Wing  
15th Wing  
18th Wing  
35th FW  
36th Wing  
36th Contingency Response Group  
51st FW  
354th FW  
374th Airlift Wing  
607th Air & Space Operations Center  
607th ASOC  
611th AOC  
611th Air Support Group  
613th AOC  
673rd Air Base Wing

## LOCATION

JB Lewis-McChord, Wash.  
JB Elmendorf-Richardson, Alaska  
Kunsan AB, South Korea  
JB Pearl Harbor-Hickam, Hawaii  
Kadena AB, Japan  
Misawa AB, Japan  
Andersen AFB, Guam  
Andersen AFB, Guam  
Osan AB, South Korea  
Eielson AFB, Alaska  
Yokota AB, Japan  
Osan AB, South Korea  
Osan AB, South Korea  
JB Elmendorf-Richardson, Alaska  
JB Elmendorf-Richardson, Alaska  
JB Pearl Harbor-Hickam, Hawaii  
JB Elmendorf-Richardson, Alaska

## AIRCRAFT/MISSION/WEAPON

Battlefield airmen operations/support  
C-12, C-17, C-130, E-3, F-15, F-22  
F-16  
C-17, C-37, C-40, F-22 (active associate), KC-135 (AA)  
E-3, F-15, HH-60G, KC-135R  
F-16CJ  
Operational platform for rotating combat forces  
Rapidly deployable bare base operations  
A-10C, C-12, F-16  
F-16  
C-12, C-130, UH-1N  
Plan/direct air operations  
Battlefield airmen operations and support  
Plan/direct air operations  
Remote facility operations, communications, engineering  
Plan/direct air operations  
Joint base facilities support



*An F-16 is prepped for a night mission at Misawa AB, Japan.*



# USAFE-AFAFRICA

## US Air Forces in Europe-Air Forces Africa

**Headquarters** Ramstein AB, Germany

**Established** Aug. 7, 1945

**Commander** Gen. Philip M. Breedlove



### PRIMARY MISSION

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

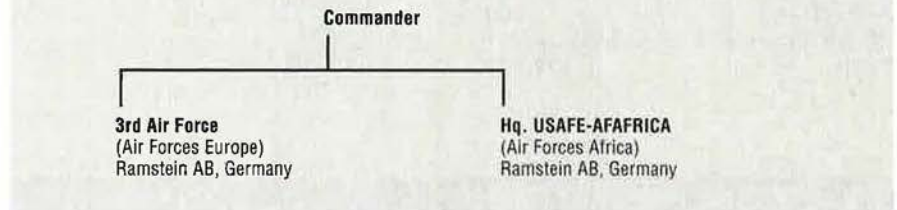
### PERSONNEL

Active Duty	23,937
Civilian	5,948
<b>Total</b>	<b>29,885</b>

### EQUIPMENT (TAI)

Fighter/Attack	174
Tanker	15
Transport	26
Helicopter	5

### USAFE-AFAFRICA STRUCTURE



### MAJOR UNITS

31st Fighter Wing  
39th Air Base Wing  
48th FW  
52nd FW  
65th ABW  
86th Airlift Wing  
100th Air Refueling Wing  
435th Air Ground Operations Wing  
501st Combat Support Wing  
603rd Air & Space Operations Center

### LOCATION

Aviano AB, Italy  
Incirlik AB, Turkey  
RAF Lakenheath, UK  
Spangdahlem AB, Germany  
Lajes Field, the Azores  
Ramstein AB, Germany  
RAF Mildenhall, UK  
Ramstein AB, Germany  
RAF Alconbury, UK  
Ramstein AB, Germany

### AIRCRAFT/MISSION/WEAPON

F-16  
Operational location for deployed US and NATO forces  
F-15, F-15E, HH-60G  
A-10C, F-16CJ  
Operational location for en route forces  
C-20, C-21, C-37, C-40, C-130J  
KC-135R  
Battlefield airmen support/operations  
Facilities support for seven geographically separated units  
Plan/direct air operations

*A C-130J arrives at Luanda AB, Angola, March 22, 2014. The Super Hercules and USAF airmen were there to participate in an African partnership flight with Angolan and Zambian air forces.*



USAF photo by TSgt. Benjamin Wilson



# ANG

## Air National Guard

**Headquarters** Washington, D.C.

**Established** Sept. 18, 1947

**Director** Lt. Gen. Stanley E. "Sid" Clarke III



### PRIMARY MISSION

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

### PERSONNEL

Total (selected reserve)	105,708
Active Duty	208
Civilian (includes technicians)	24,011
<b>Total</b>	<b>129,927</b>

### EQUIPMENT (TAI)

Fighter/Attack	630
SOF	4
ISR/BM/C3	86
Tanker	187
Transport	223
Helicopter	17

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

Wing/State	System/Mission	Wing/State	System/Mission
101st Air Refueling Wing (ME)	KC-135R, combat comm, cyber	148th FW (MN)	F-16CM, EOD
102nd Intelligence Wing (MA)	AOG, combat comm, DCGS	149th FW (TX)	F-16, cyber, intel training
103rd Airlift Wing (CT)	C-130H	150th FW (NM)	RC-26, special ops training (CA)
104th Fighter Wing (MA)	F-15C	151st ARW (UT)	KC-135R, cyber, intel
105th AW (NY)	C-17, cyber	152nd AW (NV)	C-130H, DCGS
106th Rescue Wing (NY)	HC-130, HH-60G, GA	153rd AW (WY)	C-130H, MAFFS
107th AW (NY)	C-130 (RA), MQ-9 (planned 2014)	154th Wing (HI)	C-17 (CA), F-22, KC-135R
108th Wing (NJ)	KC-135R, CRG	155th ARW (NE)	KC-135R
109th AW (NY)	LC-130	156th AW (PR)	C-130H
110th ATKW (MI)	MQ-9 (planned), AOG, cyber	157th ARW (NH)	KC-135R
111th FW (PA)	AOG, CSDC, cyber	158th FW (VT)	F-16 (F-35 planned), cyber training
113th Wing (DC)	C-38, C-40, F-16	159th FW (LA)	F-15C, combat comm, cyber, TACP
114th FW (SD)	F-16	161st ARW (AZ)	KC-135R
115th FW (WI)	F-16, RC-26	162nd FW (AZ)	F-16, MQ-1, RC-26
116th Air Control Wing (GA)	E-8C	163rd RW (CA)	MQ-1
117th ARW (AL)	KC-135R, intel	164th AW (TN)	C-17
118th AW (TN)	MQ-9, cyber	165th AW (GA)	C-130H, CRTC, TACP, tactical comm
119th Wing (ND)	MQ-1, ISR	166th AW (DE)	C-130H, aeromed, cyber
120th FW (MT)	C-130 (planned)	167th AW (WV)	C-5 (C-17 planned FY2015), aeromed
121st ARW (OH)	KC-135R	168th ARW (AK)	KC-135R
122nd FW (IN)	A-10C	169th FW (SC)	F-16
123rd AW (KY)	C-130H, CRG, special tactics	171st ARW (PA)	KC-135R/T
124th FW (ID)	A-10C, CACS, TACP	172nd AW (MS)	C-17, aeromed
125th FW (FL)	F-15C, RC-26	173rd FW (OR)	F-15C/D
126th ARW (IL)	KC-135R	174th Attack Wing (NY)	MQ-9, RC-26, AOC, CACS, TACP
127th Wing (MI)	A-10C, KC-135T, special ops weather	175th Wing (MD)	A-10C, cyber
128th ARW (WI)	KC-135R	176th Wing (AK)	C-17 (CA), C-130H, HC-130, HH-60G, GA, RAOC, RCC
129th RQW (CA)	MC-130P, HH-60G, GA		F-16, TACP
130th AW (WV)	C-130H, RC-26	177th FW (NJ)	cyber, ISR, space
131st Bomb Wing (MO)	B-2 (CA), AOG, Cannon Range, combat comm	178th FW (OH)	C-130H
		179th AW (OH)	F-16C
132nd FW (IA)	MQ-9, DTOC	180th FW (OH)	DCGS, TACP
133rd AW (MN)	C-130H	181st IW (IN)	C-130H, combat comm, TACP
134th ARW (TN)	KC-135R	182nd AW (IL)	AOG, CIRF, cyber
136th AW (TX)	C-130H, combat comm	183rd FW (IL)	CACS, cyber, DCGS, NOSS, TACP
137th ARW (OK)	KC-135R (RA), cyber, TACP	184th IW (KS)	KC-135R
138th FW (OK)	F-16, cyber, TACP training	185th ARW (IA)	KC-135R, RC-26, AOG, TACP
139th AW (MO)	C-130H, AATTC (ANG/AFRC)	186th ARW (MS)	F-16, RC-26
140th Wing (CO)	C-21, F-16, Airburst Range, MGS	187th FW (AL)	A-10C (2014, converting to ISR, space)
141st ARW (WA)	KC-135R, RC-26, combat comm	188th FW (AR)	C-130H
142nd FW (OR)	F-15C, combat weather, special tactics	189th AW (AR)	KC-135R, combat weather
143rd AW (RI)	C-130J, combat comm, cyber	190th ARW (KS)	F-22 (CA), ISR
144th FW (CA)	F-15C (converting), RC-26	192nd FW (VA)	EC-130J, AOS, combat comm, cyber, TACP
145th AW (NC)	C-130H, aeromed, combat comm, MAFFS, TACP	193rd Special Ops Wing (PA)	combat comm, combat weather, cyber, ISR, TACP
146th AW (CA)	C-130J, MAFFS		
147th Reconnaissance Wing (TX)	MQ-1, RC-26, TACP	194th Regional Support Wing (WA)	



# FOAs, DRUs, and Auxiliary

## 2014 USAF Almanac

### Air Force Agency for Modeling and Simulation

Hq.: Orlando, Fla.

Estab.: June 3, 1996

Type: FOA

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

**Total Personnel:** 24

### Air Force Audit Agency

Hq.: Washington, D.C.

Estab.: July 1, 1948

Type: FOA

**Mission:** Provide independent and quality internal audit service.

**Total Personnel:** 642

### Air Force Civil Engineer Center

Hq.: JBSA-Lackland, Tex.

Estab.: Oct. 1, 2012

Type: FOA

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

**Total Personnel:** 1,022

Activated with the merger of the Air Force Center for Engineering and the Environment, Air Force Real Property Agency, and Air Force Civil Engineer Support Agency.

### Air Force Cost Analysis Agency

Hq.: Arlington, Va.

Estab.: Aug. 1, 1992

Type: FOA

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

**Total Personnel:** 136

### Air Force District of Washington

Hq.: JB Andrews, Md.

Estab.: July 15, 1994

Type: DRU

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

**Total Personnel:** 4,762

### Air Force Financial Services Center

Hq.: Ellsworth AFB, S.D.

Estab.: Sept. 14, 2007

Type: FOA

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

**Total Personnel:** 130

### Air Force Flight Standards Agency

Hq.: Oklahoma City

Estab.: Oct. 1, 1991

Type: FOA

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

**Total Personnel:** 148

### Air Force Historical Research Agency

Hq.: Maxwell AFB, Ala.

Estab.: May 25, 1979

Type: FOA

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

**Total Personnel:** 48

### Air Force Inspection Agency

Hq.: Kirtland AFB, N.M.

Estab.: Aug. 1, 1991

Type: FOA

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

**Total Personnel:** 119

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



SrA. Joshua Sherls checks an inventory. The Air Force Civil Engineer Center is trying to reduce the amount of equipment stored for contingencies.

USAF photo by Eddie Green



### **Air Force Intelligence Analysis Agency**

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

Estab.: Feb. 2, 2001

Type: FOA

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

**Total Personnel:** 124

### **Air Force Intelligence, Surveillance, and Reconnaissance Agency**

Hq.: JBASA-Lackland, Tex.

Estab.: June 8, 2007

Type: FOA

**Mission:** Organize, train, equip, and present forces and capabilities to conduct intelligence, surveillance, and reconnaissance for combatant commanders and the nation; oversee ISH capabilities expansion to meet current and future challenges.

**Total Personnel:** 16,511

### **Air Force Legal Operations Agency**

Hq.: JBASA Lackland, Tex.

Estab.: Sept. 1, 1991

Type: FOA

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

**Total Personnel:** 780

### **Air Force Medical Operations Agency**

Hq.: JBASA-Lackland, Tex.

Estab.: July 1, 1992

Type: FOA

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

**Total Personnel:** 345

### **Air Force Medical Support Agency**

Hq.: JBASA Lackland, Tex.

Estab.: July 1, 1992

Type: FOA

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

**Total Personnel:** 356

### **Air Force Office of Special Investigations**

Hq.: JB Andrews, Md.

Estab.: Aug. 1, 1948

Type: FOA

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

**Total Personnel:** 2,348

### **Air Force Operational Test and Evaluation Center**

Hq.: Kirtland AFB, N.M.

Estab.: Jan. 1, 1974

Type: DRU

**Mission:** Test and evaluate new weapon systems.

**Total Personnel:** 573

### **Air Force Operations Group**

Hq.: Pentagon

Estab.: July 26, 1977

Type: FOA

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

**Total Personnel:** 45

### **Air Force Personnel Center**

Hq.: JBASA-Randolph, Tex.

Estab.: Oct. 1, 1995

Type: FOA

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

**Total Personnel:** 2,603

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

### **Air Force Personnel Operations Agency**

Hq.: Pentagon

Estab.: Aug. 15, 1993

Type: FOA

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

**Total Personnel:** 269

### **Air Force Petroleum Agency**

Hq.: Fort Belvoir, Va.

Estab.: Dec. 18, 2006

Type: FOA

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

**Total Personnel:** 101

*On a headquarters tour, CMSAF Jame Cody listens to Air Force OSI members*

USAF photo by Mike Hastings





## Air Force Public Affairs Agency

Hq.: JBSA-Lackland, Tex.

Estab.: Oct. 1, 2008

Type: FOA

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

**Total Personnel:** 298

## Air Force Review Boards Agency

Hq.: JB Andrews, Md.

Estab.: June 1, 1980

Type: FOA

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

**Total Personnel:** 88

## Air Force Safety Center

Hq.: Kirtland AFB, N.M.

Estab.: Aug. 1, 1991

Type: FOA

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

**Total Personnel:** 117

## Air Force Security Forces Center

Hq.: JBSA-Lackland, Tex.

Estab.: March 17, 1997

Type: FOA

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

**Total Personnel:** 324

## Air Force Weather Agency

Hq.: Offutt AFB, Neb.

Estab.: Oct. 15, 1997

Type: FOA

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

**Total Personnel:** 1,480

Formerly Air Weather Service, established July 1, 1937.



USAF photo by Felicia M. Hall

## ANG Readiness Center

Hq.: JB Andrews, Md.

Estab.: August 1997

Type: FOA

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

**Total Personnel:** 10,824 (Total Force)

## Civil Air Patrol

Hq.: Maxwell AFB, Ala.

Estab.: Dec. 1, 1941

Type: Auxiliary

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

**Total Personnel:** 60,240

*The Air Force Safety Center oversees major command mishap investigations.*

## US Air Force Academy

Hq.: Colorado Springs, Colo.

Estab.: April 1, 1954

Type: DRU

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

**Total Personnel:** 3,411

*A Civil Air Patrol aircraft taxis at Atlantic City Arpt., N.J. The Cessna 206 played the role of a wayward aircraft during an intercept exercise.*



ANG photo by TSgt. Matt Hecht



# Guide to Air Force Installations Worldwide

## 2014 USAF Almanac

### Active Duty Installations

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

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

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

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

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

**Barksdale AFB, La. 71110. Nearest city:** Bossier City. **Phone:** 318-456-1110. **Owning command:** AFGSC. **Units/missions:** 2nd BW (AFGSC), bomber operations; 307th BW (AFRC), bomber operations, training; 917th FG (AFRC), fighter

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

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

**Buckley AFB, Colo. 80011. Nearest city:** Denver. **Phone:** 720-847-9011. **Owning command:** AFSPC. **Units/missions:** 140th Wing (ANG), air mobility, fighter operations, mobile missile warning; 460th SW (AFSPC), space surveillance, missile warning; 566th IS (AFISRA), 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:** 575-784-1110. **Owning command:** AFSOC. **Unit/mission:** 27th SOW (AFSOC), special operations. **History:** activated August 1942. Named for Gen. John K. Cannon, WWII commander of all Allied air forces in the Mediterranean Theater and former commander, Tactical Air Command.

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

F. Kennedy Space Center 1973. Designated Cape Canaveral AS 1974.

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

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

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

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

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

**Creech AFB, Nev. 89191. Nearest city:** Indian Springs. **Phone:** 702-652-1110. **Owning command:** ACC. **Units/missions:** 78th ATKS, 91s ATKS (AFRC), 232nd Operations Sq. (ANG) 432nd Wing (ACC)—RPA operations; 799th ABC (ACC), support, ground combat training; Joint Unmanned Aircraft Systems Center of Excellence. **History:** activated 1942 as Army camp air-to-air gunnery training. In 1951 became USAF auxiliary field. In 1980s, officially named Indian Springs Air Force Auxiliary Field. In 2005 renamed Creech AFB for Gen. Wilbur L. "Bill



Creech, commander, Tactical Air Command, 1978 to 1984.

**Davis-Monthan AFB, Ariz. 85707. Nearest city:** Tucson. **Phone:** 520-228-3900. **Owning command:** ACC. **Units/missions:** 55th ECG (ACC), electronic combat operations; 214th RG (ANG), RPA operations; 309th Aerospace Maintenance & Regeneration Group (AFMC), aerospace vehicle storage, regeneration; 355th FW (ACC), fighter operations; 563rd RQG (ACC), 943rd RQG (AFRC)—personnel recovery operations; Hq. 12th Air Force (ACC), operational leadership. **History:** activated 1927. Named for two local aviators: 2nd Lt. Samuel H. Davis, killed Dec. 28, 1921, and 2nd Lt. Oscar Monthan, killed March 27, 1924.

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

**Dyess AFB, Tex. 79607. Nearest city:** Abilene. **Phone:** 325-696-1110. **Owning command:** ACC. **Units/missions:** 7th BW (ACC), bomber operations; 317th AG (AMC), air mobility operations. **History:** activated April 1942. Deactivated December 1945. Reactivated as Abilene AFB September 1955. Renamed December 1956 for Lt. Col. William E. Dyess, WWII pilot who escaped from a Japanese prison camp; killed in P-38 crash in December 1943.

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

**Eglin AFB, Fla. 32542. Nearest city:** Niceville-Valparaiso. **Phone:** 850-882-1110. **Owning**

**command:** AFMC. **Units/missions:** 20th SPCS (AFSPC), space surveillance; 33rd FW (AETC), training; 53rd Wing (ACC), T&E; 96th TW (AFMC), T&E, base support; Air Force Armament Museum (AFMC); Munitions Directorate (AFMC), R&D; PEO-Armament (AFMC), acquisition. **History:** activated 1935. Named for Lt. Col. Frederick I. Eglin, WWI flier killed in aircraft accident Jan. 1, 1937.

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

**Ellsworth AFB, S.D. 57706. Nearest city:** Rapid City. **Phone:** 605-385-5056. **Owning command:** ACC. **Units/missions:** 28th BW (ACC), bomber operations; Air Force Financial Services Center (USAF). **History:** activated January 1942 as Rapid City Army Air Base. Renamed June 13, 1953, for Brig. Gen. Richard E. Ellsworth, killed March 18, 1953, in RB-36 crash.

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

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



An MQ-9 Reaper rolls out for takeoff at Creech AFB, Nev.

Photo by Steve Huckvale

## Acronyms and Abbreviations

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



# Major Active Duty Air Force Bases in the US





**Goodfellow AFB**, Tex. 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., WWII observation airplane pilot killed in combat Sept. 14, 1918.

**Grand Forks AFB**, N.D. 58205. **Nearest city:** Grand Forks. **Phone:** 701-747-3000. **Owning command:** AMC. **Units/missions:** 69th RG (ACC), RPA operations; 319th ABW (AMC), support. **History:** activated 1956. Named after town of Grand Forks, whose citizens bought the property for the Air Force.

**Hanscom AFB**, Mass. 01731. **Nearest city:** Boston. **Phone:** 781-377-1110. **Owning command:** AFMC. **Units/missions:** 66th ABG (AFMC), support; PEO-Battle Management (AFMC), PEO-C3I & Networks (AFMC)—acquisition. **History:** activated 1941. Named for Laurence G. Hanscom, a pre-WWII advocate of private aviation, killed in lightplane accident 1941.

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

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

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

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

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

Anacostia named for adjacent Anacostia River. Bolling named for Col. Raynal C. Bolling, first high-ranking Army Air Service officer killed in WWI.

**JB Andrews**, Md. 20762. **Nearest city:** Washington, D.C. **Phone:** 301-981-1110. **Owning command:** AFDW. **Units/missions:** 11th Wing (AFDW), helicopter operations, support; 79th Medical Wing (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; Hq. AFOSI (USAF); Air Force Review Boards Agency (USAF); Air National Guard Readiness Center (ANG), support. **History:** Andrews activated May 1943. Naval Air Facility Washington dates from 1919 at Anacostia (above); moved to Andrews 1958. Formed JB Andrews-Naval Air Facility Washington under Air Force lead 2010. Andrews named for Lt. Gen. Frank M. Andrews, military air pioneer and WWII commander of the European Theater, killed in aircraft accident May 3, 1943, in Iceland.

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

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

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

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

Expedition. McChord named for Col. William C. McChord, killed Aug. 18, 1937.

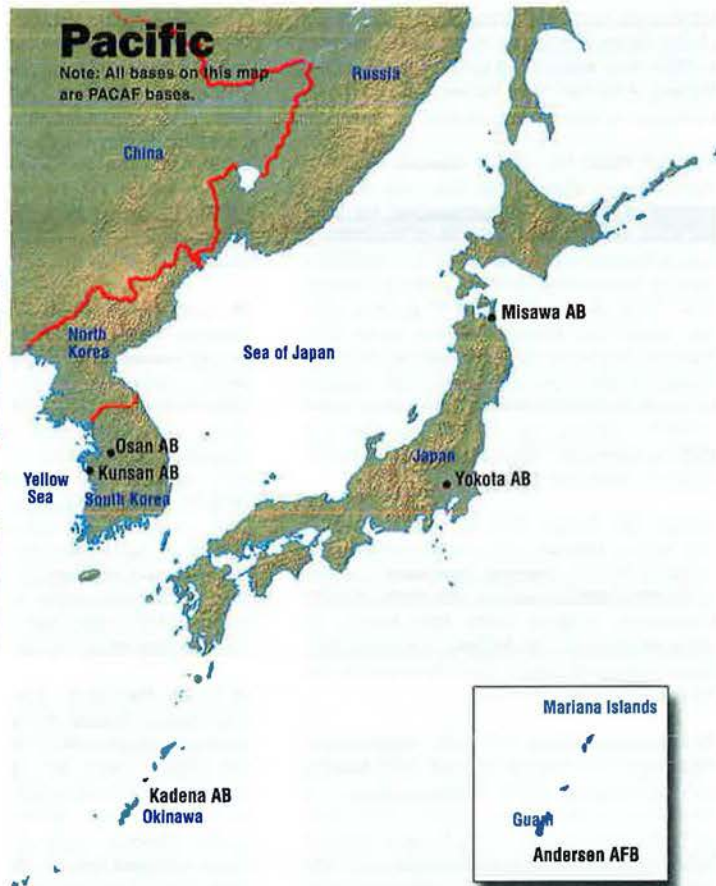
**JB McGuire-Dix-Lakehurst**, N.J. 08641. **Nearest city:** Wrightstown. **Phone:** 609-754-1100. **Owning command:** AMC. **Units/missions:** 87th ABW (AMC), support; 108th Wing (ANG), air mobility, bare base operations; 305th AMW (AMC), 514th AMW (AFRC)—air mobility operations; 621st CRW (AMC), bare base operations; US Air Force Expeditionary Center (AMC), training. **History:**

#### Acronyms and Abbreviations, cont.

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



# Major Active Duty Air Force Bases Overseas





McGuire activated 1941 as Fort Dix Army Air Base. 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. **Units/missions:** 15th Wing (PACAF), 154th Wing (ANG)—air mobility, fighter operations; 515th AMOW (AMC); 613th AOC (PACAF), C2 operations; 624th RSG (AFRC), bare base operations; 647th ABG (PACAF), support; Hq. PACAF, management, operational leadership. **History:** Pearl Harbor established 1908. Hickam dedicated 1935. Activated 1938. Formed as joint base under Navy lead 2010. Hickam named for Lt. Col. Horace M. Hickam, aviation pioneer killed in crash in Texas Nov. 5, 1934.

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

**JB SA-Lackland**, Tex. 78236. **Nearest city:** San Antonio. **Phone:** 210-671-2908. **Owning command:** AETC. **Units/missions:** 37th TRW (AETC), training; 59th Medical Wing (AETC), ambulatory surgical, management, training; 67th CW (AFSPC), network defense operations; 149th FW (ANG), cyber, fighter operations; 433rd AW (AFRC), air mobility operations, C-5 FTU; 688th IOW (AFSPC), information operations, engineering infrastructure services; 802nd MSG (AETC), support; Air Force Civil Engineer Center (USAF), engineering services; Air Force Legal Operations Agency (USAF); Air Force Medical Operations Agency (USAF); Air Force Medical Support Agency (USAF); Hq. 24th Air Force (AFSPC), operational leadership; Hq. AFISRA (USAF), management; Hq. Air Force Security

Forces Center (USAF), management. **History:** activated 1941 as part of Kelly Field. Designated independent installation July 1942 as San Antonio Aviation Cadet Center. Placed under Joint Base San Antonio installation management umbrella 2009. (Also see JB SA 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 JB SA-Lackland mailing addresses.)

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

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

**Keesler AFB**, Miss. 39534. **Nearest city:** Biloxi. **Phone:** 228-377-1110. **Owning command:** AETC. **Units/missions:** 81st TRW (AETC), training; 403rd Wing (AFRC), air mobility operations, weather reconnaissance; Hq. 2nd Air Force (AETC), operational leadership. **History:** activated June 12, 1941. Named for 2nd Lt. Samuel R. Keesler Jr., a native of Mississippi and WWI aerial observer killed in action Oct. 9, 1918.

**Kirtland AFB**, N.M. 87117. **Nearest city:** Albuquerque. **Phone:** 505-846-1110. **Owning command:** AFMC. **Units/missions:** 58th SOW (AETC), 150th FW (ANG)—special operations, CSAR training; 377th ABW (AFMC), support, nuclear operations; Air Force Inspection Agency

(USAF); 705th CTS-DMOC (ACC), virtual training; Air Force Operational T&E Center (USAF); AFNWC (AFMC), acquisition, sustainment; Air Force Safety Center (USAF), management; Directed Energy Directorate (AFMC), R&D; PEO-Strategic Systems (AFMC), acquisition; Space Development & Test Directorate (AFSPC), test; Space Vehicles Directorate (AFMC), R&D. **History:** activated January 1941. Named for Col. Roy C. Kirtland, aviation pioneer who died May 2, 1941.

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

**Lajes Field**, Azores, Portugal, APO AE 09720. **Nearest city:** Praia de Vitoria. **Phone:** 011-351-295-57-1110. **Owning command:** USAF-AFRICA. **Units/missions:** 65th ABW, support; 729th AMS (AMC), air transportation services. **History:** US operations began 1943.

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

**Little Rock AFB**, Ark. 72099. **Nearest city:** Jacksonville. **Phone:** 501-987-1110. **Owning command:** AMC. **Units/missions:** 19th AW (AMC), air mobility operations; 22nd AF Det. 1 (AFRC), 189th AW (ANG)—air mobility operations, training; 314th AW (AETC), training. **History:** activated Oct. 9, 1955.

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

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

**MacDill AFB**, Fla. 33621. **Nearest city:** Tampa. **Phone:** 813-828-1110. **Owning command:** AMC. **Units/missions:** 6th AMW (AMC), 927th ARW (AFRC)—air mobility operations; Hq. CENTCOM, operational leadership; Hq. SOCOM, operational leadership; Hq. Joint Communications Support Element, C4 operations, management; Joint Special Operations University (SOCOM), education. **History:** activated April 15, 1941. Named for Col. Leslie MacDill, killed in aircraft accident Nov. 8, 1938.

**Malmstrom AFB**, Mont. 59402. **Nearest city:** Great Falls. **Phone:** 406-731-1110. **Owning command:** AFGSC. **Units/missions:** 341st MW (AFGSC), ICBM operations; 819th RED HORSE (ACC/ANG), bare base operations. **History:**



USAF photo by SrA. Brittany Y. Auld

F-16s "elephant walk" down a runway at Kunsan AB, South Korea.



Two RC-135s (foreground) and an OC-135 on the ramp at Offutt AFB, Neb.



Photo by Sage

activated Dec. 15, 1942. Named for Col. Einar A. Malmstrom, WWII fighter commander killed in air accident Aug. 21, 1954.

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

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

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

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

**Moody AFB, Ga. 31699. Nearest city:** Valdosta. **Phone:** 229-257-1110. **Owning command:** ACC. **Units/missions:** 23rd Wing (ACC), fighter, personnel recovery operations; 93rd AGOW (ACC), battlefield airmen operations, expeditionary force protection, support; 476th FG (AFRC), fighter

operations. **History:** activated June 1941. Named for Maj. George P. Moody, killed May 5, 1941.

**Mountain Home AFB, Idaho 83648. Nearest city:** Mountain Home. **Phone:** 208-828-1110. **Owning command:** ACC. **Unit/missions:** 366th FW (ACC), fighter operations, range management. **History:** activated August 1943 as B-24 training base. Inactivated October 1945. Reactivated December 1948. Inactivated April 1950. Reactivated 1951.

**Nellis AFB, Nev. 89191. Nearest city:** Las Vegas. **Phone:** 702-652-1110. **Owning command:** ACC. **Units/missions:** 57th Wing (ACC), combat training; 99th ABW (ACC), support; 820th RED HORSE (ACC), base operations; 926th Group (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 Army Air Field with Army Air Corps Flexible Gunnery School. Named for 1st Lt. William H. Nellis, WWII P-47 fighter pilot, killed Dec. 27, 1944.

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

**Osan AB, South Korea, APO AP 96278. Nearest city:** Seoul. **Phone:** 011-82-0505-784-1110. **Owning command:** PACAF. **Units/missions:** 5th RS (ACC), reconnaissance operations; 51st FW (PACAF), fighter operations; 694th ISRG (AFISRA), DCGS operations; 731st AMS (AMC), air transportation services; Hq. 7th Air Force (PACAF), operational leadership. **History:**

originally designated K-55. Runway opened December 1952. Renamed Osan AB 1956 for nearby town that was the scene of first fighting in July 1950 between US and North Korean forces.

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

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

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

**RAF Lakenheath, UK, APO AE 09461. Nearest city:** Cambridge. **Phone:** 011-44-1638-52-1110. **Owning command:** USAF-AF-AFRICA. **Unit mission:** 48th FW, fighter, personnel recovery operations. **History:** began as Royal Air Force decoy field in 1930s. Activated as RAF airfield November 1941. USAF bombers arrived August 1948. USAF took administrative control May 1951. Named after nearby village.



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

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

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

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

**Scott AFB, Ill. 62225. Nearest city:** Belleville. **Phone:** 618-256-1110. **Owning command:** AMC. **Units/missions:** 126th ARW (ANG), 375th AMW (AMC)—air mobility operations; 618th AOC (TACC) (AMC), planning/directing worldwide air mobility operations; 635th Supply Chain Operations Wing (AFMC), global logistics support; 932nd AW (AFRC), air mobility operations; Air Force Network Integration Center (AFSPC), network integration, engineering, and 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, the first enlisted man to die in an aircraft accident, killed Sept. 28, 1912.

**Seymour Johnson AFB, N.C. 27531. Nearest city:** Goldsboro. **Phone:** 919-722-1110. **Owning command:** ACC. **Units/missions:** 4th FW (ACC), 414th FG (AFRC)—fighter operations; 567th RED HORSE (ACC), base base operations;

916th ARW (AFRC), air mobility operations. **History:** activated June 12, 1942. Named for Navy Lt. Seymour A. Johnson, Goldsboro native, killed March 5, 1941.

**Shaw AFB, S.C. 29152. Nearest city:** Sumter. **Phone:** 803-895-1110. **Owning command:** ACC. **Units/missions:** 20th FW (ACC), fighter operations; 495th FG (ACC), active associate management; 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, Tex. 76311. Nearest city:** Wichita Falls. **Phone:** 940-676-1110. **Owning command:** AETC. **Units/missions:** 80th FTW (AETC), Euro-NATO Joint Jet Pilot Training program; 82nd TRW (AETC), training. **History:** activated June 14, 1941. Named for US Sen. Morris E. Sheppard, who died April 9, 1941.

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

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

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

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

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

7, 1941. Named for 1st Lt. Frank B. Tyndall, WWI fighter pilot killed July 15, 1930.

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

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

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

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

**Wright-Patterson AFB, Ohio 45433. Nearest city:** Dayton. **Phone:** 937-257-1110. **Owning command:** AFMC. **Units/missions:** 88th ABW (AFMC), support; 445th AW (AFRC), air mobility operations; 591st SCMG (AFMC), systems life cycle support; 711th Human Performance Wing (AFMC), evaluation/research; Air Force Institute of Technology (AETC), education; PEO-Agile Combat Support, PEO-Fighters & Bombers, PEO-ISR & SOF, PEO-Mobility, PEO-Tanker (AFMC)—acquisition; Hq. Air Force Life Cycle Management Center (AFMC), acquisition and development; Hq. AFMC, management; Hq. Air Force Research Laboratory (AFMC), R&D; National Air & Space Intelligence Center (AFISRA), foreign aerospace analysis; National Museum of the US Air Force (AFMC); Wright-Patterson Medical Center (AFMC). **History:** originally separate, Wright Field and Patterson Field were merged and redesignated Wright-Patterson AFB Jan. 13, 1948. Named for aviation pioneers Orville and Wilbur Wright and for 1st Lt. Frank S. Patterson, killed June 19, 1918.

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



## ANG and AFRC Installations

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Fort Smith Arpt.**, Ark. 72903. **Nearest city:** Fort Smith. **Phone:** 479-573-5100. **Component:** ANG. **Unit/missions:** 188th FW, ISR, space operations (planned 2014).

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

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

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

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



A Wisconsin Air National Guard KC-135R takes off from General Mitchell Arpt., Wis.



# Air Reserve Component Bases



Note: S-B Arpt. in Ohio is Springfield-Beckley Arpt. (ANG)



**Greater Peoria Arpt., Ill. 61607. Nearest city:** Peoria. **Phone:** 800-942-3771. **Component:** ANG. **Unit/missions:** 182nd AW, air mobility, combat communications, TACP operations.

**Great Falls Arpt., Mont. 59404. Nearest city:** Great Falls. **Phone:** 406-791-0159. **Component:** ANG. **Unit/mission:** 120th FW, air mobility operations (planned).

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

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

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

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

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

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

**Hensley Field AGS, Tex. 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:** ANG. **Unit/mission:** 20th Operations Group Det. 2 (ACC) (active associate), 125th FW Det. 1 (ANG), 482nd FW (AFRC)—fighter operations.

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

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

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

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

**Klamath Falls Arpt./Kingsley Field, Ore. 97603. Nearest city:** Klamath Falls. **Phone:** 800-864-6264. **Component:** ANG. **Unit/mission:** 173rd FW, training. **History:** named for 2nd Lt. David R. Kingsley, MOH recipient, killed June 23, 1944, on Ploesti, Romania, oil field bombing mission.

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

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

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

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

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

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

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

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

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

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

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

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

**Montgomery Regional Arpt., Ala. 36108. Nearest city:** Montgomery. **Phone:** 334-394-7200. **Component:** ANG. **Unit/missions:** 187th FW, fighter, ISR operations. **History:** originally named for Ens. Clarence Dannelly, Navy pilot killed in WWII.

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

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

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

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

**Niagara Falls Arpt./ARS, N.Y. 14304. Nearest city:** Niagara Falls. **Phone:** 716-236-2000. **Components:** ANG/AFRC. **Units/missions:** 107th AW (ANG), RPA operations (planned 2014); 914th AW (AFRC), air mobility operations.

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

**Pease Intl. Tradeport ANG, N.H. 03803. Nearest city:** Portsmouth. **Phone:** 603-430-3577. **Component:** ANG. **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. **Components:** ANG/AFRC. **Units/missions:** 171st ARW (ANG), air mobility operations; 911th AW (AFRC), aeromedical evacuation, air mobility operations.

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

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

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

**Rickenbacker ANGB, Ohio 43217. Nearest city:** Columbus. **Phone:** 614-492-3408. **Component:** ANG. **Unit/mission:** 121st ARW, air mobility





ANG photo by TSgt. Robert Hanet

**An A-10 at Selfridge ANGB, Mich.**

operations. **History:** activated 1942. Formerly Lockbourne AFB. Renamed May 7, 1974, for Capt. Edward V. Rickenbacker. Base transferred from Strategic Air Command to ANG April 1, 1980.

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

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

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

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

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

**Sioux Gateway Arpt./Col. Bud Day Field, Iowa 51111. Nearest city:** Sioux City. **Phone:** 712-233-0200. **Component:** ANG. **Unit/mission:** 185th ARW, air mobility operations. **History:** activated as Sioux City Army Air Base in July 1942. Closed in December 1945. Reopened in September 1946 as Sioux City ARB. Returned to joint civil-military use. Named in 2002 for retired Col. George E. "Bud" Day, a Vietnam War POW and MOH recipient.

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

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

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

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

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

**Tucson Arpt., Ariz. 85706. Nearest city:** Tucson. **Phone:** 520-295-6192. **Component:** ANG. **Unit/**

**missions:** 162nd FW, fighter, ISR, RPA (at Davis-Monthan AFB) operations, training.

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

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

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

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

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

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



**C-5s line the ramp at Westover ARB, Mass.**

USAF photo by S/A. Kelly Galloway



# Gallery of USAF Weapons

Note: Inventory numbers are total active inventory figures as of Sept. 30, 2013.

## 2014 USAF Almanac

### Bombers

#### B-1 Lancer

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

**Function:** Long-range conventional bomber.

**Operator:** ACC, AFMC.

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

**Delivered:** June 1985-May 1988.

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

**Production:** 104.

**Inventory:** 63.

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

**Contractor:** Boeing, AIL Systems, General Electric.

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

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

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

**Weight:** max T-O 477,000 lb.

**Ceiling:** more than 30,000 ft.

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

**Armament:** three internal weapons bays accommodate a wide range of weapons incl up to 84 Mk 82 (500-lb) or 24 Mk 84 (2,000-lb) general-purpose bombs; up to 84 Mk 62 (500-lb) or 8 Mk 65 (2,000-lb) Quick Strike naval mines; up to 30 CBU-87/89 cluster bombs or 30 CBU-103/104/105 WCMDs; up to 24 GBU-31 or 15 GBU-38 JDAMs; up to 24 AGM-158A JASSMs (AGM-158B JASSM-ER also integrated); GBU-54 Laser JDAM; or a mix, employing a different type of weapon in each bay.

**COMMENTARY**  
Proposed as replacement for the B-52. Four B-1A prototypes developed and tested in 1970s. Program canceled in 1977, but flight test continued. Program revived in 1981 as B-1B variant. Blended wing/body configuration, variable-geometry design, and turbofan engines provide long range, maneuverability, high speed, and survivability. Substantial payload and long loiter time. Offensive avionics include SAR for tracking-targeting-engaging moving vehicles, self-targeting of stationary targets, and following terrain. GPS-aided INS lets aircrews autonomously navigate without ground-based navigation aids and engage targets with precision.

#### Extant Variant(s)

■ B-1B. Vastly upgraded B-1A, with 74,000 lb increase in useable payload, improved radar, and reduction in radar cross section, but max speed cut to Mach 1.2. Total production of 100 B variants, but USAF reduced inventory to 67 aircraft in 2002. First used in combat against Iraq during Desert Fox in December 1998. Equipped over the years with GPS, smart weapons carriage, improved onboard



B-1B Lancer (SSgt. Aaron Ailmon)

computers, improved communications. Sniper targeting pod added in mid-2008. Ongoing upgrades include Vertical Situation Display Upgrade, Central Integrated Test System, and Fully Integrated Data Link (FIDL). The FIDL upgrade includes Link 16 and Joint Range Extension data link, enabling permanent LOS and BLOS C2 connectivity. FIDL also adds an Ethernet infrastructure to enable rapid airborne retargeting. The B-1B has an expected service life beyond 2040.

#### B-2 Spirit

**Brief:** Stealthy, long-range multirole bomber that can deliver nuclear and conventional munitions anywhere on the globe.

**Function:** Long-range heavy bomber.

**Operator:** AFGSC, AFMC, ANG.

**First Flight:** July 17, 1989.

**Delivered:** Dec. 17, 1993.

**IOC:** April 1997, Whiteman AFB, Mo.

**Production:** 21.

**Inventory:** 20.

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

**Contractor:** Northrop Grumman, Boeing, Vought.

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

**Accommodation:** two pilots, on zero/zero ejection seats.

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



B-2 Spirit (SrA. Kenny Holston)





**B-52 Stratofortress** (SrA. Carlin Leslie)

**Weight:** max T-O 336,500 lb.

**Ceiling:** 50,000 ft.

**Performance:** speed high subsonic, estimated unrefueled range for a hi-lo-hi mission with 16 B61 nuclear free-fall bombs is 5,000 miles, with one aerial refueling more than 10,000 miles.

**Armament:** in various combinations, up to nearly 60,000 pounds over two weapons bays. Nuclear weapons on rotary launcher assemblies (RLAs) (one RLA per each bay): up to 16 B61-7, 16 B83, or 8 B61-11 bombs. Conventional weapons on bomb rack assemblies (BRAs) (two BRAs per bay): 80 Mk 62 (500-lb) sea mines, 80 Mk 82 (500-lb) bombs, 80 GBU-38 JDAMs, or 34 CBU-87/89 munitions; on RLAs: 16 GBU-31 JDAMs, 16 Mk 84 (2,000-lb) bombs, 16 AGM-154 JSOWs, 16 AGM-158 JASSMs, or eight GBU-28 LGBs. Future weapons incl JASSM-ER, GBU-53 SDB II, and GBU-57 Massive Ordnance Penetrator.

**COMMENTARY**

Based on the flying wing concept. Combination of advanced technologies, LO stealth design, and high aerodynamic efficiency. Able to attack heavily defended targets and neutralize enemy defenses. First use of B-2s in combat on March 24, 1999, against Serb targets in Allied Force, with two aircraft each dropping 16 JDAMs. Smoothly blended "fuselage" section has two large weapons bays capable of carrying up to nearly 60,000 lb of weapons. No vertical tail surfaces. Quadruple-redundant fly-by-wire digital flight-control system, actuating moving surfaces at the wing trailing edges that combine aileron, elevator, and rudder functions.

**Extant Variant(s)**

■ B-2A Block 30. B-2 production went in three successive blocks of capability: Blocks 10, 20, and 30. All aircraft have been upgraded to Block 30. Recent application of a specially formulated surface coating has significantly reduced maintenance time and improved operational readiness. Other improvements include integration of a Link 16 LOS tactical communication system and a smart BRA that enables delivery of 80 JDAMs on a single pass. Continuing modernization efforts include a new AESA radar antenna and high-speed computing upgrade that will enable future improvements, such as an EHF satcom system, Defensive Management System-Modernization (DMS-M), and the Flexible Strike capability to enable future use of advanced digital weapons, including the B61-12 bomb and Long-Range Standoff (LRSO) missile.

**B-52 Stratofortress**

**Brief:** A long-range, heavy multirole bomber that can carry nuclear or conventional ordnance or cruise missiles.

**Function:** Long-range heavy bomber.

**Operator:** AFGSC, AFMC, AFRC.

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

**Delivered:** 1955-October 1962.

**IOC:** June 19, 1955.

**Production:** 744.

**Inventory:** 76.

**Aircraft Location:** Barksdale AFB, La.; Edwards AFB, Calif.; Minot AFB, N.D.

**Contractor:** Boeing.

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

**Accommodation:** two pilots, side by side, plus navigator, radar navigator, and EWOW.

**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:** 12 AGM-86B ALCMs externally, with provision for eight more ALCMs or gravity weapons internally. Conventional weapons incl 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. Future weapons incl the GBU-54 Laser JDAM, AGM-158B JASSM-ER, MALD, and MALD-J jammer variant.

**COMMENTARY**

Many variants; all but one retired. Multimission capability includes long-range precision strike, CAS, offensive counterair, air interdiction, defense suppression, and maritime surveillance. Can carry weapon targeting pods. ECM suite uses a combination of electronic detection, jamming, and IR countermeasures to defeat air defenses.

**Extant Variant(s)**

■ B-52H. First flown July 1960. Total production was 102, with deliveries between May 1961 and October 1962. USAF's only nuclear/conventional cruise missile carrier. Can conduct CAS using GPS/INS guided weapons. First delivered LGBs in Operation Iraqi Freedom in 2003, with Litening targeting pods. The Internal Weapons Bay Upgrade program will convert 44 nuclear-weapon-capable Common Strategic Rotary Launchers into Conventional Rotary Launchers. Increment 1.1 of this upgrade will enable internal carriage of eight JDAMs and variants and will introduce external carriage of 16 LJDAMs. Increment 1.2 will provide internal carriage of eight JASSMs and eight MALDs or their variants, plus adding external carriage for 12 JASSM-ER missiles. Other ongoing fleet modernization efforts include the Combat Network Communications Technology (CONNECT) program to replace aging cockpit displays and communications, enabling such things as machine-to-machine retasking and retargeting for CALCM and J-series weapons. As of Dec. 31, 2013, USAF estimates an average of 9,391 flight hours remain out of a certified service life of 27,701 hours.

**Fighter and Attack Aircraft**

**A-10 Thunderbolt II**

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

**Function:** Attack aircraft.

**Operator:** ACC, AFMC, PACAF, USAF-AFRICA, ANG, AFRC.

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

**Delivered:** October 1975-March 1984.

**IOC:** October 1977.

**Production:** 713.

**Inventory:** 334.

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

**Contractor:** Fairchild Republic, now Lockheed Martin.

**Power Plant:** two General Electric TF34-GE-100 turbofans, each 9,065 lb thrust.

**Accommodation:** pilot.

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

**Weight:** max T-O 51,000 lb.

**Ceiling:** 45,000 ft.

**Performance:** speed 518 mph, range 800 miles.

**Armament:** one 30 mm, seven-barrel GAU-8/A Gatling gun (1,174 rd), straight HEI, or anti-armor tailored HE/armor-piercing incendiary (API) combat mix; 11 hardpoints for up to 16,000 lb of ordnance, incl various types of free-fall or guided bombs, such as Mk 82, Mk 84, GBU-10/12/38, CBU-87, various WCMDs, illumination rockets/flares, AGM-65 Mavericks, and AIM-9 Sidewinders. Chaff and flares carried internally to counter radar or IR threats. Up to three 600-gallon fuel tanks can also be carried.

**Acronyms**

<b>ACTD</b>	Advanced Concept Technology Demonstration
<b>AE</b>	aeromedical evacuation
<b>AEHF</b>	Advanced Extremely High Frequency
<b>AESA</b>	active electronically scanned array
<b>AGM</b>	air-to-ground missile
<b>AIM</b>	air intercept missile
<b>ALCM</b>	Air Launched Cruise Missile
<b>AMRAAM</b>	Advanced Medium-Range Air-to-Air Missile
<b>ATP</b>	advanced targeting pod
<b>AvFID</b>	Aviation Foreign Internal Defense
<b>BLOS</b>	beyond line of sight
<b>BLU</b>	bomb live unit
<b>BM</b>	battle management
<b>C2</b>	command and control
<b>C3</b>	command, control, & communications
<b>CALCM</b>	Conventional ALCM
<b>CAS</b>	close air support
<b>CBU</b>	cluster bomb unit
<b>CEM</b>	combined effects munition
<b>CEP</b>	circle error probable
<b>CFTs</b>	conformal fuel tanks
<b>COTS</b>	commercial off the shelf
<b>CSAR</b>	combat search and rescue
<b>CSO</b>	combat systems officer
<b>DARPA</b>	Defense Advanced Research Projects Agency
<b>EA</b>	electronic attack
<b>ECM</b>	electronic countermeasures
<b>EHF</b>	extremely high frequency
<b>Elint</b>	electronic intelligence
<b>EO</b>	electro-optical
<b>ER</b>	extended range
<b>EW</b>	electronic warfare
<b>EWO</b>	electronic warfare officer
<b>FLIR</b>	forward-looking infrared
<b>FMV</b>	full-motion video
<b>FYDP</b>	Future Years Defense Program
<b>GATM</b>	Global Air Traffic Management
<b>GBU</b>	glide bomb unit
<b>GCS</b>	ground control station
<b>GPS</b>	Global Positioning System
<b>HARM</b>	High-speed Anti-Radiation Missile
<b>HE</b>	high-explosive
<b>HUD</b>	head-up display
<b>IFF</b>	identification, friend or foe
<b>IIR</b>	imaging IR
<b>Imint</b>	imagery intelligence
<b>INS</b>	inertial navigation system
<b>IOC</b>	initial operational capability
<b>IR</b>	infrared
<b>ISR</b>	intelligence, surveillance, & reconnaissance
<b>JASSM</b>	Joint Air-to-Surface Standoff Missile
<b>JDAM</b>	Joint Direct Attack Munition
<b>JSOW</b>	Joint Standoff Weapon

*Continued on p. 73*





**A-10C Thunderbolt II** (Jim Haseltine)

**COMMENTARY**

Deadly combination of large and diverse weapons payload, long loiter times, austere airfield capability, maneuverability, and wide combat radius. Can operate under 1,000 ft ceilings, above 25,000 ft with ATPs and GPS guided munitions, in darkness with NVG. The 30 mm gun can destroy heavily armored tanks. Cockpit protected by titanium armor. First used in combat in 1991 Gulf War.

**Extant Variant(s)**

■ **A-10C.** Upgraded with precision engagement mod, new color MFDs, hands-on throttle and stick system, digital stores management, JDAM/WCMD integration, Litening and Sniper ATP capability, Situational Awareness Data Link (SADL), and integration of sensors with aircraft systems. IOC in August 2007. First combat deployment September 2007. Although fleetwide wing replacements were ongoing, USAF announced in its FY15 budget plans to retire the entire fleet by FY19, beginning with 89 aircraft in FY15.

**F-15 Eagle**

**Brief:** A supersonic, all-weather, highly maneuverable tactical fighter designed to swiftly gain and maintain air superiority in aerial combat.

**Function:** Air superiority fighter.

**Operator:** ACC, AFMC, PACAF, USAF-AFAFRICA, ANG.

**First Flight:** July 27, 1972.

**Delivered:** November 1974-85.

**IOC:** September 1975.

**Production:** 874.

**Inventory:** 214 (F-15C); 35 (F-15D).

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

**Contractor:** McDonnell Douglas (now Boeing), Raytheon.

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

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

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

**Weight:** max T-O 68,000 lb.

**Ceiling:** 60,000 ft.

**Performance:** F-15C: speed Mach 2.5, ferry range

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.

**COMMENTARY**

World's dominant air superiority fighter for more than 30 years. Became USAF's front-line fighter upon introduction in the mid-1970s. Combines superior maneuverability and acceleration, range, weapons, and avionics. First saw combat for USAF in 1991 Gulf War, accounting for 34 of the 37 USAF air-to-air victories. Before that, flown in combat by Israeli Air Force in the 1982 Bekaa Valley War.

**Extant Variant(s)**

■ **F-15C/D.** Introduced in June 1979, with an internal EW countermeasures suite, additional 2,000 lb of internal fuel, and provision for CFTs. Tactical capabilities were enhanced with the initiation of the Multistage Improvement Program. The final 43 production aircraft received the F-15E-designed APG-70 radar. The FY15 budget supports ongoing upgrades, including the AESA radar, a more capable mission computer, and a new EW self-protection system. USAF has delayed by one year development of the Eagle Passive/Active Warning Survivability System (EPAWSS) but considers it crucial to future operations in highly contested environments. USAF has announced plans to retire 51 aircraft over the FYDP, sustaining the remaining aircraft through at least 2035. It expects to complete full-scale fatigue testing in 2014 to determine possible life-extension measures.

**F-15E Strike Eagle**

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

**Function:** Dual-role fighter.

**Operator:** ACC, AFMC, USAF-AFAFRICA.

**First Flight:** Dec. 11, 1986.

**Delivered:** April 1988-2004.

**IOC:** September 1989.

**Production:** 236.

**Inventory:** 218.

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

**Contractor:** McDonnell Douglas (now Boeing), Raytheon.

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

**Accommodation:** pilot and WSO.

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

**Weight:** max T-O 81,000 lb.

**Ceiling:** 50,000 ft.

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

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

**COMMENTARY**

Basic F-15 airframe strengthened and upgraded for heavyweight multirole capability. Saw first combat in Desert Storm in 1991. Can maneuver at nine Gs throughout flight envelope.

**Extant Variant(s)**

■ **F-15E.** Has advanced cockpit controls, displays, and a wide-field-of-view HUD. Array of integrated avionics and electronics to permit flight at low, medium, or high altitude, day or night, and in all weather conditions. Carries LANTIRN targeting pods and Sniper and Litening ATPs on dedicated sensor stations. SAR pod provides surveillance and reconnaissance support to ground operations. Potent ground attack capability supplied by GPS-aided and precision weapons and by 20 mm gun for strafing. Air-to-air capability based on array of radar guided and IR-homing weapons. Carries a large and varied ordnance load. Equipped with Link 16 and ARC-210 BLOS satcom. Ongoing upgrades include an AESA radar, more capable mission computer, and helmet mounted cueing system for the front cockpit. EPAWSS mods are delayed one year. USAF expects to complete full-scale fatigue testing in 2015 to determine whether the aircraft will need a SLEP to continue in service until at least 2035.

**F-16 Fighting Falcon**

**Brief:** Multirole fighter aircraft that is highly maneuverable and proven in air-to-air combat, SEAD, and air-to-surface attack.

**Function:** Multirole fighter.

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

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

**Delivered:** January 1979-2005.

**IOC:** October 1980, Hill AFB, Utah.

**Production:** 2,206.

**Inventory:** 846 (F-16C); 161 (F-16D).

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

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

**Accommodation:** pilot.

**Dimensions:** span 32.8 ft, length 49.3 ft, height 16.7 ft.

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

**Ceiling:** 50,000 ft.

**Performance:** speed Mach 2, ferry range 2,002+ miles.

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

**COMMENTARY**

Workhorse of the USAF fighter fleet. A lightweight fighter supporting the majority of PGM taskings in combat operations. Among the most maneuverable fighters ever built. First flown by USAF in combat in 1991 Gulf War; USAF F-16s flew 13,500 missions, more than any other type. All Block 40/42 and 50/52 F-16s upgraded with the Common



**F-15E Strike Eagles** (SSgt. Michael B. Keller)



Configuration Implementation Program (CCIP), providing standardized cockpit configuration with color MFDs and software, modular mission computer, helmet mounted cueing system, and Link 16 data link.

**Extant Variant(s)**

■ F-16C/D. Introduced in 1984, at production Block 25. Featured Multinational Staged Improvement Program (MSIP) II upgrades to cockpit, airframe, and core avionics plus addition of increased-range APG-68 radar. Block 25s also added the AIM-120 AMRAAM as a baseline weapon. With Block 30/32 came MSIP III mods; new engines; and additional weapons, including the AGM-88 HARM. Block 40/42 and Block 50/52 aircraft are the newest variants, but the majority are showing bulkhead cracks. Sustainment efforts to extend the F-16 as a bridge to the F-35A have included a legacy SLEP, integration of new weapons and targeting pods, and the Combat Avionics Programmed Extension Suite (CAPES). The SLEP includes structural mods to add six to eight years of service life for 300 aircraft. USAF had to drop CAPES from its FY15 budget, but it considers upgrades with an AESA radar, new cockpit display, data link enhancements, and improved defensive suite necessary to ensure effectiveness against emerging threats.

■ F-16CG Block 40/42 aircraft, first delivered in 1988, specialize in night attack with PGMs and wide-angle HUD. Greater T-O weight and maneuvering limits, expanded envelope, nine-G capability. Introduced LANTIRN pods, including automatic terrain following, for high-speed penetration and precision attack at night and in adverse weather. Other upgrades included APG-68(V5) fire-control radar, GPS, ring-laser gyro INS, enhanced-envelope gunsight, digital flight controls, and diffracted optics HUD.

■ F-16CJ Block 50/52, first delivered in 1991, are optimized for SEAD, employing the AGM-88 HARM targeting system (HTS) and longer range APG-68 (V9) fire-control radar. Other upgrades include F110-GE-129 and F100-PW-229 increased performance engines, newer cockpit control and display technology with avionics growth capability, ring laser gyro INS, GPS, ALR-56M RWR, ALE-47 threat adaptive countermeasures system, and advanced IFF system. Weapons improvements include use of Sniper and Litening ATPs. Downlink capability integrates with ROVER system to support joint terminal attack controllers (JTACs) on the ground.

**F-22 Raptor**

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

**Function:** Air dominance multirole fighter.

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

**First Flight:** Sept. 7, 1997.

**Delivered:** 2002 (first production representative aircraft).

**IOC:** Dec. 15, 2005.

**Production:** 187.

**Inventory:** 182.

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



**F-22A Raptor** (SSgt. Jacob N. Bailey)



**F-16C Fighting Falcon** (Aaron M. U. Church)

**Contractor:** Lockheed Martin, Boeing.

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

**Accommodation:** pilot.

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

**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 in side 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.

**COMMENTARY**

USAF's newest operational fighter, built to operate day and night and in adverse weather, across full spectrum of missions. Flew its first operational sortie from Langley in 2006, as part of Noble Eagle. Combines stealth, supercruise, high maneuverability, and integrated avionics to counter and survive multiple anti-access threats and survive. Integrated avionics and intraflight data link permit simultaneous engagement of multiple targets. Advanced flight controls, heavy structure, high-performance engines, thrust vectoring nozzles yield great maneuverability.

**Extant Variant(s)**

■ F-22A. Cockpit fitted with six color LCD panels. The primary MFD provides a view of the air and ground tactical situation, including threat identity, threat priority, and tracking information, with two secondary MFDs showing air and ground threats, stores management, and air threat information. Two additional displays give navigation, communication, identification, and flight information. A HUD shows target status, weapon status, weapon envelopes, and shoot cues. Other equipment includes APG-77 radar, an EW system with RWR and missile launch detector, JTIDS, IFF system, laser gyroscope inertial reference, and GPS. The FY15 funding request would continue the Reliability, Availability, and Maintainability Maturation Program (RAMMP) to develop and integrate upgrades and retrofit of combat-coded F-22s with Increment 3.1 mods, upgrading SAR ground mapping, threat geolocation, EA capability, and integration of SDB 1. It also continues development of Increment 3.2, including integration of AIM-120D AMRAAM and AIM-9X.

**F-35 Lightning II**

**Brief:** Next generation strike aircraft.

**Function:** Multirole fighter.

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

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

**Delivered:** April 2011 (first LRIP aircraft).

**IOC:** 2016 (USAF).

**Production:** planned: 1,763 USAF (F-35A); 680 Navy and Marine Corps (F-35B&C); unspecified number Britain; unspecified number to seven other partner countries.

**Inventory:** 22 (USAF).

**Aircraft Location:** Edwards AFB, Calif.; Eglin AFB, Fla.; Luke AFB, Ariz.; Nellis AFB, Nev.; other locations TBD.

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

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

**Accommodation:** pilot.

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

**Weight:** max T-O 70,000 lb.

**Ceiling:** 50,000 ft.

**Acronyms, Continued**

<b>JSUPT</b>	Joint Specialized Undergraduate Training
<b>JTIDS</b>	Joint Tactical Information Distribution System
<b>LANTIRN</b>	Low-Altitude Navigation & Targeting Infrared for Night
<b>LCD</b>	liquid crystal display
<b>LGB</b>	laser guided bomb
<b>LJDAM</b>	Laser JDAM
<b>LO</b>	low observable
<b>LOS</b>	line of sight
<b>LRIP</b>	low-rate initial production
<b>MALD</b>	Miniature Air Launched Decoy
<b>Masint</b>	measurement & signature intelligence
<b>MFD</b>	multifunction display
<b>MTI</b>	military training instructor
<b>n/a</b>	not available
<b>NSAv</b>	non-standard aviation
<b>NVG</b>	night vision goggles
<b>PGM</b>	precision guided munition
<b>PSP</b>	precision strike package
<b>ROVER</b>	Remotely Operated Video Enhanced Receiver
<b>RPA</b>	remotely piloted aircraft
<b>RWR</b>	radar warning receiver
<b>SAR</b>	synthetic aperture radar
<b>satcom</b>	satellite communications
<b>SDB</b>	Small Diameter Bomb
<b>SEAD</b>	suppression of enemy air defenses
<b>SHF</b>	super high frequency
<b>shp</b>	shaft horsepower
<b>Sigint</b>	signals intelligence
<b>S-L</b>	sea level
<b>SLEP</b>	service life extension program
<b>SOF</b>	special operations forces
<b>STOL</b>	short takeoff and landing
<b>TACAN</b>	tactical air navigation
<b>TBD</b>	to be determined
<b>TF/TA</b>	terrain-following/terrain-avoidance
<b>T-O</b>	takeoff
<b>WCMD</b>	Wind-Corrected Munitions Dispenser
<b>WSO</b>	weapon systems officer



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

**Armament:** F-35A: one 25 mm GAU-22/A cannon and up to 18,000 lb on 10 weapons stations—four stations inside two weapons bays (for maximum stealth) and three stations on each wing; standard internal loadout: two AIM-120 AMRAAMs and two GBU-31 JDAMs.

#### COMMENTARY

The F-35 is a joint and multinational program aimed at developing and fielding an affordable, highly common family of next generation strike fighters. For US forces, the program provides: F-35A conventional takeoff and landing (CTOL) variant for the Air Force; F-35B short takeoff and vertical landing (STOVL) variant for USMC; and F-35C carrier variant (CV) variant for USN. USAF's F-35A will replace F-16 and A-10 fleets with a stealthy multirole fighter. Designed to be able to enter heavily defended enemy airspace and engage all enemy targets in any conflict. Features advanced stealth design, high maneuverability, long range, and advanced avionics.

#### Extant Variant(s)

■ F-35A. First flight by a USAF test pilot on Jan. 30, 2008. On May 5, 2011, USAF received its first production aircraft—dubbed AF-7—built as part of Lot 1 LRIP. F-35 joint schoolhouse at Eglin received its first F-35, a production model F-35A CTOL variant, on July 14, 2011. On Feb. 28, 2012, USAF cleared the F-35s at Eglin schoolhouse for initial flight operations. All variants are still in development and test. Program officials expect the development program, which is about 90 percent complete, to end in 2017. Nellis flew its first operational test mission on April 4, 2013. The first of 144 F-35As to be based at Luke, selected to train both USAF and international pilots, arrived March 11, 2014. The FY15 budget would procure another 26 F-35As.

## Special Operations Forces Aircraft

### AC-130H/U Spectre/Spooky

**Brief:** Heavily armed aircraft using side-firing weapons integrated with sophisticated sensor, navigation, and fire-control systems to provide precise firepower or area saturation for long periods, at night and in adverse weather, for CAS, air interdiction, and armed reconnaissance.

**Function:** Attack aircraft.

**Operator:** AFSOC.

**First Flight:** 1967.

**Delivered:** 1968-present.

**IOC:** 1972 AC-130H; 1996 AC-130U.

**Production:** 43; incl four recent conversions.

**Inventory:** eight AC-130H; 17 AC-130U.

**Aircraft Location:** Cannon AFB, N.M. (H model); Hurlburt Field, Fla. (U model).



AC-130U Spooky (A1C Emily Moore)



F-35A Lightning II (MSgt. Jeremy T. Lock)

**Contractor:** Lockheed Martin (airframe); Boeing (AC-130H); Rockwell, now Boeing (AC-130U).

**Power Plant:** four Allison T56-A-15 turboprops, each 4,910 shp.

**Accommodation:** officer: two pilots, navigator, fire-control officer, EWOC; enlisted: 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:** AC-130H: one 40 mm Bofors cannon (256 rd) and one 105 mm Howitzer (100 rd). AC-130U: one 25 mm Gatling gun, plus one 40 mm and one 105 mm cannon.

#### COMMENTARY

Gunship modified with gun systems, electronic and EO sensors, fire-control systems, enhanced navigation systems, sophisticated communications, defensive systems, in-flight refueling capability. Plans call for phased replacement with procurement of AC-130J models beginning in 2014.

#### Extant Variant(s)

■ AC-130H Spectre. Serves with 27th Special Operations Wing at Cannon. Equipped with digital fire-control computer, EO sensors, target-acquisition systems, including FLIR sensor and low-light-level television (LLTV), and capable of in-flight refueling. Advanced fire-control computers, navigation, communications, and sensor suites. Originally AC-130E, converted to H standard after Vietnam War.

■ AC-130U Spooky. Serves with 1st SOW, Hurlburt Field. Conversions of earlier gunships. Thirteen conversions by Rockwell delivered to 4th SOS in 1994-95. Four remaining conversions done by Boeing in recent years. All weapons can be subordinated to the APQ-180 digital fire-control

radar, FLIR, or all-light-level television (ALLTV) for adverse weather attack operations.

### AC-130J Ghost rider

**Brief:** Fourth generation gunship upgraded with digital avionics, trainable 30 mm and 105 mm cannons, and low-yield PGMs, primarily to conduct CAS and air interdiction missions and is suited particularly for urban operations.

**Function:** Attack aircraft.

**Operator:** AFSOC.

**First Flight:** April 5, 1996 (basic C-130J).

**Delivered:** from 2014.

**IOC:** 2017 (planned).

**Production:** 32 (to be converted from new-build MC-130Js).

**Inventory:** 0.

**Aircraft Location:** Cannon AFB, N.M. (initial).

**Contractor:** Lockheed Martin.

**Power Plant:** four Rolls-Royce AE 2100D3 turboprops, each 4,591 shp.

**Accommodation:** two pilots, two CSOs, three enlisted gunners.

**Dimensions:** span 132.6 ft, length 97.7 ft, height 38.8 ft.

**Weight:** max T-O 164,000 lb.

**Ceiling:** 28,000 ft., 42,000 lb payload.

**Performance:** speed 416 mph, range 3,000 miles.

**Armament:** 30 mm GAU-23/A cannon; 105 mm cannon; PGMs.

#### COMMENTARY

A C-130J significantly modified to include fully integrated digital avionics cockpit, GPS/INS, integrated defensive systems and color weather radar, and PSP. Designed to provide ground forces with a direct-fire platform that is persistent, suited for urban operations, and delivers precision low-yield munitions against ground targets. Air interdiction missions may cover preplanned targets or targets of opportunity and include strike coordination and reconnaissance.

#### Extant Variant

■ AC-130J Ghost rider. PSP includes a mission management console, robust communications suite, two EO/IR sensors, advanced fire control equipment, PGM delivery capability, and trainable cannons. First delivery expected in 2014, running through FY21. IOC slated for FY17 at Cannon.

### AC-130W Stinger II

**Brief:** Highly modified C-130H aircraft that primarily provides armed overwatch, performing reconnaissance and direct ordnance delivery to support ground troops.

**Function:** Armed overwatch for special operations activities.

**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, and two special mission aviators.  
**Dimensions:** span 132.6 ft, length 98.8 ft, height 38.5 ft.

**Weight:** max T-O 155,000 lb.

**Ceiling:** 28,000 ft.

**Performance:** speed 300 mph, range 2,875 miles.

**Armament:** 30 mm GAU-23/A Bushmaster II chain gun; PGMs, incl GBU-39 SDB and AGM-176 Griffin.

#### COMMENTARY

A C-130H significantly modified to include improved navigation, threat detection, countermeasures, communications suites, and a standoff PSP. Originally modified to MC-130W Combat Spear variant, primarily for infiltration/exfiltration and in-flight refueling of SOF helicopters. In November 2010 USAF introduced a roll on/roll off PSP, changing the name to Dragon Spear, to meet a new USSOCOM requirement for additional gunships. In May 2012 USAF changed the designation to AC-130W Stinger II, after adding further enhancements, including an improved PSP. Plans call for the new-build C-130J gunships to replace AC-130Ws, which on average are more than 24 years old.

#### Extant Variant(s)

■ AC-130W Stinger II. Performs armed overwatch and CAS reconnaissance over friendly positions for threat prevention. Still maintains limited mobility capability but also can provide strike coordination, nontraditional ISR, and C2. PSP mod includes a mission management console, communications suite, and flight deck hardware. SDB capability deployed in July 2012.

#### C-145 Skytruck

**Brief:** STOL, multipurpose utility aircraft used for the AvFID mission and light mobility operations.

**Function:** Foreign aviation forces trainer and light mobility.

**Operator:** AFSOC, AFRC (classic associate).

**First Flight:** July 1993 (PZL M-28).

**Delivered:** from 2009.

**IOC:** n/a.

**Production:** 16 (planned).

**Inventory:** USSOCOM-owned.

**Aircraft Location:** Duke Field, Fla.

**Contractor:** PZL Mielec (Sikorsky subsidiary)

**Power Plant:** two Pratt & Whitney PT6A-65B turboprops, 1,100 shp.

**Accommodation:** crew: two pilots, one loadmaster. Load: 16 passengers or 10 paratroopers; up to four litters; max cargo 5,000 lb.

**Dimensions:** span 72.3 ft, length 43 ft, height 16.1 ft.

**Weight:** max T-O 16,534 lb.

**Ceiling:** 25,000 ft.

**Performance:** speed 256.5 mph, range 1,161.5 miles.

#### COMMENTARY

Originally purchased by USSOCOM and operated by AFSOC for the NSAv mission, providing dedicated air support for small, detached combat teams, the C-145A flew out of Cannon AFB, N.M., making its first deployment in March 2011 to support operations in Afghanistan. In 2012 USSOCOM began several asset realignments, including shifting the C-145As to support the AvFID mission as part of increased emphasis on the Combat Aviation Advisors role in building partner-nation capabilities. The last two of 10 aircraft departed Cannon for Duke Field in March 2013. Duke is slated to receive its six final C-145As in FY15.

#### Extant Variant(s)

■ C-145A. Built by Polish manufacturer PZL Mielec as the M-28 Skytruck, the C-145A is a high-wing aircraft with twin vertical fins and a nonretractable tricycle landing gear capable of STOL to unprepared runways. It is reconfigurable to support both airland and airdrop (max 2,400 lb) of cargo, casualty evacuation, CSAR, humanitarian assistance, and disaster relief. Operated by AFSOC's 6th SOS Combat Aviation Advisors and AFRC's 711th SOS (classic associate) out of Duke Field, where AFSOC and AFRC units also provide AvFID aircraft training.

#### C-146 Wolfhound

**Brief:** A militarized German-built Dornier 328 commuter airliner that provides flexible and responsive mobility support to SOF operations worldwide.

**Function:** Multimission mobility.



C-145A Skytruck (TSgt. Jasmin Taylor)

**Operator:** AFSOC.

**First Flight:** December 1991 (Do 328).

**Delivered:** from 2011.

**IOC:** n/a.

**Production:** 17 (converted).

**Inventory:** USSOCOM-owned.

**Aircraft Location:** Cannon AFB, N.M.

**Contractor:** Fairchild-Dornier; Sierra Nevada Corp.

**Power Plant:** two Pratt & Whitney 119C turbo-props, 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).

#### COMMENTARY

Purchased by USSOCOM and operated by AFSOC for the NSAv mission, the C-146A provides direct support to SOF teams worldwide, utilizing prepared and semiprepared airfields. Sierra Nevada Corp. has overseen modifications and took delivery of the 17th aircraft from Fairchild-Dornier in summer 2013.

#### Extant Variant(s)

■ C-146A. Preowned aircraft built by German manufacturer Dornier as the Do-328, the C-146A has received NSAv-specific modifications, including communications suite (ARC-231, PRC-117, and Iridium package), troop/cargo-capable cabin, casualty evacuation capability, NVG compatibility, and STOL and austere landing zone enhancements. First deployed in October 2011 to support USAFRICOM operations.

#### CV-22 Osprey

**Brief:** A long-range, tilt-rotor, multimission transport aircraft designed to have the maneuverability and lift capability of a helicopter and the speed and range of a fixed wing aircraft. It can operate in adverse weather and restricted visibility.



CV-22 Osprey (TSgt. DeNoris Mickle)

**Function:** Multimission airlift.

**Operator:** AETC, AFSOC.

**First Flight:** March 19, 1989 (V-22).

**Delivered:** 2006.

**IOC:** 2009.

**Production:** 52 (CV-22; incl two replacements).

**Inventory:** 32.

**Aircraft Location:** Hurlburt Field, Fla.; Kirtland AFB, N.M.; RAF Mildenhall, UK.

**Contractor:** Boeing, Bell Helicopter Textron.

**Power Plant:** two Rolls Royce-Allison AE1107C turboshafts, each 6,200 shp.

**Accommodation:** crew: officer; two pilots; enlisted; 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.

#### COMMENTARY

Multiengine, dual-piloted, self-deployable, medium-lift vertical takeoff and landing (VTOL) tilt-rotor aircraft, operated by both the US Air Force and US Marine Corps. First operational deployment, to Africa, took place in November 2008; first combat deployment, to Iraq, in summer 2009. RAF Mildenhall received the first of 10 CV-22s in June 2013. Final delivery expected in 2014. FY15 budget would fund CV-22 production line shut down and Pacific region squadron standup.

#### Extant Variant(s)

■ CV-22B. Air Force's variant of the V-22 Osprey. Operates with forces of USSOCOM. Mission is long-range clandestine penetration of denied areas in adverse weather and low visibility to infiltrate, exfiltrate, resupply SOF. Optimized for special missions, including in nuclear, biological, and chemical (NBC) warfare conditions. Designed to operate from land bases, austere forward operating locations, and air capable ships without reconfiguration.



Equipped with fully integrated precision navigation suite, a digital cockpit management system, FLIR, integrated NVG HUD, TF/TA radar, digital map system. Has robust self-defense avionics and secure anti-jam communications.

#### MC-130E/H Combat Talon

**Brief:** A modified C-130 able to provide global, day, night, and adverse weather capability to air-drop personnel and to deliver personnel and equipment to support US and allied SOF.

**Function:** SOF infiltration, exfiltration, and resupply.

**Operator:** AETC, AFSOC, AFRC.

**First Flight:** circa 1965 MC-130E; June 1984 MC-130H.

**Delivered:** initially 1966.

**IOC:** 1966 MC-130E; June 1991 MC-130H.

**Production:** 22 new-build MC-130Hs.

**Inventory:** 5 MC-130E; 20 MC-130H.

**Aircraft Location:** Duke Field and Hurlburt Field, Fla.; Kadena AB, Japan; Kirtland AFB, N.M.; RAF Mildenhall, UK.

**Contractor:** Lockheed Martin (airframe), Boeing (integrated weapons system support).

**Power Plant:** four Allison T56-A-15 turboprops, each 4,910 shp.

**Accommodation:** MC-130E crew: officer: two pilots, two navigators, EWO; enlisted: flight engineer, radio operator, two loadmasters. MC-130E load: 53 troops or 26 paratroopers. MC-130H crew: officer: two pilots, navigator, EWO; enlisted: flight engineer, two loadmasters. MC-130H load: 77 troops, 52 paratroops, or 57 litters.

**Dimensions:** span 132.6 ft, height 38.5 ft, length 100.8 ft (MC-130E), 99.8 ft (MC-130H).

**Weight:** max T-O 155,000 lb.

**Ceiling:** 33,000 ft (MC-130H).

**Performance:** speed 300 mph (MC-130H), range 3,105 miles.

#### COMMENTARY

Special operations mobility aircraft. Used primarily to conduct infiltration, resupply, and exfiltration of SOF. Capable of airdrop using Joint Precision Airdrop System, landing on austere and unmarked landing zones. Can support psychological operations with leaflet bundle drops. Equipped with TF/TA radars, precision navigation systems using INS/GPS, and electronic and IR countermeasures for self-protection. All models capable of aerial refueling as a receiver and tanker.

#### Extant Variant(s)

■ MC-130E Combat Talon I. Fourteen modified C-130E aircraft were equipped with a pod-based system to air refuel SOF helicopters and tilt-rotor aircraft. Plans call for replacement by MC-130J variants.

■ MC-130H Combat Talon II. C-130H aircraft modified with an integrated glass cockpit were acquired in the late 1980s and early 1990s to supplement the Combat Talon I. All are modified with a state-of-the-art pod-based aerial refueling system to augment the MC-130E and MC-130P aerial refueling fleet.

#### MC-130J Commando II

**Brief:** Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide air refueling for SOF helicopters and tilt-rotor aircraft or to air-drop/resupply special operations forces.



MC-130H Combat Talon II (SSgt. Samuel Morse)

**Function:** Air refueling for SOF helicopters and tilt-rotor aircraft and airdrop.

**Operator:** AETC, AFSOC.

**First Flight:** April 20, 2011.

**Delivered:** September 2011.

**IOC:** 2011.

**Production:** 37 (planned).

**Inventory:** 13.

**Aircraft Location:** Cannon AFB, N.M.; Kirtland AFB, N.M.; RAF Mildenhall, UK.

**Contractor:** Lockheed Martin (airframe), Boeing.

**Power Plant:** four Rolls Royce AE2100D3 turboprops, each 4,591 shp.

**Accommodation:** crew: officer: two pilots, CSO; enlisted: 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.

#### COMMENTARY

Specialized tanker aircraft flies clandestine formation or single-ship intrusion of hostile territory missions to provide air refueling of special operations forces vertical-lift and tilt-rotor assets and the infiltration, exfiltration, and resupply of SOF by airdrop or air-land operations. Has secondary mission of leaflets airdrop. Replacing MC-130E and MC-130P tankers. USAF officially changed name from Combat Shadow II to Commando II in March 2012.

#### Extant Variant(s)

■ MC-130J. Mods include fully integrated INS/GPS systems, color LCDs, NVG lighting, HUDs, integrated defensive systems, digital moving map display, EO/IR system, dual satcom for voice/data, enhanced cargo-handling system, and enhanced service life wing. Also has fully populated CSO and auxiliary flight deck stations. Improvements over MC-130P reduce crew size, leaving the CSO to handle helicopter refueling process, normally run by flight engineer, and loadmasters to handle other flight engineer and communications operator functions.

#### MC-130P Combat Shadow

**Brief:** Aircraft that flies clandestine or low-visibility,

low-level missions into denied areas to provide air refueling for SOF helicopters or for airdrop/resupply of special operations teams.

**Function:** Air refueling for SOF helicopters and airdrop.

**Operator:** AETC, AFSOC, ANG.

**First Flight:** Dec. 8, 1964 (as HC-130H).

**Delivered:** from 1965.

**IOC:** 1986.

**Production:** (converted).

**Inventory:** 23.

**Aircraft Location:** Hurlburt Field, Fla.; Kadena AB, Japan; Kirtland AFB, N.M.; Moffett Field, Calif.

**Contractor:** Lockheed Martin (airframe), Boeing.

**Power Plant:** four Allison T56-A-15 turboprops, each 4,910 shp.

**Accommodation:** officer: two pilots, two navigators; enlisted: flight engineer, communications systems operator, two loadmasters.

**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 290 mph, range 4,000+ miles.

#### COMMENTARY

Specialized tanker aircraft flies clandestine formation or single-ship intrusion of hostile territory missions to provide air refueling of SOF helicopters and the infiltration, exfiltration, and resupply of SOF by airdrop or air-land operations.

#### Extant Variant(s)

■ MC-130P. Mods include fully integrated INS/GPS system, NVG-compatible interior and exterior lighting, FLIR, radar and missile warning receivers, chaff and flare dispensers, satellite and data-burst communications.

#### U-28A

**Brief:** A militarized version of the Pilatus PC-12 that provides tactical airborne ISR support for special operations teams.

**Function:** Tactical ISR.

**Operator:** AFSOC, AFRC.

**First Flight:** circa 1994 (PC-12).

**Delivered:** 2006.

**IOC:** n/a.

**Production:** (converted).

**Inventory:** USSOCOM-owned.

**Aircraft Location:** Cannon AFB, N.M.; Hurlburt Field, Fla.

**Contractor:** Pilatus Aircraft Ltd.

**Power Plant:** single Pratt & Whitney PT6A-67B, 1,200 shp.

**Accommodation:** officer: 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.

#### COMMENTARY

Modified Pilatus PC-12 aircraft flies worldwide special operations missions. USSOCOM owned and AFSOC operated for the NSAv role. AFRC provides associate instructors for flying training.

#### Extant Variant(s)

■ U-28A. Mods include advanced radio-commu-



MC-130J Commando II (SSgt. Matthew Plew)



nications suite, aircraft survivability equipment, EO sensors, and advanced navigation systems. First employed by AFSOC for Enduring Freedom and Iraqi Freedom.

## ISR/BM/C3 Aircraft

### E-3 Sentry

**Brief:** Heavily modified Boeing 707-320B aircraft, fitted with an extensive complement of mission avionics providing all-weather air surveillance and C2 for tactical and air defense forces.

**Function:** Airborne early warning, tactical BM, and C2 of theater air forces.

**Operator:** ACC, PACAF, AFRC.

**First Flight:** Oct. 31, 1975 (full avionics).

**Delivered:** March 1977-R4

**IOC:** 1977.

**Production:** 33.

**Inventory:** 22 E-3B; six E-3C; three E-3G.

**Aircraft Location:** JB Elmendorf-Richardson, Alaska; Kadena AB, Japan; Tinker AFB, Okla.

**Contractor:** Boeing, Northrop Grumman (radar), Lockheed Martin (computer).

**Power Plant:** four Pratt & Whitney TF33-PW-100A turbofans, each 21,000 lb thrust.

**Accommodation:** four flight crew, 13-19 mission specialists.

**Dimensions:** span 145.8 ft, length 152.9 ft, height 41.8 ft.

**Weight:** max T-O 335,000 lb.

**Ceiling:** above 35,000 ft.

**Performance:** speed 360 mph, range 5,000+ miles.

#### COMMENTARY

Battle management aircraft—airborne warning and control system (AWACS)—capable of conducting surveillance from Earth's surface to the stratosphere, over land or water, at a range of more than 200 miles. Coordinates actions of hundreds of strike, support, and cargo aircraft. Integrates C2, BM, surveillance, target detection, and tracking in one platform. Operates in direct subordination to joint or combined air operations center.

#### Extant Variant(s)

■ E-3B. Upgrade of earliest E-3A. Equipped with much-enhanced computer capabilities, jam-resistant communications, austere maritime surveillance capability, upgraded radio communications, and five additional mission consoles. Completed in 1994. Received Block 30/35 mods, integrating and enhancing four major subsystems; completed in 2001. Installing interim next generation IFF capability to ensure Block 30/35 aircraft meet new IFF requirements while awaiting Block 40/45 upgrade.

■ E-3C. Upgrade from E-3A, including five additional mission consoles and Have Quick anti-jamming equipment. Received Block 30/35 upgrades. Also receiving interim next generation IFF.

■ E-3G. Designation applied to Block 40/45 upgraded aircraft. Entire fleet conversion planned by 2020. Considered the most comprehensive upgrade in E-3 program history, Block 40/45 mod will enhance tracking and combat identification capabilities, enhance mission effectiveness, improve mission system reliability, and lower life-cycle costs. Mods include a new mission computer system, using an open architecture with some 50 COTS computers and 24 COTS software products and automated processes to greatly reduce operator workload; new operator consoles; improved electronic support measures (ESM) passive surveillance capability; and full next generation IFF.

### E-4 National Airborne Operations Center

**Brief:** A four-engine, swept-wing, long-range high-altitude airplane providing a highly survivable C3 center allowing national leaders to direct US forces, execute emergency war orders, and coordinate actions by civil authorities.

**Function:** Airborne operations center.

**Operator:** ACC.

**First Flight:** June 13, 1973 (E-4A); June 10, 1978 (E-4B).

**Delivered:** December 1974-85.

**IOC:** December 1974 E-4A; January 1980 E-4B.

**Production:** four.

**Inventory:** four.

**Aircraft Location:** Offutt AFB, Neb.



E-3 Sentry (SrA. Brett Clashman)

**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.

#### COMMENTARY

Militarized version of the Boeing 747-200. Performs the National Airborne Operations Center (NAOC) mission. Provides survivable C3 platform in all situations, including sustained operations in a nuclear environment.

#### Extant Variant(s)

■ E-4B. Hardened against the effects of nuclear explosions, including electromagnetic pulse (EMP). A 1,200-kVA electrical system supports advanced system electronics as well as state-of-the-art communications and data processing equipment such as EHF Milstar satellite terminals and six-channel International Maritime Satellite. A triband radome houses SHF communications antenna. The last aircraft has received the Modernization Block 1 upgrade, which updated the electronic and communications infrastructure, utilizing COTS hardware and software. However, this final aircraft received a different physical configuration for its Audio Infrastructure Upgrade (AIU) because of diminishing manufacturing sources, so USAF plans to retrofit the first three to ensure a standard AIU configuration.

### E-8 JSTARS

**Brief:** A modified Boeing 707-300 series with long-range air-to-ground radar capable of locating, classifying, and tracking moving ground vehicles out to distances in excess of 124 miles.

**Function:** Ground surveillance, BM, C2 aircraft.

**Operator:** ACC (active associate) and ANG.

**First Flight:** December 1988.

**Delivered:** May 1996-2005.

**IOC:** Dec. 18, 1997.

**Production:** 18.

**Inventory:** 17.

**Aircraft Location:** Robins AFB, Ga.

**Contractor:** Northrop Grumman, Motorola, Cubic, Raytheon.

**Power Plant:** four Pratt & Whitney TF33-102C turbojets, each 19,200 lb thrust.

**Accommodation:** flight crew: four; mission crew: 15 Air Force and three Army operators (can be augmented according to mission).

**Dimensions:** span 145.8 ft, length 152.9 ft, height 42.5 ft.

**Weight:** max T-O 336,000 lb.

**Ceiling:** 42,000 ft.

**Performance:** speed 584 mph (optimal orbit), range 9 hr normal endurance, longer with air refueling.

#### COMMENTARY

Aircraft equipped with canoe-shaped radome under the forward fuselage housing a 24-ft-long side-looking phased array antenna capable of locating, classifying, and tracking vehicles on the ground. Data is transmitted via data link to ground stations or other aircraft. Provides theater ground and air commanders with surveillance data to support attack operations. Evolved from Army and Air Force programs to develop capability to detect, locate, and attack enemy armor at ranges beyond the forward area of troops. The first two developmental aircraft deployed in 1991 to Desert Storm.

#### Extant Variant(s)

■ E-8C. Production version delivered from 1996 to 2005. Earlier aircraft retrofitted to final production Block 20, featuring more powerful computers, an Internet protocol local area network, and BLOS connectivity. USAF retired one aircraft damaged beyond economical repair. Development testing of the first new production-configured Pratt & Whitney JT8D-219 engine on the JSTARS test aircraft completed in 2011. However, in May 2012, USAF said it would not proceed with the re-engining



E-8 JSTARS (SrA. Andrew Lee)



program. With some COTS mission equipment now 20 years old, USAF is continuing some upgrades through FY15 but expects to begin an aircraft recapitalization program in FY18.

#### EC-130H Compass Call

**Brief:** A heavily modified C-130 for electronic combat.  
**Function:** Electronic warfare.

**Operator:** ACC.

**First Flight:** 1981.

**Delivered:** 1982.

**IOC:** 1983; Block 30 from February 1999.

**Production:** (converted).

**Inventory:** 14.

**Aircraft Location:** Davis-Monthan AFB, Ariz.

**Contractor:** Lockheed Martin.

**Power Plant:** four Allison T56-A-15 turboprops, each 4,910 shp.

**Accommodation:** officer: two pilots, navigator, two EWOs; enlisted: 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.

#### COMMENTARY

Aircraft designed to disrupt enemy C2 communications and limit adversary coordination essential for enemy force management.

#### Extant Variant(s)

■ EC-130H. Mods include EA system and air refueling capability. All aircraft retrofitted to Block 35. Mission equipment baseline upgrades occur about every three years to ensure continued protection against evolving threats. Also replacing center wing box to meet wing service life expiration.

#### EC-130J Commando Solo (CS)/Super J (SJ)

**Brief:** A C-130J modified for psychological warfare broadcast and information operations (CS) and special operations mobility missions (SJ).

**Function:** Psychological and SOF mobility operations.  
**Operator:** ANG.

**First Flight:** April 5, 1996 (C-130J).

**Delivered:** March 1980 (J model from 2003).

**IOC:** December 1980 (EC-130E).

**Production:** seven.

**Inventory:** seven (three CS, four SJ).

**Aircraft Location:** Harrisburg Arpt., Pa.

**Contractor:** Lockheed Martin, Raytheon.

**Power Plant:** four Rolls Royce-Allison AE2100D3 turboprops, each 4,637 shp.

**Accommodation:** officer: two pilots, flight systems officer, mission systems officer; enlisted: two loadmasters, five electronic communications systems operators (CS).

**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.

#### COMMENTARY

Commando Solo aircraft have been employed for psychological operations in every US war and most other contingency operations since 1980, providing Military Information Support Operation (MISO) and civil affairs broadcasts. Recapitalization to the J model coincided with introduction of a secondary mission—special operations mobility, known as SOFFLEX—and planned introduction of a roll on/roll off (RORO) broadcast package to enable the Super J aircraft to perform the primary mission as lower cost modular Commando Solo aircraft.

#### Extant Variant(s)

■ EC-130J Commando Solo. Three heavily modified C-130J aircraft used by ANG's 193rd SOW as a broadcasting station for psychological warfare operations. Specialized mods include enhanced navigation systems, self-protection equipment, and worldwide color television configuration. Air refuelable. First entered service in 2004, with deployments to contingency operations beginning in 2005.

■ EC-130J Super J. Four modified C-130J aircraft used by ANG's 193rd SOW for SOFFLEX missions, including personnel and cargo airdrop,



MC-12 Liberty (SrA. Tiffany Trojca)

combat offload, and infiltration/exfiltration. Plans call for incorporation of a RORO psychological broadcast package (potentially the Army's Fly-Away Broadcast System).

#### MC-12W Liberty

**Brief:** A medium- to low-altitude, twin-engine turboprop ISR version of the militarized C-12, based on the Beechcraft Super King Air 350/350ER.

**Function:** Manned tactical ISR.

**Operator:** ACC, ANG.

**First Flight:** April 2009.

**Delivered:** from April 2009.

**IOC:** June 2009.

**Production:** 42 (planned).

**Inventory:** 41.

**Aircraft Location:** Beale AFB, Calif.; Key Field, Miss. (initial weapon system training). Other TBD.

**Contractor:** Hawker 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).

#### COMMENTARY

Acquired to augment RPA systems operating in Southwest Asia, this sensor-equipped C-12 is a complete collection, processing, analysis, and dissemination system. It provides ground forces with targeting data and other tactical intelligence. The MC-12W began operations in Iraq in June 2009 and in Afghanistan in December 2009.

#### Extant Variant(s)

■ MC-12W. Initial mod to first seven aircraft—used King Air 350s—including included FMV, LOS satcom data link to ROVER system, limited Sigint, and basic BLOS connectivity. Subsequent mod to remaining 30 aircraft—based on King Air 350ER—includes enhanced FMV with laser designator, more robust Sigint, and increased bandwidth for BLOS connectivity. Before joining the fleet, an additional five aircraft are completing mod to Phase 3 configuration, including a high-definition EO/IR sensor with Hi-beam capability, enhanced communications equipment, digital intercom control system, and TACAN system. USAF plans to transfer the MC-12W to USSOCOM and the Army at end of FY14.

#### MQ-1 Predator

**Brief:** A medium-altitude, long-endurance RPA, providing joint force commanders with a multimission asset that combines imagery sensors with strike capability.

**Function:** Armed reconnaissance, airborne surveillance, target acquisition.

**Operator:** ACC, AFSOC, ANG, AFRC.

**First Flight:** July 1994.

**Delivered:** July 1994 (USAF from 1996)-2011.

**IOC:** 2005.

**Production:** 268 air vehicles.

**Inventory:** 156.

**GCS Location:** Cannon AFB, N.M.; Creech AFB, Nev.; Davis-Monthan AFB, Ariz.; Ellington Field, Tex.; Hector Arpt., N.D.; Holloman AFB, N.M.; March ARB, Calif.; Nellis AFB, Nev.; Springfield-Beckley Arpt., Ohio.; Whiteman AFB, Mo.

**Aircraft Location:** Cannon AFB, N.M.; Creech AFB, Nev.; Fort Polk Airfield, La.; Fort Huachuca, Ariz.; Grand Forks AFB, N.D.; Holloman AFB, N.M.; March ARB, Calif.; Whiteman AFB, Mo.

**Contractor:** General Atomics Aeronautical Systems.

**Power Plant:** one Rotax 914F turbo engine.

**Accommodation:** GCS: pilot, sensor operator.

**Dimensions:** span 55 ft, length 27 ft, height 6.9 ft.

**Weight:** max T-O 2,250 lb.

**Ceiling:** 25,000 ft.

**Performance:** speed 84-135 mph, range 770 miles, max endurance 40 hr.

**Armament:** Two AGM-114 Hellfire missiles.

#### COMMENTARY

Fully operational system comprises four air vehicles, GCS, satellite link, and about 55 personnel for 24-hour operations. Became a fully USAF system in 1996. Systems armed with two Hellfire missiles since 2002, at which time designation changed from RQ-1 to MQ-1 to denote multimission capability. USAF forward deploys launch and recovery element (LRE) systems and support personnel for takeoff and landing operations, while the CONUS-based GCS conducts the mission via extended communication links.

#### Extant Variant(s)

■ MQ-1B. Multimission weaponized RPA. Employs near real-time FMV and MTS-A multispectral targeting system, which provides a laser designator and laser illuminator with EO/IR sensors in a single package. GCS controls the RPA via LOS data link or BLOS satcom data link. USAF received its last MQ-1B in March 2011, but continues to fund GCS and airframe mods.

#### MQ-9 Reaper

**Brief:** A medium-to-high altitude, long-endurance RPA. Operates as a persistent hunter-killer.

**Operator:** ACC, AFSOC, ANG.

**First Flight:** February 2001.

**Delivered:** November 2003.

**IOC:** October 2007.

**Production:** 319 (planned).

**Inventory:** 104.

**GCS Location:** Cannon AFB, N.M.; Creech AFB, Nev.; Holloman AFB, N.M.; Hancock Field, N.Y. Planned: Ellsworth AFB, S.D.

**Aircraft Location:** Cannon AFB, N.M.; Creech AFB, Nev.; Eglin AFB, Fla.; Fort Drum, N.Y.; Holloman AFB, N.M.; Nellis AFB, Nev.

**Contractor:** General Atomics Aeronautical Systems; L3 Communications; Raytheon.

**Power Plant:** one Honeywell TPE331-10GD turboprop, max 900 shp.

**Accommodation:** GCS: pilot, sensor operator.

**Dimensions:** span 66 ft, length 36 ft, height 12.5 ft.

**Weight:** max T-O 10,500 lb.

**Ceiling:** 50,000 ft.

**Performance:** cruise speed 230 mph, range 1,150 miles, endurance 14+ hr.

**Armament:** combination of AGM-114 Hellfires,





**MQ-9 Reaper** (Lt. Col. Leslie Pratt)

GBU-12/49 Paveway IIs, and GBU-38 JDAMs.

**COMMENTARY**

System comprises several aircraft, GCS, a Predator Primary Satellite Link (PPSL), and spare equipment and operations and maintenance crews for deployed 24-hour operations. Delivers capabilities using mission kits with various weapons and sensors payload combinations.

**Extant Variant(s)**

■ **MQ-9B Reaper.** Operational in Afghanistan since 2007. The baseline aircraft has an MTS-B multispectral targeting system, integrating an EO/IR sensor, color/monochrome daylight TV camera, image-intensified TV camera, laser designator (enabling laser guided munitions), and laser illuminator in a single package. The MTS-B sensors provide FMV as separate video streams or fused together. Also employs SAR for GBU-38 JDAM targeting. FY15 funding would continue to support GCS and airframe capability development activities, including leveraging Gorgon Stare quick reaction capability; pursuing Block 5 (with two ARC-210 radios, high-definition MTS-B, and more); adding Step Stare mode to the EO/IR sensor; and modifying additional airframes to ER configuration.

**JC-135 Open Skies**

**Brief:** A modified C-135 aircraft that performs unarmed observation and verification flights over nations that are parties to the 1992 Open Skies Treaty.  
**Function:** Observation aircraft.

**Operator:** ACC.

**First Flight:** 1993.

**Delivered:** 1993-96.

**OC:** 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.

**COMMENTARY**

A modified WC-135B used for specialized arms control treaty observation and imagery collection missions with framing and panoramic optical cameras installed in the rear of the aircraft.

**Extant Variant(s)**

■ **OC-135B.** One vertical and two oblique KS-87E framing cameras, used for photography approximately 3,000 ft above the ground, and one KA-91C panoramic camera that provides a wide sweep for each picture and is used for high-altitude photography at approximately 35,000 ft. The data annotation and recording system notes position, altitude, time, roll angle, and other data for each photo.

**RC-26 Condor**

**Brief:** Specially configured variant of the Fairchild A227-DC C-26 Metro 23 with surveillance and communications equipment for use in domestic and overseas counterdrug efforts and for reconnais-

sance following natural and man-made disasters.

**Function:** Counterdrug airborne day/night surveillance and C2.

**Operator:** ANG.

**First Flight:** 1990.

**Delivered:** C-26 first delivered 1989.

**IOC:** n/a.

**Production:** 11.

**Inventory:** 11.

**Aircraft Location:** Ellington Field, Tex.; 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.

**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.

**COMMENTARY**

Militarized ISR platform used primarily in counterdrug operations and increasingly during natural disasters such as hurricanes and wildfires. Provides real-time streaming video footage to ground personnel.

**Extant Variant(s)**

■ **RC-26B.** Specialized equipment includes state-of-the-art digital aerial cameras and an IR video camera. An extensive communications suite allows communications from 29 to 960 MHz, including provisions for plugging in 800 MHz handheld radios, and air phone capabilities. ANG is seeking funding to reconfigure Block 25 aircraft, which no longer meet either combatant commander or domestic requirements because of outdated and problematic mission management system, EO/IR sensor, and communication suite.



**RC-26B Condor** (SSgt. Marvin Cornell)

**RC-135S Cobra Ball**

**Brief:** A Masint collector equipped with special EO instruments for observing ballistic missile flights at long range.

**Function:** Electronic reconnaissance aircraft.

**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: officer: three EWOs; enlisted: 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.

**COMMENTARY**

Monitors missile-associated signatures and tracks missiles during boost and re-entry phases to provide reconnaissance for treaty verification and theater ballistic missile proliferation.

**Extant Variant(s)**

■ **RC-135S Cobra Ball.** Provides the capability to collect optical and electronic data on ballistic missile-associated activity. Cobra Ball can deploy anywhere in the world in 24 hours and provide on-scene EO reconnaissance for treaty verification and theater ballistic missile proliferation. Equipment includes wide-area IR sensors, long-range optical cameras, and an advanced communications suite.

**RC-135U Combat Sent**

**Brief:** Designed to collect technical intelligence on adversary radar emitter systems.

**Function:** Electronic reconnaissance aircraft.

**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.

**COMMENTARY**

Collects and examines data on airborne, land, and naval radar systems, providing strategic analysis for National Command Authorities and combatant forces. Distinctive antennae arrays on the chin and wing tips, large cheek fairings, and extended tail. Each airframe has slightly unique reconnaissance equipment.

**Extant Variant(s)**

■ RC-135U Combat Sent. Uses special Sigint suite to collect scientific and technical Elint data against air-, land-, and sea-based emitter systems. 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.

**RC-135V/W Rivet Joint**

**Brief:** Contains highly advanced electronic signal collection systems to acquire real-time Elint and Sigint data for theater and tactical commanders.

**Function:** Electronic reconnaissance aircraft.

**Operator:** ACC.

**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.

**Aircraft Location:** Offutt AFB, Neb.; Kadena AB, Japan; RAF Mildenhall, UK.

**Contractor:** Boeing (original airframe), L3 Communications.

**Power Plant:** four CFM International F108-CF-201 turbofans, each 21,600 lb thrust.

**Accommodation:** flight crew: three pilots, two navigators; mission crew: three EW officers, 14 intelligence operators, four airborne maintenance technicians, and up to six more depending on mission.

**Dimensions:** span 131 ft, length 135 ft, height 42 ft.

**Weight:** max T-O 297,000 lb.

**Ceiling:** 50,000 ft.

**Performance:** speed 500+ mph, range 3,900 miles.

**COMMENTARY**

Extensively modified C-135, performing worldwide reconnaissance missions to detect, identify, and geolocate signals throughout the electromagnetic spectrum.

**Extant Variant(s)**

■ RC-135V/W Rivet Joint. A self-contained standoff airborne Sigint collection system. Used mostly to exploit electronic battlefield 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. Planned mods include sensor and mission planning system upgrades.

■ TC-135W. Used for training purposes.

**RQ-4 Global Hawk**

**Brief:** A high-altitude, long-range, long-endurance RPA.

**Function:** Unmanned surveillance and reconnaissance aircraft.

**Operator:** ACC.

**First Flight:** Feb. 28, 1998.

**Delivered:** from 1995 (ACTD versions).

**IOC:** Block 30 August 2011; Block 40 FY14 (planned)

**Production:** TBD.

**Inventory:** 25.

**Aircraft Location:** Beale AFB, Calif.; Grand Forks AFB, N.D.; Andersen AFB, Guam. Planned: two other forward operating bases.

**Contractor:** Northrop Grumman, Raytheon, L3 Communications.

**Power Plant:** one Rolls Royce-North American F137-RR-100 turbofan, 7,600 lb thrust.

**Accommodation:** one launch and recovery element (LRE) pilot, one mission control element (MCE) pilot, one MCE sensor operator.



**RQ-4 Global Hawk** (Northrop Grumman photo)

**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.

**COMMENTARY**

The system consists of an aircraft with an integrated sensor suite, LRE, MCE, and communications and mission planning equipment. (ACTD system used in Afghanistan and Iraq.)

**Extant Variant(s)**

■ Block 20 (Imint). Larger than original Block 10 (version retired in FY11), adding an enhanced integrated sensor suite (EISS) in an Imint-only configuration. Four being converted to new EQ-4 communications relay configuration, employing the battlefield airborne communications node (BACN), a theater communications relay system employed in place of the EISS.

■ Block 30 (Multi-int). Employs the EISS ground target sensors and advanced Sigint program electronic signal collection sensor to provide a Multi-int capability. Supported combat operations in Afghanistan, Iraq, and Libya and humanitarian relief efforts following Japan's 2011 earthquake and massive tsunami. USAF now plans to sustain Block 30 and fund modernization efforts to enable operation beyond FY23.

■ Block 40. A multimission platform expected to provide SAR/MTI, Imint, and BMC2 support, utilizing the multiplatform radar technology insertion program (MP-RTIP) AESA radar to simultaneously collect Imint on stationary ground targets and track ground moving targets. Delivery of final two Block 40 aircraft are due in FY14.

**RQ-170 Sentinel**

**Brief:** An LO RPA in development and test that has already flown in combat.

**Function:** Unmanned surveillance and reconnaissance aircraft.

**Operator:** ACC.

**Aircraft Location:** Tonopah Test Range, Nev. GCS: Creech AFB, Nev.; Eglin AFB, Fla.

**Contractor:** Lockheed Martin.

**COMMENTARY**

Although the RQ-170 is still under development and test, USAF has employed it in Southwest Asia for Enduring Freedom. In December 2009, USAF publicly acknowledged the aircraft for the first time, after photos had appeared in foreign news media of its operations over Afghanistan.

**Extant Variant(s)**

■ RQ-170. No data available. Being developed in response to DOD call for additional RPA support to combatant commanders.

**U-2 Dragon Lady**

**Brief:** Single-seat, single-engine, high-altitude endurance reconnaissance aircraft carrying a wide variety of sensors and cameras.

**Function:** High-altitude reconnaissance.

**Operator:** ACC.

**First Flight:** Aug. 4, 1955 (U-2); 1967 (U-2R) October 1994 (U-2S).

**Delivered:** 1955-October 1989.

**IOC:** circa 1956.

**Production:** 35 (U-2S/ST).

**Inventory:** 27 U-2; five TU-2 trainers.

**Aircraft Location:** Beale AFB, Calif.

**Contractor:** Lockheed Martin.

**Power Plant:** General Electric F118-GE-101 turbojet.

**Accommodation:** one (two for trainer).

**Dimensions:** span 105 ft, length 63 ft, height 16 ft.

**Weight:** max T-O 40,000 lb.

**Ceiling:** above 70,000 ft.

**Performance:** speed 410 mph, range 7,000+ miles.

**COMMENTARY**

The U-2 is the Air Force's premier high-altitude reconnaissance platform, capable of carrying Multi-int sensors simultaneously. Although the U-2 was designed initially in the 1950s, current aircraft were produced primarily in the 1980s, when the



**U-2 Dragon Lady** (Lockheed Martin photo)



production line was reopened to produce the TR-1, a significantly larger and more capable version of the aircraft. Conversion to S model configuration began in October 1994.

#### Extant Variant(s)

■ U-2S. A single-seat aircraft. Each current operational U-2 is in Block 20 configuration, featuring a new glass cockpit using MFDs, a digital autopilot, a new EW system, and new data links. Sensor upgrades include the ASARS-2A SAR sensor; SYERS-2A EO imagery system (providing multispectral and IR capability); and enhanced RF-intelligence capability. Optical bar camera is also still in use, providing broad-area synoptic imagery coverage. With the FY15 budget, USAF announced plans to retire the U-2 fleet beginning in FY16.

■ TU-2ST. A two-seat trainer aircraft.

#### WC-130 Hercules

**Brief:** A high-wing, medium-range aircraft flown into the eye of tropical cyclones or hurricanes to collect weather data from within the storm's environment.

**Function:** Weather reconnaissance aircraft.

**Operator:** AFRC.

**First Flight:** circa 1996 (production J model).

**Delivered:** September 1999-2002.

**IOC:** 2005.

**Production:** 10.

**Inventory:** 10.

**Aircraft Location:** Keesler AFB, Miss.

**Contractor:** Lockheed Martin.

**Power Plant:** four Rolls Royce AE2100D3 turbo-props, each 4,700 shp.

**Accommodation:** two pilots, navigator, aerial reconnaissance weather officer, weather recon loadmaster/dropsonde system operator.

**Dimensions:** span 132.5 ft, length 99.3 ft, height 38.5 ft.

**Weight:** max T-O 155,000 lb.

**Ceiling:** 28,000 ft.

**Performance:** speed 417 mph at 22,000 ft, range 1,841 miles with payload, endurance 18 hr at 300 mph.

#### COMMENTARY

Flown by AFRC's "Hurricane Hunters" to provide forecasting data for tropical disturbances and storms, hurricanes, and winter storms. An average mission lasts 11 hours and covers almost 3,500 miles. Configured with palletized weather instrumentation.

#### Extant Variant(s)

■ WC-130J. Weather reconnaissance version of the most recent C-130 model, operated by the 53rd WRS for weather reconnaissance duties. Includes two external 1,400-gallon fuel tanks and internal 1,800-gallon tank. Features include improved radar and Dowty 391 six-bladed composite propellers. Equipment includes the GPS Dropsonde Wind-finding System, equipped with HF radio and sensing devices and released about every 400 miles over water, measuring and relaying to the aircraft a vertical atmospheric profile.

#### WC-135 Constant Phoenix

**Brief:** Collects particulate and gaseous effluent and debris samples in the atmosphere in support of the 1963 Limited Nuclear Test Ban Treaty.

**Function:** Air sampling and air collection.

**Operator:** ACC.

**First Flight:** 1965

**Delivered:** 1965-96.

**IOC:** December 1965.

**Production:** converted.

**Inventory:** two.

**Aircraft Location:** Offutt AFB, Neb.

**Contractor:** Boeing.

**Power Plant:** four Pratt & Whitney TF33-P-5 turbofans, each 16,050 lb thrust.

**Accommodation:** seating for 33, incl cockpit crew.

**Dimensions:** span 131 ft, length 140 ft, height 42 ft.

**Weight:** max T-O 300,500 lb.

**Ceiling:** 40,000 ft.

**Performance:** speed 403 mph, range 4,600 miles.

#### COMMENTARY

Program commissioned by Gen. Dwight D. Eisenhower on Sept. 16, 1947, using modified B-29 aircraft. In September 1949, a WB-29 flying between Alaska and Japan detected nuclear debris from the

Soviet Union's first atomic test, much earlier than anticipated. Today, the air-sampling mission supports the Limited Nuclear Test Ban Treaty of 1963.

#### Extant Variant(s)

■ WC-135W. Either a modified C-135B or EC-135C (former Looking Glass aircraft). Collection suite allows mission crew to detect radioactive "clouds" in real time. The aircraft has external flow-through devices to collect particulates on filter paper and a compressor system for whole air samples collected in holding spheres. Cockpit crew comes from 45th RS at Offutt, and special equipment operators from Det. 1, Air Force Technical Applications Center, at Offutt.

## Tanker Aircraft

#### HC-130J Combat King II

**Brief:** An extended range version of the C-130J dedicated as a personnel recovery platform, designed to operate in hostile environments and provide C2 and helicopter in-flight refueling.

**Function:** Aerial refueling/transport.

**Operator:** ACC, AETC, ANG, AFRC.

**First Flight:** July 29, 2010.

**Delivered:** from 2010.

**IOC:** 2013.

**Production:** 37 planned.

**Inventory:** seven.

**Aircraft Location:** Davis-Monthan AFB, Ariz.; Kirtland AFB, N.M. Planned: Francis S. Gabreski Arpt., N.Y.; JB Elmendorf-Richardson, Alaska; Moody AFB, Ga.; Patrick AFB, Fla.

**Contractor:** Lockheed Martin.

**Power Plant:** four Rolls Royce AE2100D3 turbo-props, 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.

#### COMMENTARY

Replacing HC-130N/Ps. Based on USMC KC-130J tanker baseline with enhanced service life wing and cargo handling system, boom refueling receptacle, EO/IR sensor, CSO console on flight deck, and dual satcom. Features also include INS/GPS, NVG-compatible lighting, FLIR, radar/missile warning receivers, and chaff and flare dispensers.

#### Extant Variant(s)

■ HC-130J. First ACC aircraft delivered to 79th RQS at Davis-Monthan Sept. 24, 2011; first training aircraft delivered to 58th SOW at Kirtland Sept. 29, 2011. Plans also would add the Lightweight Airborne Radio System V12 to speed locating personnel and add the ALQ 213 EW management system to automate/integrate defensive systems.

USAF expects to complete recapitalization and conversion efforts in 2023.

#### HC-130N/P King

**Brief:** An extended-range, CSAR-configured C-130 that extends the range of rescue helicopters through in-flight refueling and performs tactical delivery of pararescue (PJ) specialists and/or equipment in hostile environments.

**Function:** Aerial refueling/transport.

**Operator:** ACC, AETC, ANG, AFRC.

**First Flight:** Dec. 8, 1964 (as HC-130H).

**Delivered:** from 1965.

**IOC:** 1966.

**Production:** 33 converted N/P models.

**Inventory:** nine HC-130N; 18 HC-130P.

**Aircraft Location:** Davis-Monthan AFB, Ariz.; Francis S. Gabreski Arpt., N.Y.; Kirtland AFB, N.M.; JB Elmendorf-Richardson, Alaska; Moody AFB, Ga.; Patrick AFB, Fla.

**Contractor:** Lockheed Martin.

**Power Plant:** four Allison T56-A-15 turboprops, each 4,910 shp.

**Accommodation:** officer: two pilots, navigator; enlisted: 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.

#### COMMENTARY

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 areas 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 countermeasures dispensers, and data-burst communications. Both models to be replaced by HC-130J.

#### Extant Variant(s)

■ HC-130N. C-130H model modified with C-130E model radome, new center wing section, and the capability to refuel helicopters aurally.

■ HC-130P. C-130H model modified to refuel helicopters aurally.

#### KC-10 Extender

**Brief:** A modified McDonnell Douglas DC-10 that combines in a single aircraft the operations of aerial refueling and long-range cargo and AE transport.

**Function:** Aerial refueling/transport.

**Operator:** AMC, AFRC (assoc.).

**First Flight:** April 1980.

**Delivered:** March 1981-April 1990.



HC-130 King (MSGt. Sean Mitchell)





**KC-10 Extender** (SSgt. J. G. Buzanowski)

**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.

**COMMENTARY**

USAF's largest air-refueling aircraft. Combines tasks of tanker and cargo aircraft simultaneously, enabling it to support worldwide fighter deployments. Employs an advanced aerial refueling boom or a hose and drogue system to refuel a wide variety of US and allied aircraft within the same mission. Can be air refueled by a KC-135 or another KC 10.

**Extant Variant(s)**

■ KC-10A, DC-10 Series 30CF, modified to include 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. Service life expected through 2045, but USAF signaled in its FY15 budget request that it would divest the fleet if necessary to sustain investment priorities such as the KC-46.

**KC-46**

**Brief:** A modified Boeing 767-200R that will provide air refueling capability for any military fixed wing aircraft and carry simultaneously a mixed load of passengers, patients, and palletized cargo.

**Function:** Aerial refueling/transport.

**Operator:** AMC.

**First Flight:** late 2014 (planned).

**Delivered:** from 2017 (planned).

**IOC:** TBD.

**Production:** 179 (planned).

**Inventory:** zero.

**Aircraft Location:** 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.

**COMMENTARY**

Boeing awarded contract for 179 KC-46A tankers, the first increment (KC-X) toward replacing USAF's KC-135R fleet, on Feb. 24, 2011. Compared to the 50-year-old KC-135, the KC-46A will have enhanced refueling capabilities, including more fuel capacity, improved efficiency, and enhanced cargo and AE capability. Like the KC-10, it will employ both an advanced refueling boom and independently operating hose and drogue system.

**Extant Variant(s)**

■ KC-46A. Development continues. Initial flight expected in late 2014. LRIP of seven aircraft slated to begin in FY15.

**KC-135 Stratotanker**

**Brief:** A medium-range tanker aircraft, meeting the air refueling needs of USAF bomber, fighter, cargo, and reconnaissance forces, as well as any USN, USMC, and allied aircraft; also provides AE transport.

**Function:** Aerial refueling/airlift.

**Operator:** AETC, AFMC, AMC, PACAF, USAFE-AFAFRICA, ANG, AFRC.

**First Flight:** August 1956.

**Delivered:** January 1957-65.

**IOC:** June 1957, Castle AFB, Calif.

**Production:** 732.

**Inventory:** 354 KC-135R; 54 KC-135T.

**Aircraft Location:** Altus AFB, Okla.; Fairchild AFB, Wash.; Grissom ARB, Ind.; JB Andrews, Md.; Kadena AB, Japan; MacDill AFB, Fla.; March ARB, Calif.; McConnell AFB, Kan.; RAF Mildenhall, UK; Seymour Johnson AFB, N.C.; Tinker AFB, Okla.; and ANG in Alabama, Arizona, Illinois, Iowa, Kansas, Maine, Michigan, Mississippi, Nebraska, New Hampshire, New Jersey, Ohio, Oklahoma, Pennsylvania, Tennessee, Utah, Washington, Wisconsin.

**Contractor:** Boeing.

**Power Plant:** four CFM International CFM56-2 (USAF designation F108) turbofans, each 21,634 lb thrust.

**Accommodation:** flight crew: two pilots, boom operator, plus navigator depending on mission; AE

crew: two flight nurses, three medical technicians (adjusted for patient needs). Load: 37 passengers, six cargo pallets, max 83,000 lb.

**Dimensions:** span 130.8 ft, length 136.3 ft, height 41.7 ft.

**Weight:** max T-O 322,500 lb.

**Ceiling:** 50,000 ft.

**Performance:** speed 530 mph; range 1,500 miles with 150,000 lb transfer fuel, up to 11,015 miles for ferry mission.

**COMMENTARY**

Mainstay of the USAF tanker fleet for some 50 years, similar in size and appearance to commercial 707 aircraft but designed to military specifications.

**Extant Variant(s)**

■ KC-135R. Re-engined KC-135As with CFM turbofan engines. Can operate from relatively short runways. First flight October 1982; deliveries started July 1984. Twenty were modified with the Multipoint Refueling System (MPRS), allowing the use of hose-and-drogue systems either on wing pods or attached to the end of the boom that enable them to refuel US Navy and NATO aircraft. The MPRS also allows them to refuel two aircraft at once, one on each wing pod. Other KC-135s may use the shuttlecock-shaped drogue attached to the boom. Upgrades include Pacer CRAG avionics and Block 30 safety mods (completed 2002) and GATM mod (completed 2011). Link 16 capability also added to a limited number. FY15 budget would fund repairs to the now 10-year-old Pacer CRAG mods. Fleet service life projected to 2045.

■ KC-135T aircraft (formerly KC-135Q) can carry different fuels in the wing and body tanks. Under same upgrade programs as R models.

**Transports**

**C-5 Galaxy**

**Brief:** A heavy-lift, air refuelable cargo transport for massive strategic airlift over long ranges, including oversize cargo.

**Function:** Cargo and troop transport.

**Operator:** AMC, ANG, AFRC.

**First Flight:** June 30, 1968.

**Delivered:** October 1969-April 1989.

**IOC:** September 1970.

**Production:** 131.

**Inventory:** 31 C-5A; 29 C-5B; two C-5C; 10 C-5M

**Aircraft Location:** Dover AFB, Del.; Eastern West Virginia Arpt., W.Va.; JBSA-Lackland, Tex.; Memphis Arpt., Tenn.; Stewart ANGB, N.Y.; Travis AFB, Calif.; Westover ARB, Mass.; Wright-Patterson AFB, Ohio.

**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.



**KC-135 Stratotanker** (SrA. Amber Russell)





**C-5 Galaxy** (SrA. Kelly Galloway)

**Ceiling:** 45,000 ft.

**Performance:** speed 518 mph, range 2,473 miles with max payload (plus additional 575 miles after offload).

**COMMENTARY**

JSAF's largest airlifter. One of world's largest aircraft. Can carry unusually heavy cargo over intercontinental ranges at jet speeds, take off and land in relatively short distances, taxi on unstandard surfaces in emergencies. Front and rear cargo openings permit simultaneous drive-through loading and off-loading.

**Extant Variant(s)**

■ C-5A. Basic model; 81 delivered 1969-73. Has undergone a major wing mod, extending service life by 30,000 flight hours. Incorporates avionics subsystems developed for C-5B. USAF has begun retiring A models. One airframe converted to M model.

■ C-5B. Embodies all improvements since completion of C-5A production, including strengthened wings, improved turbofans, and improved avionics, with color weather radar and triple INS. First flight September 1985. First delivery in January 1986. Some models equipped with defensive system. Under current plan, 49 B models convert to M model.

■ C-5C. Two A variants modified to carry outside space cargo for NASA. Both airframes would convert to M models.

■ C-5M. Upgraded aircraft called Super Galaxy. Received latest avionics (under Avionics Modernization Program) and new GE CF6-80C2 (F138-GE-100) turbofans, with 200 percent increase in thrust. Equipped with other components installed under the Reliability Enhancement and Re-engining Program (RERP). First flight June 6, 2006. Developmental testing completed August 2008. Operational testing and evaluation concluded in 2010. First flight of production C-5M September 2010. USAF plans to modernize a total of 52 C-5s to the new C-5M standard, with delivery expected through FY17.

**C-12 Huron**

**Brief:** A twin-engine turboprop that provides diplomatic and special duty support passenger/cargo airlift and test support.

**Function:** Special airlift.

**Operator:** AFMC, PACAF.

**First Flight:** Oct. 27, 1972 (Super King Air 200).

**Delivered:** 1974-late 1980s.

**IOC:** circa 1974.

**Production:** 88.

**Inventory:** 13 C-12C; three C-12D; two C-12F; four C-12J.

**Aircraft Location:** Edwards AFB, Calif.; Holloman AFB, N.M.; JB Elmendorf-Richardson, Alaska; Yokota AB, Japan; various US embassies.

**Contractor:** Beech.

**Power Plant:** (C-12J) two Pratt & Whitney Canada PT6A-65B turboprops, each 1,173 shp.

**Accommodation:** crew: two pilots; load: (C-12J) up to 19 passengers or 3,500 lb cargo.

**Dimensions:** (C-12J) span 54.5 ft, length 57 ft, height 15 ft.

**Weight:** (C-12J) max T-O 16,710 lb.

**Ceiling:** (C-12J) 25,000 ft.

**Performance:** (C-12J) speed 284 mph, range 1,669 miles.

**COMMENTARY**

Military version of the Beechcraft King Air A200 series. Flight deck and cabin are pressurized for high-altitude flight. Incorporates a cargo door with an integral air-stair door.

**Extant Variant(s)**

■ C-12C. Re-engined C-12As, with PT6A-41 turboprops, deployed to US embassies.

■ C-12D. Similar to C model, with larger cargo doors and stronger wing. Also deployed to US embassies.

■ C-12F. With uprated PT6A-42 engines, up to eight passengers, accommodates AE litters.

■ C-12J. A military version of the larger Beechcraft Model 1900C, operated by PACAF. Can also transport two litters or 10 ambulatory patients for AE. Extensive avionics upgrade, including three MFDs, three integrated GPS, two flight management systems, new autopilot, VHF/UHF radios, and weather radar.

**C-17 Globemaster III**

**Brief:** A heavy-lift, air refuelable cargo transport for intertheater (strategic) and intratheater (tactical) direct delivery airlift of all classes of military cargo.

**Function:** Cargo and troop transport.

**Operator:** AETC, AFMC, AMC, PACAF, ANG, AFRC.

**First Flight:** Sept. 15, 1991.

**Delivered:** June 1993-September 2013.

**IOC:** Jan. 17, 1995.

**Production:** 223.

**Inventory:** 218.

**Aircraft Location:** Allen C. Thompson Field, Miss.; Altus AFB, Okla.; Dover AFB, Del.; Edwards AFB, Calif.; JB Charleston, S.C.; JB Elmendorf-Richardson, Alaska; JB Lewis-McChord, Wash.; JB McGuire-Dix-Lakehurst, N.J.; JB Pearl Harbor-Hickam, Hawaii; March ARB, Calif.; Travis AFB, Calif. Planned: 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.

**COMMENTARY**

Core airlifter of US military. Able to operate on small, austere airfields (3,500 ft by 90 ft) previously limited to C-130. Only aircraft able to directly air-land or air-drop outside cargo into a tactical environment. First military transport to feature a full digital fly-by-wire control system.

**Extant Variant(s)**

■ C-17A. Ongoing modernization of original aircraft through Block 17. Improvements include open-system communications architecture, new weather radar, all-weather formation flying system, NVG lighting, HF data link. Full retrofit to Block 17 to be completed by FY15. Additional planned mods include an advanced IFF system and other software upgrades to meet new operational requirements. Boeing delivered the 223rd aircraft (TAI inventory as of FY13 still at 218) to USAF on Sept. 12, 2013, and expects to end production in 2015 after completing its final international order.

**C-20 Gulfstream**

**Brief:** A twin-engine turbofan aircraft acquired to provide airlift for high-ranking government and DOD officials.

**Function:** Operational support airlift, special air missions.

**Operator:** AMC, USAFE-AFAFRICA.

**First Flight:** December 1979.

**Delivered:** September 1983-89.

**IOC:** circa 1983.

**Production:** n/a.

**Inventory:** five C-20B; three C-20C; 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, communication 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).

**COMMENTARY**

C-20A/B models initially acquired to replace C-140B Jetstar aircraft.

**Extant Variant(s)**

■ C-20B. With advanced mission communications equipment and revised interior, delivered in 1988.

■ C-20H. Gulfstream IV SP aircraft, with advanced technology flight management systems and upgraded Rolls Royce engines acquired 1992. Equipped with GPS, vertical separation equipment, GATM, and traffic collision avoidance system (TCAS).

**C-21 Learjet**

**Brief:** Aircraft designed to provide cargo and passenger airlift and transport litters during AE.

**Function:** Pilot seasoning, passenger and cargo airlift.

**Operator:** AETC, AMC, USAFE-AFAFRICA, ANG.

**First Flight:** January 1973.



**C-17 Globemaster III** (MSgt. John R. Nimmo Sr.)



**Delivered:** April 1984-October 1985.

**IOC:** April 1984.

**Production:** 84.

**Inventory:** 47.

**Aircraft Location:** JB Andrews, Md.; Peterson AFB, Colo.; Ramstein AB, Germany; Scott AFB, Ill.  
**Contractor:** Gates Learjet.

**Power Plant:** two AlliedSignal TFE731-2 turbofans, each 3,500 lb thrust.

**Accommodation:** crew: two pilots; AE crew: flight nurse, two medical technicians (adjusted as required). Load: eight passengers and 3,153 lb cargo; one litter or five ambulatory patients.

**Dimensions:** span 39.5 ft, length 48.6 ft, height 12.2 ft.

**Weight:** max T-O 18,300 lb.

**Ceiling:** 45,000 ft.

**Performance:** speed 530 mph at 41,000 ft, range 2,306 miles.

#### COMMENTARY

Provides operational support for time-sensitive movement of people and cargo throughout the US and European Theaters, including AE missions if required.

#### Extant Variant(s)

■ C-21A. Military version of the Learjet 35A. Upgrades included color weather radar, TACAN, and HF/VHF/UHF radios.

#### C-27 Spartan

**Brief:** A small tactical transport capable of carrying heavy loads into a wide range of airfields, including unprepared strips at high altitude.

**Function:** Tactical airlift.

**Operator:** ANG.

**First Flight:** September 1999 (developmental aircraft).

**Delivered:** 2010.

**IOC:** 2011.

**Production:** 38 (planned).

**Inventory:** 13.

**Aircraft Location:** Bradley Arpt., Conn.; Hector Arpt., N.D.; Key Field, Miss.; Mansfield Lahm Arpt., Ohio; Martin State Arpt., Md.; W. K. Kellogg Arpt., Mich.

**Contractor:** L-3 Communications.

**Power Plant:** two Rolls Royce AE 2100-D2 turbofans, rated at 4,637 shp.

**Accommodation:** crew: two pilots, two loadmasters. Load: up to 68 troops or 24 paratroops; 36 litters plus six attendants; up to 25,353 lb cargo; 19,842 lb low velocity airdrop.

**Dimensions:** basic G.222 airframe span 94.1 ft, length 74.5 ft, height 32.1 ft.

**Weight:** max T-O 70,000 lb.

**Ceiling:** 30,000 ft.

**Performance:** speed 374 mph, range 1,150 miles with 22,046 lb payload.

#### COMMENTARY

Derivative of Alenia G.222, selected in 2007 to fulfill the Joint Cargo Aircraft requirement. Acquired to support ground forces served only by the most basic airstrips or for missions where the C-130 would operate at half-load capacity. With USAF decision to divest all C-27Js, USSOCOM planned to take some, and Congress directed in the FY14 National Defense Authorization Act that the remainder go to Homeland Security for use by the Coast Guard.

#### Extant Variant(s)

■ C-27J. Equipped with digital avionics suite, NVG-compatible cockpit. Floor strength is equal to that of the C-130, and the cargo bay can accommodate C-130 pallets.

#### C-32 Air Force Two

**Brief:** A modified Boeing 757-200 used to provide backup transportation for the President. It is the primary means of travel for the vice president, Cabinet, congressional members, and other high-ranking US and foreign officials.

**Function:** VIP air transport.

**Operator:** AMC, ANG.

**First Flight:** Feb. 19, 1982 (USAF Feb. 11, 1998).

**Delivered:** June-December 1998.

**IOC:** 1998.

**Production:** six.

**Inventory:** four.



C-32A Air Force Two (TSgt. Michael O'Halloran)

**Aircraft Location:** JB Andrews, Md.

**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.

#### COMMENTARY

Using COTS acquisition practices, contract award to first delivery in less than two years.

#### Extant Variant(s)

■ C-32A. Specially configured Boeing 757-200 airliner. Cabin divided into four sections: forward, communications center, galley, lavatory, 10 business-class seats; second, full-enclosed stateroom with private lavatory, two first-class swivel seats, convertible divan; third, conference and staff area with eight business-class seats; rear, 32 business-class seats, galley, two lavatories. Communications system provides worldwide clear and secure voice and data communications. Modern flight deck avionics are upgradeable.

#### C-37 Gulfstream V

**Brief:** Modified Gulfstream aircraft used for worldwide special air missions for high-ranking government and DOD officials.

**Function:** VIP air transport.

**Operator:** AMC, PACAF, USAF-AFRICA.

**First Flight:** USAF October 1998.

**Delivered:** from October 1998.

**IOC:** Dec. 9, 1998.

**Production:** 10 C-37A; two C-37B.

**Inventory:** eight 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.

#### COMMENTARY

Military versions of "ultralong range" Gulfstream business aircraft.

#### Extant Variant(s)

■ C-37A. Military version of Gulfstream V. Includes separate VIP and passenger areas and a communications system capable of worldwide clear and secure voice and data. Features include enhanced weather radar, autopilot, and advanced HUD.

■ C-37B. Military version of the Gulfstream 550, modified for VIP duties. Has Honeywell PlaneView flight deck. Upgrades include a directional IR countermeasures system.

#### C-38 Courier

**Brief:** A twin-engine transcontinental aircraft used to provide VIP transportation for congressional or high-ranking military members.

**Function:** VIP air transport and operations support.

**Operator:** ANG.

**First Flight:** 1998.

**Delivered:** April-May 1998.

**IOC:** 1998.

**Production:** two.

**Inventory:** two.

**Aircraft Location:** JB Andrews, Md

**Contractor:** Tracor (Israel Aircraft Industries Ltd)

**Power Plant:** two AlliedSignal TFE731-40R-200G each 4,250 lb thrust.

**Accommodation:** crew: two pilots. Load: up to eight passengers or, for AE role, two Spectrum 500 Life Support Units and two medical attendants all seats removable for cargo.

**Dimensions:** span 54.6 ft, length 55.6 ft, height 18.2 ft.

**Weight:** max T-O 24,800 lb.

**Ceiling:** 33,000 ft.

**Performance:** speed 662 mph, range 3,000 miles.

#### COMMENTARY

Military version of Astra SPX produced by IAI and supported worldwide by Galaxy Aerospace.

#### Extant Variant(s)



C-37A Gulfstream V (A1C Brea Miller)



■ C-38A. Acquired in 1998. Equipment includes modern avionics, navigation, communication, vertical separation, and safety equipment.

#### C-40 Clipper

**Brief:** A Boeing 737-700 used primarily for medium-range airlift of senior military commanders, Cabinet officials, and members of Congress.

**Function:** Passenger transportation.

**Operator:** AMC, PACAF, USAF-AFACRICA, ANG, AFRC.

**First Flight:** USN C-40A: April 14, 1999.

**Delivered:** 2002.

**IOC:** not available.

**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.

#### COMMENTARY

The C-40, which added winglets to Boeing 737-700, transports VIPs and performs other operational support missions. Both versions have modern avionics, integrated GPS and flight management system/electronic flight instrument system, and HUD. Each also has auxiliary fuel tanks and managed passenger communications.

#### Extant Variant(s)

■ C-40B. Equipped with an office-in-the-sky arrangement, including clear and secure voice/data communication and broadband data/video.

■ C-40C. Does not have the advanced communications of the B model. It does have a VIP area, including sleep accommodations, and can be configured to carry from 42 to 111 passengers.

#### C-130 Hercules

**Brief:** A rugged aircraft capable of operating from rough dirt strips to provide theater airlift and paratrooping of troops and equipment into hostile areas.

**Function:** Inter- and intratheater airlift.

**Operator:** AETC, AMC, PACAF, USAF-AFACRICA, ANG, AFRC.

**First Flight:** August 1954 (C-130A).

**Delivered:** December 1956-present (C-130J).

**IOC:** circa 1958.

**Production:** more than 2,200.

**Inventory:** six C-130E; 273 C-130H; 92 C-130J.

**Aircraft Location:** Dobbins ARB, Ga.; Dyess AFB, Tex.; Keesler AFB, Miss.; Little Rock AFB, Ark.; Maxwell AFB, Ala.; Minneapolis-St. Paul Arpt./ARS, Minn.; Niagara Falls Arpt., N.Y.; Peterson AFB, Colo.; Pittsburgh Arpt., Pa.; Pope Field, N.C.; Ramstein AB, Germany; Yokota AB, Japan; Youngstown ARS, Ohio; and ANG in Alaska, Arkansas, California, Delaware, Georgia, Hawaii, Illinois, Kentucky, Minnesota, Missouri, Nevada, New York, North Carolina, Ohio, Puerto Rico, Rhode Island, Tennessee, Texas, West Virginia, Wyoming.

**Contractor:** Lockheed Martin.

**Power Plant:** four Allison T56-A-7 turboprops (C-130E), 4,200 shp; four Allison T56-A-15 turboprops (C-130H), each 4,591 shp; four Rolls Royce AE2100D3 turboprops (C-130J), each 4,700 shp.

**Accommodation:** E/H crew: two pilots, navigator, flight engineer, loadmaster, J/J-30 crew: two pilots, loadmaster. E/H/J load: up to 92 combat troops or 34 paratroopers or 74 litters or six cargo pallets or 16 Container Delivery System (CDS) bundles or any combination of these up to max weight for each version. J-30 load: 128 combat troops or 92 paratroopers or 97 litters or eight pallets or 24 CDS bundles or any combination of these up to max weight.

**Dimensions:** span 132.6 ft, length 97.8 ft, height 38.8 ft.; J-30 length 112.8 ft.

**Weight:** max T-O 155,000 lb (E/H/J), 164,000 lb (J-30); max payload 42,000 lb (E/H/J), 44,000



C-130 Hercules (A1C Rusty Frank)

lb (J-30).

**Ceiling:** with max payload, 19,000 ft (E), 23,000 ft (H), 26,000 ft (J), 28,000 (J-30).

**Performance:** speed 345 mph (E), 366 mph (H), 417 mph (J), 410 mph (J-30); range with 35,000 lb payload 1,438 miles (E), 1,496 miles (H), 1,841 miles (J), 2,417 miles (J-30).

#### COMMENTARY

All-purpose theater transport that operates throughout USAF, performing diverse roles. Missions include tactical and intertheater airlift and airdrop support, Arctic resupply, AE flights, aerial spraying, firefighting duties for the US Forest Service, and natural disaster and humanitarian relief missions. FY15 budget would fund minimal safety-of-flight communication/navigation systems upgrade, following FY13 decision to terminate full Avionics Modernization Program.

#### Extant Variant(s)

■ C-130E. Extended-range version of early Hercules. Total of 389 ordered, with first deliveries in 1962. Original wing modified to correct fatigue and corrosion. Self-contained nav system, with an integrated communications/navigation management suite, GPS capability, and a state-of-the-art autopilot.

■ C-130H. Model generally similar to E, with updated turboprops, redesigned outer wing, improved pneumatic systems. First delivery in July 1974. Equipped with updated avionics, improved low-power color radar, NVG lighting. ANG LC-130Hs modified with wheel-ski gear and eight-bladed props to support Arctic and Antarctic operations. Modernized with digital displays, flight management systems, multifunction radar, new communications systems, and a single air data computer.

■ C-130J. Features three-crew flight operations system, more powerful engines, all composite six-blade propeller system, digital avionics, and

mission computers. Flies faster, higher, and farther than earlier C-130s. ANG and AFRC units began receiving J models in 1999, Active units in 2004. First wartime deployment in 2004.

■ C-130J-30. Stretch version of the J model capable of larger payload. ANG began receiving J-30 models in 2001, Active Duty and AFRC units in 2004.

#### VC-25 Air Force One

**Brief:** A specially configured Boeing 747-200B used for air transport of the President and his entourage. When the President is aboard, it has the radio call sign Air Force One.

**Function:** Air transport of the President.

**Operator:** AMC.

**First Flight:** first flown as Air Force One Sept. 6, 1990.

**Delivered:** August-December 1990.

**IOC:** circa 1990.

**Production:** two.

**Inventory:** two.

**Aircraft Location:** JB Andrews, Md.

**Contractor:** Boeing.

**Power Plant:** four General Electric CF6-80C2B1 turbofans, each 56,700 lb thrust.

**Accommodation:** crew: 28; 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.

#### COMMENTARY

Aircraft are equipped with staff work areas, a conference room, a general seating area, and an executive office. Communications capability includes worldwide secure and clear communications equipment.

#### Extant Variant(s)



VC-25 Air Force One (Photographer's Mate 2nd Class Daniel J. McLain)





HH-60 Pavé Hawk (TSgt. Matt Hecht)

■ VC-25A. Flown by the Presidential Airlift Group at the 89th AW. FY15 budget request supports ongoing modifications to extend service life beyond the approximately five years remaining.

## Helicopters

### HH-60 Pavé Hawk

**Brief:** Specially modified helicopters used primarily for personnel recovery in hostile environments. Also conduct AE, civil search and rescue, disaster and humanitarian response, and other support missions.

**Function:** Personnel recovery medium-lift helicopter.

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

**First Flight:** October 1974.

**Delivered:** from 1982.

**IOC:** circa 1982.

**Production:** 105.

**Inventory:** 99.

**Aircraft Location:** Davis-Monthan AFB, Ariz.; Eglin AFB, Fla.; Francis S. Gabreski Arpt., N.Y.; JB Elmendorf-Richardson, Alaska; Kadena AB, Japan; Kirtland AFB, N.M.; Moffett Field, Calif.; Moody AFB, Ga.; Nellis AFB, Nev.; Patrick AFB, Fla.; RAF Lakenheath, UK.

**Contractor:** United Technologies/Sikorsky.

**Power Plant:** two General Electric T700-GE-700/701C turboshafts, each 1,560-1,940 shp.

**Accommodation:** crew: two pilots, flight engineer, gunner, Load: mission dependent.

**Dimensions:** rotor diameter 53.6 ft, overall length 64.7 ft, height 16.7 ft.

**Weight:** max T-O 22,000 lb.

**Ceiling:** 14,000 ft.

**Performance:** speed 184 mph; range 580 miles.

**Armament:** two 7.62 mm miniguns or two .50-caliber machine guns.

#### COMMENTARY

A highly modified Black Hawk helicopter, USAF acquired the HH-60G in the early 1980s and has been in continuous use by Active Duty, ANG, and AFRC air rescue units. Future plans call for a new Combat Rescue Helicopter, with contract award now expected in summer 2014.

#### Extant Variant(s)

■ HH-60G. Equipped with advanced communications/navigation suite that includes INS/GPS/Doppler navigation systems, satcom, secure/anti-jam communications, and a precision landing system (PLS) that provides range/steering data to survivor radios. Automatic flight-control system, NVG lighting, FLIR, color weather radar, engine/rotor blade anti-ice system, retractable in-flight

refueling probe, internal auxiliary fuel tanks, and an integral external rescue hoist. Combat enhancements include RWR, IR jammer, flare and chaff countermeasures dispensing system, and two machine guns. FY15 funding would continue mission-critical avionics and safety of flight mods.

### UH-1 Iroquois

**Brief:** Modified Bell helicopter used to provide security and support for Air Force ICBM systems, undergraduate pilot training, combat aviation advisor training, and administrative airlift.

**Function:** Light-lift utility and training helicopter.

**Operator:** AETC, AFDW, AFGSC, AFMC, AFSOC, AMC, PACAF.

**First Flight:** 1956.

**Delivered:** from September 1970 (UH-1N).

**IOC:** circa 1970.

**Production:** 20 TH-1H; many UH-1H; 79 UH-1N.

**Inventory:** 26 TH-1H; three UH-1H; 43 UH-1N.

**Aircraft Location:** Eglin AFB, Fla.; Fairchild AFB, Wash.; F. E. Warren AFB, Wyo.; Fort Rucker, Ala.; Hurlburt Field, Fla.; JB Andrews, Md.; Kirtland AFB, N.M.; Malmstrom AFB, Mont.; Minot AFB, N.D.; Yokota AB, Japan.

**Contractor:** Bell, Lockheed Martin (TH-1H prime).

**Power Plant:** TH-1H: one Honeywell T53-L-703 turboshaft, 1,800 shp. UH-1H: one Lycoming T53-L-13B turboshaft, 1,400 shp. UH-1N: two Pratt & Whitney Canada T400-CP-400 turboshafts, 1,290 shp.

**Accommodation:** UH-1N crew: two pilots, flight engineer; load: up to 13 passengers (depending on fuel and atmospheric conditions) or up to six litters or, without seats, bulky, oversize cargo.

**Dimensions:** TH-1H: rotor diameter 48.0 ft, length 57 ft, height 13 ft. UH-1H: rotor diameter 48.3 ft, length 57.1 ft, height 13.6 ft. UH-1N: rotor diameter 48 ft, length 57.1 ft, height 12.8 ft.

**Weight:** max gross 10,500 lb (TH-1H), 9,500 lb (UH-1H), 10,500 (UH-1N).

**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.

#### COMMENTARY

UH-1N aircraft initially provided search-and-rescue capabilities, and then began replacing the UH-1Hs at missile wings and taking on other missions. With termination of the Common Vertical Lift Support Program (CVLSP) (also called the Common Support Helicopter), USAF may fly the 40-year-old UH-1N for at least another 10 years. USAF continues conversion/modernization of UH-1H models to TH-1H variant, providing a service life of at least 20 years.

#### Extant Variant(s)

■ TH-1H. Modified version of the UH-1H for use by the 23rd FTS at Fort Rucker for Air Force undergraduate helicopter pilot training.

■ UH-1H. Single-engine version of UH-1 utility helicopter, based on Bell 205. AFSOC maintains two for combat aviation advisor training.

■ UH-1N. Military version of the Bell 212. Most used for ICBM security and administrative/VIP airlift. Also used by AETC's 58th SOW at Kirtland for training purposes and by the 336th TRG at Fairchild for aircrew survival training. AFSOC maintains two for combat aviation advisor training. With CVLSP termination, AFGSC plans to provide selective mods, including an NVG-capable cockpit, upgraded sensors, and safety and sustainment improvements to extend fleet life and usefulness.

## Trainers

### T-1 Jayhawk

**Brief:** A medium-range, twin-engine jet trainer version of the Beechcraft 400A. Used by USAF to train student airlift and tanker pilots and student CSOs.

**Function:** Advanced pilot training.

**Operator:** AETC, AFRC.

**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, Tex.; Vance AFB, Okla.; NAS Pensacola, Fla.

**Contractor:** Hawker 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.

#### COMMENTARY

Military version of Beech 400A used in the advanced phase of JSUPT for students selected to fly tanker or transport aircraft. Also used to train student CSOs.

#### Extant Variant(s)

■ T-1A. Cockpit seating for instructor and two students. Mods include UHF/VHF radios, INS, TACAN airborne detection finder, increased bird-strike resistance, and an additional fuselage fuel tank. CSO training aircraft also have GPS-driven SAR and simulated RWR and have a second student and second instructor station.

### T-6 Texan II

**Brief:** A single-engine turboprop aircraft used for primary pilot training for Air Force and Navy pilots.

**Function:** Primary trainer.

**Operator:** AETC, USN.

**First Flight:** July 15, 1998.

**Delivered:** from May 2000 (operational aircraft).

**IOC:** November 2001.

**Production:** Planned: 452 (USAF); 315 (USN).

**Inventory:** 445 (USAF).

**Aircraft Location:** USAF: Columbus AFB, Miss.; Laughlin AFB, JBSA-Randolph, and Sheppard AFB, Tex.; Vance AFB, Okla. USN: NAS Corpus Christi, Tex.; NAS Whiting, Fla.; NAS Pensacola, Fla.

**Contractor:** Hawker Beechcraft (formerly Raytheon).

**Power Plant:** one Pratt & Whitney Canada PT6A-68 turboprop, 1,100 shp.

**Accommodation:** two pilots, in tandem, on zero/zero ejection seats.

**Dimensions:** span 33.5 ft, length 33.4 ft, height 10.7 ft.

**Weight:** basic 6,500 lb.

**Ceiling:** 31,000 ft.

**Performance:** speed 320 mph, range 1,035 miles

#### COMMENTARY

Trainer based on Swiss Pilatus PC-9 aircraft modified to include a strengthened fuselage, zero zero ejection seats, upgraded engine, increased fuel capacity, pressurized cockpit, bird-resistant canopy, and digital avionics.

#### Extant Variant(s)



■ T-6A. Purchased by USAF to replace T-37 and Navy to replace T-34 as primary pilot trainer. (Navy also acquiring B model.) Student and instructor positions—one in front of the other—are interchangeable. May be flown by one pilot in front seat. Full aerobatic and features an anti-G system, ejection seat, and advanced avionics package with sunlight readable LCDs. USAF production completed in 2010 with an expected service life of 21 years from that date. FY15 budget request includes modifications to prevent avionics obsolescence.

■ T-6B. Navy is also purchasing this variant with upgraded glass cockpit avionics suite, including six MFDs, backup flight instrument, HUD, hands-on-throttle-and-stick functionality, and integrated computers. Planned buy is 252 aircraft. Navy's B model reached IOC in April 2010.

#### T-38 Talon

**Brief:** A twin-engine, high-altitude, supersonic jet trainer used in a variety of roles, primarily for undergraduate pilot, pilot instructor training, and introduction to fighter fundamentals training (IFFT).

**Function:** Trainer.

**Operator:** ACC, AETC, AFMC, AFRC.

**First Flight:** April 1959.

**Delivered:** 1961-72.

**IOC:** March 1961.

**Production:** more than 1,100.

**Inventory:** 54 T-38A; 448 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, Tex.; Tyndall AFB, Fla.; Vance AFB, Okla.

**Contractor:** Northrop Grumman.

**Power Plant:** two General Electric J85-GE-5 turbojets, each 2,900 lb thrust with afterburning.

**Accommodation:** two pilots in tandem ejection seats.

**Dimensions:** span 25.3 ft, length 46.3 ft, height 12.8 ft.

**Weight:** max T-O 12,093 lb.

**Ceiling:** above 55,000 ft.

**Performance:** speed 812 mph, range 1,093 miles.

#### COMMENTARY

Most now used by AETC for advanced bomber-fighter training track in JSUPT and IFFT. Used to each supersonic techniques, aerobatics, formation, night and instrument flying, and cross-country and low-level navigation. The aircraft is also used by the USAF Test Pilot School to train test pilots and light-test engineers in experimental techniques, and by ACC as a companion trainer to maintain pilot proficiency. ACC also uses regenerated T-38s as dedicated aggressor aircraft for F-22 training.

#### Extant Variant(s)

■ T-38A. Close in structure to the F-5A export fighter. World's first supersonic trainer aircraft. Underwent structural renewal in successive Pacer Classic I and II mods, first begun in 1984, to extend service life.

■ T-38C. Redesignated after Avionics Upgrade Program, which added glass cockpit avionics, including HUD, color MFDs, mission computer, and INS/GPS. First model delivered 2002; last delivery 2007. Life sustaining measures include propulsion mods to replace major engine components to improve reliability and maintainability. Ongoing upgrades include Pacer Classic III, the latest structural renewal effort, which will replace major longerons, bulkheads/formers, internal skins, and structural floors. Service life expected to 2020.

#### T-41 Mescalero

**Brief:** Short-range, high-wing trainer used primarily for aerodynamic and navigation courses.

**Function:** Training, support.

**Operator:** AETC.

**Delivered:** 1968.

**Inventory:** four.

**Aircraft Location:** US Air Force Academy, Colo.

**Contractor:** Cessna.

**Power Plant:** one Continental IO-360-DB piston engine, 210 hp.

**Accommodation:** two, side by side.

**Dimensions:** span 36.1 ft, length 26.5 ft, height 1.9 ft.

**Weight:** max T-O 2,550 lb.



T-38A and T-38C Talons (Bobbi Zapka)

**Ceiling:** 14,000 ft.

**Performance:** speed 182 mph, range 630 miles.

#### COMMENTARY

Used primarily by US Air Force Academy.

#### Extant Variant(s)

■ T-41C. Military version of Cessna 172. All-metal, strut-braced high-wing monoplane. Equipped with modern avionics, GPS, and other equipment appropriate to its mission. Used for Aero 456 flight testing, USAFA flying team support, orientation flights.

#### T-51 Cessna

**Brief:** A short-range, high-wing aircraft used primarily by the USAFA Flying Team during intercollegiate competitions.

**Function:** Training, competition.

**Operator:** AETC.

**Delivered:** 1970s.

**Inventory:** three.

**Aircraft Location:** USAFA, Colo.

**Contractor:** Cessna.

**Power Plant:** one Lycoming O-320 E2D piston engine, 150 hp.

**Accommodation:** two, side by side.

**Dimensions:** span 33.3 ft, length 24 ft, height 8.5 ft.

**Weight:** (Cessna 150M) max T-O 1,760 lb.

**Ceiling:** 12,600 ft.

**Performance:** speed 162 mph, range 450 miles.

#### COMMENTARY

Military designation for civilian Cessna 150. All-metal, strut-braced, high-wing monoplane.

#### Extant Variant(s)

■ T-51A. The aircraft is equipped with modern avionics, GPS, and other equipment appropriate to its mission.

#### T-53

**Brief:** A Cirrus SR20 personal aircraft with advanced avionics and safety features for USAFA's Powered Flight Program.

**Function:** Training.

**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.

#### COMMENTARY

Military designation for civilian Cirrus SR20. All-composite monoplane.

#### Extant Variant(s)

■ T-53A. The aircraft is equipped with modern avionics, GPS, and Cirrus Airframe Parachute System, integrated fuselage roll cage, cuffed wing design, and other active and passive safety systems and features that are standard on Cirrus aircraft.

#### TG-15 Duo Discus/Duo 2B

**Brief:** Sailplane used for advanced cross-country training and competition.

**Function:** Trainer/cross-country competition sailplane.

**Operator:** AETC.

**Inventory:** two (A); three (B).

**Aircraft Location:** USAFA, Colo.

**Contractor:** Schempp-Hirth, Germany.

**Accommodation:** two-seat (A), single-seat (B).

**Dimensions:** span 65.6 ft (A), 49.2 ft (B); length 28.3 ft (A), 22.3 ft (B).

**Weight:** 1,543 lb (A), 1,157 lb (B).

**Performance:** max permitted speed 155 mph.

#### COMMENTARY

Sailplanes manufactured by Schempp-Hirth of Germany. Used for cross-country soaring training and Soaring Society of America national competitions.

#### Extant Variant(s)

■ TG-15A. Two-seat variant.

■ TG-15B. Single-seat variant.

#### TG-16 Club

**Brief:** German-built glider used for training and aerobatic competition.

**Function:** Trainer/aerobatic glider.



TG-16A Club (Rob Densmore)



**Operator:** AETC.  
**Inventory:** 19 (A).  
**Aircraft Location:** USAFA, Colo.  
**Contractor:** DG-Flugzeugbau, Germany.  
**Accommodation:** two-seat.  
**Dimensions:** span 59.1 ft; length 28.4 ft.  
**Weight:** max T-O 1,653 lb.  
**Performance:** max permitted speed 167.9 mph.  
**COMMENTARY**  
 DG-Flugzeugbau received contracts in 2011 for five aerobatic trainers and 14 basic trainers based on its DG-1001 glider. TG-16A has longer wingspan and greater glide ratio (42 to 1) providing increased performance over the TG-10 (28 to 1) model it replaces. It also has an extended service life.  
**Extant Variant(s)**  
 ■ TG-16A. Fixed landing gear variant of DG-1001 Club glider series.

**UV-18 Twin Otter**  
**Brief:** Modified utility transport used for parachute jump training.  
**Function:** Parachute.  
**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 Aircraft of Canada.  
**Power Plant:** two Pratt & Whitney Canada PT6A-27 turboprops, each 620 ehp.  
**Accommodation:** crew: two pilots; load: up to 20 passengers.  
**Dimensions:** span 65 ft, length 51.9 ft, height 18.7 ft.  
**Weight:** max T-O 12,500 lb.  
**Ceiling:** 25,000 ft.  
**Performance:** speed 210 mph, range 806 miles.  
**COMMENTARY**  
 Used at USAFA to support various parachuting activities and perform general utility missions. Used by the Air Force Parachute Team, The Wings of Blue.  
**Extant Variant(s)**  
 ■ UV-18B. Military variant of the civilian DeHavilland DHC-6 Twin Otter.

## Strategic Missiles

**AGM-86 Air Launched Cruise Missile**  
**Brief:** A small, subsonic winged air vehicle, deployed on B-52H aircraft, which can be equipped with either a nuclear or conventional warhead.  
**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).  
**COMMENTARY**  
 Programmed to conduct strategic attack—nuclear or conventional—on surface targets. Small radar signature and low-level flight capability enhance the missile's effectiveness.  
**Extant Variant(s)**  
 ■ AGM-86B. First production version. Last of 1,715 delivered in 1986. Undergoing several SLEP phases to extend service life to 2030. USAF to cut inventory to 528 and consolidate at Minot. Although the FY15 budget would delay the follow-on Long-Range Standoff (LRSO) missile for three



**Minuteman III** (MSGt. Lorenzo Gaines)

years, USAF is continuing with risk reduction and early systems engineering work.  
 ■ AGM-86C. Conventional warhead version, called CALCM. Some 600 B models converted; initial deliveries in 1987. Few remain in inventory. First used operationally in Desert Storm; used widely in subsequent combat operations. Provides adverse weather, day/night, air-to-surface, accurate, standoff strike capability. Range greater than 500 miles. Block 1A enhancements offer improved accuracy and increased immunity to electronic jamming.  
 ■ AGM-86D. CALCM Block II penetrator version with AUP-3(M) warhead. Provides standoff capability against hardened, deeply buried targets. Used with success in Southwest Asia operations.

**LGM-30 Minuteman**  
**Brief:** A solid-fuel ICBM capable of being fired from silo launchers and delivering a thermonuclear payload of one to three warheads with high accuracy over great distances.  
**Function:** Strategic surface-to-surface ballistic missile.  
**Operator:** AFGSC.  
**First Flight:** February 1961.  
**Delivered:** 1962–December 1978.  
**IOC:** December 1962, Malmstrom AFB, Mont.  
**Production:** 1,800.  
**Unit Location:** F. E. Warren AFB, Wyo.; Malmstrom AFB, Mont.; Minot AFB, N.D.  
**Contractor:** Boeing.  
**Power Plant:** stage 1: Thiokol M-55 solid-propellant motor, 202,600 lb thrust; stage 2: Aerojet General SR19-AJ-1 solid-propellant motor, 60,721 lb thrust; stage 3: Thiokol SR73-AJ-1 solid-propellant motor, 34,400 lb thrust.  
**Guidance:** inertial guidance system.  
**Warhead:** one Mk 21 RV or one-three Mk 12/12A MIRVs.  
**Dimensions:** length 59.9 ft, diameter 5.5 ft.  
**Weight:** weight 79,432 lb.  
**Performance:** speed at burnout approx 15,000 mph, range 6,000+ miles.  
**COMMENTARY**  
 Three-stage, solid-propellant ICBM in underground silo. Sole remaining US land-based ICBM. Major life extension program ensures viability to 2020. Ongoing mods, including updated warhead fuzes and start of guidance and propulsion mod programs, would extend that to 2030.  
**Extant Variant(s)**  
 ■ LGM-30G. 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. USAF initially deployed 550, later reducing to 500 based at Malmstrom, Minot, and Warren. Deactivation of a further 50 completed in July 2008.

## Tactical Missiles and Weapons

**ADM-160 Miniature Air Launched Decoy**  
**Brief:** Air-launched programmable air vehicle that stimulates, dilutes, and confuses the enemy's integrated air defense system (IADS) by transmitting radio frequency energy that duplicates combat flight profiles and signatures of US and allied aircraft. Jammer version operates alone or in concert with other EW platforms.  
**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).  
**COMMENTARY**  
 MALD is a low-cost, state-of-the-art, modular, autonomous, and programmable flight vehicle that looks like US or allied aircraft to enemy IADS. MALD-J, the first stand-in jammer to enter production, adds radar-jamming capability to the basic decoy platform. F-16C/D or B-52 are lead employment aircraft. USAF capped MALD procurement in FY12, converting Lot 4 to the MALD-J variant. Plans call for a total of 3,000, with 2,400 in the jammer version.  
**Extant Variant(s)**  
 ■ ADM-160B MALD. DARPA initiated an ACTD program for MALD to respond to an ACC SEAD mission needs statement. First flight was Jan. 9, 1999.  
 ■ ADM-160C MALD-J. Jammer version fills the stand-in jamming gap for the airborne electronic attack mission. Designed as an expendable, close-in jammer to degrade and deny an early warning or acquisition radar's ability to establish a track or strike aircraft, it also maintains the ability to fulfill the basic decoy mission.





**AIM-120 AMRAAM** (Lockheed Martin photo/Paul Weatherman)

#### **AGM-65 Maverick**

**Brief:** A tactical, TV or IIR guided or laser guided air-to-surface missile carried by fighters and designed for use in CAS, interdiction, and defense suppression missions, having standoff capability and high probability of strike against a wide range of targets.

**Function:** Air-to-surface guided missile.

**First Flight:** August 1969.

**Delivered:** from August 1972.

**IOC:** February 1973.

**Contractor:** Raytheon.

**Power Plant:** Thiokol TX-481 solid-propellant rocket motor.

**Guidance:** EO TV guidance system (B/H/K); IIR seeker (D/G); laser seeker (E).

**Warhead:** 125-lb cone-shaped (B/D/H); 300-lb delayed-fuse penetrator (E/G/K).

**Dimensions:** span 2.3 ft, length 8.2 ft, diameter 12 in.

**Performance:** classified.

#### **COMMENTARY**

First employed during Vietnam War; used extensively in Desert Storm and Iraqi Freedom. Integrated with A-10 and F-16 for use against tanks and columns of vehicles and in the SEAD role.

#### **Extant Variant(s)**

■ AGM-65B. A launch-and-leave, EO TV guided missile. Equipped with "scene magnification" TV seeker allowing pilot to identify and lock on to smaller or distant targets.

■ AGM-65D. Employs an IIR seeker to overcome daylight-only, adverse weather limits of B variant. Became operational in 1986 on A-10 aircraft.

■ AGM-65E. Laser guided version used by USAF and USMC. Employs heavyweight penetrator warhead.

■ AGM-65G. Uses IIR seeker with software mods to track larger targets. Employs heavyweight penetrator warhead. Has digital autopilot and a pneumatic actuation system. First delivered in 1989.

■ AGM-65H. Upgraded B variant to increase capability. Undergoing tracker upgrade.

■ AGM-65K. Modified G variant, replacing IR guidance system with EO TV guided seeker. Undergoing tracker upgrade.

■ AGM-65L. New laser Maverick to strike moving targets traveling at high speed. Will use EO TV seeker components with new semiactive laser (SAL) components.

#### **AGM-88 HARM**

**Brief:** A tactical air-to-surface missile designed to seek and destroy enemy radar-equipped air defense sites, using an advanced guidance system that senses and homes in on enemy radar emissions.

**Function:** Air-to-surface anti-radiation missile.

**First Flight:** April 1979.

**Delivered:** 1982-98.

**IOC:** circa 1984.

**Contractor:** Raytheon.

**Power Plant:** Thiokol dual-thrust, solid-propellant rocket motor.

**Guidance:** proportional with fixed antenna and seeker head in missile nose.

**Warhead:** HE fragmentation.

**Dimensions:** span 3.7 ft, length 13.7 ft, diameter 10 in.

**Performance:** speed supersonic, range 30+ miles.

#### **COMMENTARY**

Joint USAF-Navy weapon. Great velocity and ability to cover wide range of frequencies with use of programmable digital processors in carrier aircraft's avionics and missile. Highly effective against enemy ground radar. Carried by USAF F-16CJ Block 50/52s dedicated to SEAD mission.

#### **Extant Variant(s)**

■ AGM-88B. Equipped with erasable and electronically programmable read-only memory, permitting in-field changes to missile memory.

■ AGM-88C. Current production model. Has warhead more lethal than earlier variants. In late 2013 Raytheon began HARM Control Section Mod (HCSM) that will convert current models to new F model, with GPS and improved inertial measurement unit.

#### **AGM-154 Joint Standoff Weapon**

**Brief:** Joint USAF and Navy family of low-cost glide weapons with a standoff capability.

**Function:** Air-to-surface guided missile.

**First Flight:** December 1994.

**Delivered:** 2000-2005 (USAF).

**IOC:** 2000 (USAF).

**Contractor:** Raytheon.

**Guidance:** GPS/INS.

**Warhead:** (see variants below).

**Dimensions:** length 13.3 ft, diameter 13 in.

**Performance:** range 13.8 miles low altitude, 73 miles high altitude.

#### **COMMENTARY**

Medium-range, GPS/INS guided, standoff air-to-ground weapon. Used to attack a variety of soft and armored area targets during day and night, and adverse weather conditions.

#### **Extant Variant(s)**

■ AGM-154A. The baseline BLU-97 CEM variant for use against soft and area targets.

■ AGM-154B. The BLU-108 variant provides anti-armor capability.

#### **AGM-158 Joint Air-to-Surface Standoff Missile**

**Brief:** An advanced weapon designed to attack heavily defended targets with high precision at great standoff range. Joint USAF-Navy program.

**Function:** Air-to-surface guided weapon.

**First Flight:** April 8, 1999.

**Delivered:** through FY19 (planned).

**IOC:** September 2003.

**Contractor:** Lockheed Martin, Raytheon, Honeywell.

**Power Plant:** Teledyne Continental Motors turbojet (baseline); Williams Intl. turbofan (ER).

**Guidance:** GPS/INS and IIR terminal seeker.

**Warhead:** 1,000-lb class penetrator.

**Dimensions:** length 14 ft.

**Performance:** 1,000-lb dual mode penetrator/blast-fragmentation warheads; range 200+ miles (baseline), 500+ miles (ER).

#### **COMMENTARY**

Autonomous precision strike weapon. Can attack both fixed and relocatable targets, from non-hardened above ground to moderately hardened buried targets.

#### **Extant Variant(s)**

■ AGM-158 JASSM. Stealthy LO airframe equipped with GPS/INS guidance, IIR terminal seeker. Low operational support costs.

■ AGM-158 JASSM-ER. Extended-range version. Utilizes same baseline body, but new engine and fuel system increase range to more than 500 miles. Currently integrated only on the B-1B. Full rate production planned for FY15.

#### **AIM-9 Sidewinder**

**Brief:** A supersonic, short-range, IR guided air-to-air missile with HE warhead, carried by fighter aircraft.

**Function:** Air-to-air missile.

**First Flight:** September 1953.

**Delivered:** 1957-present. AIM-9M deliveries began 1983; AIM-9X May 2002.

**IOC:** circa 1983 (9M); 2003 (9X).

**Contractor:** Raytheon, Loral.

**Power Plant:** Thiokol Hercules and Bermite Mk 36 Mod 11 solid-propellant rocket motor.

**Guidance:** solid-state IR homing guidance.

**Warhead:** annular blast fragmentation.

**Dimensions:** span 2.1 ft, length 9.4 ft, diameter 5 in.

**Performance:** speed Mach 2+, range 10+ miles.

#### **COMMENTARY**

Developed by the Navy for fleet air defense, adapted by USAF for fighter aircraft use. Early versions used extensively in the Vietnam War.

#### **Extant Variant(s)**

■ AIM-9M. Joint Navy-USAF weapon. All-altitude, all-aspect, launch-and-leave intercept capability. Improved defense against IR countermeasures, background discrimination, and reduced-smoke rocket motor. First flight in 1978.

■ AIM-9M-9. Expanded IR countermeasures detection capability.

■ AIM-9X. A jointly funded Navy-USAF project. Employs same rocket motor and warhead as AIM-9M. Has fixed forward canards and smaller fins to increase flight performance. Employs IIR seeker. FY15 budget request funds Block II full rate production.

#### **AIM-120 AMRAAM**

**Brief:** A supersonic, medium-range, active radar guided air-to-air missile with HE warhead.

**Function:** Air-to-air guided missile.

**First Flight:** December 1984.

**Delivered:** from 1988.

**IOC:** September 1991.

**Contractor:** Raytheon.

**Power Plant:** Alliant boost-sustain solid-propellant rocket motor.

**Guidance:** active radar terminal/inertial mid-course.

**Warhead:** blast fragmentation.

**Dimensions:** span 1.7 ft, length 12 ft, diameter 7 in.

**Performance:** speed supersonic, range 20+ miles.

#### **COMMENTARY**

Joint USAF-Navy project, follow-on to AIM-7 Sparrow. Launch-and-maneuver capability.

#### **Extant Variant(s)**

■ AIM-120B. Upgraded, reprogrammable variant of AIM-120A.

■ AIM-120C. Weapon with smaller, clipped control surfaces to provide for internal carriage in F-22A and F-35 and involves high-angle off-boresight (HOBS) launch capability. In production.

■ AIM-120D. Adds an enhanced electronic protection suite, two-way data link, improved HOBS, GPS-aided navigation, and increased range. Operational testing suspended in 2012 for software and hardware issues; testing resumed in May 2013 with completion expected in FY14. FY15 budget would fund production and improvements, including fuzing and guidance.



### CBU-87/103 Combined Effects Munition

**Brief:** An area munition effective against light armor, materiel, and personnel and used by USAF and Navy fighters and bombers for interdiction.

**Function:** Area munition.

**Contractor:** Aerojet General, Honeywell, Alliant Tech.

**Guidance:** none (CBU-87).

**Dimensions:** length 7.7 ft, diameter 15 in.

**Performance:** dispenses 202 BLU-97 combined effects bomblets over an area roughly 800 ft x 400 ft.

#### COMMENTARY

A cluster-bomb family of weapons that can be delivered as low-accuracy free-fall weapon or with near precision, given installation of a simple tail kit.

#### Extant Variant(s)

■ CBU-87. Unguided gravity weapon. CEM type. Dispenses BLU-97 shaped-charge anti-personnel/anti-materiel fragmentary/incendiary bomblets over the target in rectangular pattern.

■ CBU-103. Basic CBU-87 CEM with WCMD tail kit to increase accuracy when released from medium to high altitude.

### CBU-89/104 Gator

**Brief:** An anti-armor/anti-personnel mine dispenser used by USAF and Navy fighters and bombers for interdiction.

**Function:** Scatterable mines.

**Contractor:** Honeywell, Aerojet General, Olan, Alliant Tech.

**Guidance:** none (CBU-89).

**Dimensions:** length 7.7 ft, diameter 15 in.

**Performance:** dispenses 72 BLU-91 anti-armor and 22 BLU-92 anti-personnel mines.

#### COMMENTARY

Weapons system provides low-cost means to rapidly seed a battlefield with mines delivered from high-speed aircraft and able to destroy armor.

#### Extant Variant(s)

■ CBU-89. Gravity weapon. Dispenses 72 anti-tank and 22 anti-personnel mines over target in a circular pattern. Able to fuze anti-tank mines for three different time delay settings. Magnetic influence fuze senses armor.

■ CBU-104. Basic CBU-89 with WCMD tail kit to increase accuracy when released from medium to high altitude.

### CBU-105 Sensor Fuzed Weapon

**Brief:** An anti-armor munition used by fighters and bombers for multiple kills per pass against moving and stationary land combat vehicles.

**Function:** Wide-area munition.

**First Flight:** circa 1990.

**IOC:** 1997.

**Contractor:** Textron Systems.

**Guidance:** IR sensors in each warhead search for targets, then detonate over them.

**Dimensions:** length 7.7 ft, diameter 15 in.

**Performance:** delivers 40 lethal projectiles over an area of about 500 ft x 1,200 ft.

#### COMMENTARY

Tactical munitions dispenser with a payload of 10 BLU-108 submunitions, each containing four skeet projectiles, for a total of 40 lethal projectiles that seek out their target. The skeet's active laser and passive IR sensors can detect a vehicle's shape and IR signature; if no target is detected, the warhead detonates after a preset time. Primary targets are massed tanks, armored personnel carriers, and self-propelled targets.

#### Extant Variant(s)

■ CBU-105. Basic gravity-type CBU-97 with a WCMD tail kit for greater accuracy. Can be delivered from high altitude and in adverse weather. Combat debut came in April 2003 in Iraq.

### CBU-107 Passive Attack Weapon

**Brief:** Provides the capability to attack nonhardened surface targets, with a minimum of collateral and environmental damage.

**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.



**GBU-28 Paveway III** (USAF)

**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).

#### COMMENTARY

After release, weapon glides toward its target. Before impact, inner chamber begins to rotate and the projectiles are ejected in rapid succession by centrifugal force, penetrating a target within a 200-ft radius.

#### Extant Variant(s)

■ CBU-107A. Weapon has no explosive. Ejects various-size, penetrating projectiles. WCMD guided for greater accuracy. Full production completed in six months. Used during Iraqi Freedom.

### GBU-10 Paveway II

**Brief:** An unpowered LGB used to destroy high-value enemy targets from short standoff distances.

**Function:** Air-to-surface guided munition.

**First Flight:** early 1970s.

**IOC:** 1976.

**Contractor:** Lockheed Martin, Raytheon.

**Guidance:** semiactive laser.

**Warhead:** Mk 84 bomb (2,000 lb unitary).

**Dimensions:** span 5.5 ft, length approx 14.8 ft, diameter 18 in.

**Performance:** CEP 29.7 ft, range 9.2 miles.

#### COMMENTARY

Folding-wing laser and GPS guided weapon used primarily for precision bombing against nonhardened targets but capable of penetration. Can operate in cloud ceilings down to 2,500 ft.

#### Extant Variant(s)

■ GBU-10. Laser guidance provides high accuracy over distances up to 40,000 ft.

### GBU-12/49 Paveway II

**Brief:** An unpowered LGB used to destroy high-value enemy targets from short standoff distances.

**Function:** Air-to-surface guided munition.

**First Flight:** early 1970s.

**IOC:** 1976.

**Contractor:** Lockheed Martin, Raytheon.

**Guidance:** semiactive laser.

**Warhead:** Mk 82 (500 lb) blast/fragmentation bomb.

**Dimensions:** span 4.4 ft, length 10.8 ft, diameter 11-18 in.

**Performance:** CEP 29.7 ft, range about six miles.

#### COMMENTARY

Improved versions of the earlier fixed wing Paveway I.

#### Extant Variant(s)

■ GBU-12. Used primarily to strike fixed armor. Can operate in cloud ceilings down to 2,500 ft.

■ GBU-49. Features both laser guidance and onboard GPS for all-weather, precision delivery capability.

### GBU-24 Paveway III

**Brief:** An unpowered low-level LGB equipped with an advanced guidance kit.

**Function:** Air-to-surface penetrating glide bomb.

**First Flight:** GBU-24 in service May 1985.

**IOC:** 1986.

**Contractor:** Raytheon.

**Guidance:** semiactive laser.

**Warhead:** BLU-109 2,000-lb bomb.

**Dimensions:** span 6.7 ft, length 14.4 ft, diameter 18 in.

**Performance:** range more than 11 miles.

#### COMMENTARY

Precision weapon that is effective against a broad range of high-value targets. Can be dropped from low, medium, or high altitude.

#### Extant Variant(s)

■ GBU-24. Air-to-ground weapon equipped with third generation Paveway III guidance kit, integrated with a BLU-109 penetrating warhead. Advanced guidance section and high-lift airframe.

### GBU-28 Paveway III

**Brief:** A large 5,000-lb class air-to-ground penetrating warhead, equipped with an advanced laser guidance kit, used for striking and destroying hard and deeply buried targets.

**Function:** Air-to-surface guided glide bomb.

**First Flight:** February 1991.

**IOC:** 1991.

**Contractor:** Raytheon.

**Guidance:** laser.

**Warhead:** BLU-113 or BLU-122 5,000-lb bombs.

**Dimensions:** length approx 20 ft, diameter 15 in.

**Performance:** range more than 5.75 miles.

#### COMMENTARY

Developed during Desert Storm for use against Iraq's deeply buried, hardened C2 facilities. Two used by F-111Fs against a bunker complex Feb. 27, 1991.

#### Extant Variant(s)

■ GBU-28B/B. Integrates GPS/INS guidance into the existing GBU-28 guidance control unit to provide poor weather capability and improved target location. Entered production in 1999.

■ GBU-28C/B. Equipped with more powerful BLU-122 warhead for increased penetration, lethality. Guidance and control provided by Enhanced Paveway III system with GPS/INS and laser capability. Entered production in 2005.

### GBU-31/32/38 Joint Direct Attack Munition

**Brief:** A joint USAF-Navy GPS/INS guided weapon, carried by fighters and bombers, that provides highly accurate, autonomous, all-weather conventional bombing capability.

**Function:** Air-to-surface guided bomb.

**First Flight:** Oct. 22, 1996.

**IOC:** 1998.

**Contractor:** Boeing, Textron, Honeywell.

**Guidance:** GPS/INS.

**Warhead:** 2,000-lb Mk 84/BLU-109 (31), 1,000-lb Mk 83/BLU-110 (32), 500-lb Mk 82/BLU-111 (38).

**Dimensions:** span 25 in (31), 19.6 in (32), 14 in (38); length (with JDAM and warhead) approx 12





**GBU-31 Joint Direct Attack Munition** (SSgt. Michael B. Keller)

ft (31), 10 ft (32), 7.8 ft (38).

**Performance:** range up to 15 miles, CEP with GPS 16.4 ft, CEP with INS only 98 ft.

**COMMENTARY**

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. Acquires target information through aircraft's avionics system. Guided to target by inertial guidance kit with periodic GPS updates. FY15 budget would continue production at low rate.

**Extant Variant(s)**

■ GBU-31. Variant adds GPS/INS guidance kit to the 2,000-lb general-purpose Mk 84 bomb or BLU-109 penetrator. First used in combat March 24, 1999.

■ GBU-32. Variant adds GPS/INS guidance kit to the 1,000-lb general-purpose Mk 83 bomb or BLU-110 penetrator.

■ GBU-38. Variant adds GPS/INS guidance kit to the 500-lb general-purpose Mk 82 bomb or BLU-111 penetrator.

**GBU-39 Small Diameter Bomb I**

**Brief:** Extended-range all-weather, day/night 250-lb class near-PGM. Provides increased loadout to achieve multiple kills per sortie and decreases collateral damage.

**Function:** Air-to-surface guided munition.

**First Flight:** May 23, 2003 (guided).

**IOC:** Oct. 2, 2006.

**Contractor:** Boeing.

**Guidance:** GPS/INS.

**Warhead:** 250-lb class penetrating blast fragmentation munition.

**Dimensions:** bomb: length 6 ft, width 7.5 in; BRU-31/A carriage (four bombs) length 12 ft, width 16 in, height 16 in.

**Performance:** near-precision capability at standoff range up to 46 miles.

**COMMENTARY**

Capable of destroying high-priority fixed and stationary targets from fighters and bombers in internal bays or on external hardpoints. Can be targeted and released against single or multiple targets. Acquires target coordinates prior to release.

**Extant Variant(s)**

■ GBU-39B SDB I. First combat use Oct. 5, 2006, by F-15E operating over Iraq. Employs advanced anti-jam GPS/INS. Contract to develop/build SDB issued in 2003. Projected production: 24,000 weapons.

**GBU-43 MOAB Bomb**

**Brief:** A massive weapon designed for use against large area or buried targets.

**Function:** Massive guided bomb.

**Guidance:** GPS/INS.

**Warhead:** BLU-120/B 18,000-lb high explosive.

**Dimensions:** length 30 ft, diameter 3.3 ft.

**COMMENTARY**

Large, powerful, and accurately delivered conventional HE bomb. Developed in only nine weeks to be available for the 2003 Iraq campaign. Given name Massive Ordnance Air Blast (MOAB) but known unofficially as "Mother of All Bombs." Designed to be dropped from the rear of a C-130 without a parachute. Provides power to attack large area targets or enemy hidden in tunnels or caves.

**Extant Variant(s)**

■ GBU-43/B. GPS guided munition with fins and inertial gyro for pitch and roll control. Weighs 21,000 lb, of which 18,700 lb is attributed to BLU 120/B warhead. History's largest satellite guided, air-delivered weapon.

**GBU-53 Small Diameter Bomb II**

**Brief:** Air-launched, precision strike standoff weapon for use against both fixed and moving targets in adverse weather conditions. Features higher loadout and less collateral damage similar to the SDB I.

**Function:** Air-to-surface guided munition.

**First Flight:** 2012.

**IOC:** TBD.

**Contractor:** Raytheon.

**Guidance:** Tri-mode seeker, fusing millimeter-wave radar, uncooled IIR, and digital semiactive laser sensors on a single gimbal.

**Warhead:** 250-lb class munition.

**Dimensions:** n/a (compatible with SDB I BRU-61/A carriage).

**Performance:** precision strike at standoff range up to 46 miles.

**COMMENTARY**

A joint USAF-Navy program designed to provide the capability to attack both mobile and stationary targets from standoff range and through adverse weather. Will provide multiple kills per pass, multiple ordnance carriage, precision strike, reduced munitions footprint, minimized collateral damage, reduced susceptibility to countermeasures, and network-enabled capability through Link 16 and UHF data links.

**Extant Variant(s)**

■ GBU-53/B SDB II. Under development. Raytheon won competition; contract issued August 2010. FY15 budget request would fund LRIP. Planned USAF production: 12,000 weapons.

**GBU-54 Laser JDAM**

**Brief:** A joint USAF-Navy INS/GPS guided weapon equipped with a laser seeker, carried by fighters, providing highly accurate, autonomous, all-weather conventional bombing capability against stationary and moving targets.

**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.

**COMMENTARY**

Combines a laser guidance kit with the GPS/INS-based navigation of existing GBU-38 JDAM. Boeing also developing GBU-31 and GBU-32 variants.

**Extant Variant(s)**

■ GBU-54 Laser JDAM. Dual mode 500-lb guided weapon. Adds laser seeker to the JDAM's existing GPS/INS guidance to provide capability to attack moving targets with precision. Identified as an urgent operational need, development and testing completed in less than 17 months. First delivered in May 2008. First combat use in August 2008 in Iraq. FY15 budget would continue production at low rate.

**GBU-57 Massive Ordnance Penetrator**

**Brief:** A massive earth-penetrating weapon for use against hard and deeply buried targets.

**Function:** Massive PGM.

**Guidance:** GPS.

**Warhead:** 5,300-lb high explosive.

**Dimensions:** length 20.5 ft, diameter 31.5 in.

**COMMENTARY**

USAF partnered with the Defense Threat Reduction Agency in 2004 on early development and test. Flight tests conducted from 2008 to 2010. In February 2010, program transitioned to USAF. Boeing received contract in 2009 for aircraft integration.

**Extant Variant(s)**



**GBU-43B MOAB Bomb** (USAF photo)





**AEHF** (Lockheed Martin photo)

■ GBU-57B. Integration testing for B-2A bomber completed June 2011.

## Satellite Systems

### Advanced EHF Satellite System

**Brief:** Satcom system that provides global, secure, protected, and jam-resistant strategic and tactical communications.

**Function:** Communications.

**Operator:** AFSPC.

**First Launch:** August 2010.

**IOC:** 2015 (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 Plant:** 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.

#### COMMENTARY

Replenishing existing Milstar satellites, operating at much higher capacity and data rate capability. Offers secure, anti-jam communications around the world. Uses cross-linked satellites, eliminating the need for ground relay stations. Collaborative program with Canada, Netherlands, and United Kingdom.

#### Extant Variant(s)

■ AEHF SV-1. Launched in August 2010. An anomaly with its propulsion system delayed its arrival in operational orbit until October 2011. Completed on-orbit testing February 2012.

■ AEHF SV-2. Launched in May 2012. Now in orbit and operational.

■ AEHF SV-3. Launched in September 2013.

### Defense Meteorological Satellite Program

**Brief:** Satellites that collect air, land, sea, and space environmental data to support worldwide strategic and tactical military operations.

**Function:** Space and Earth environmental data collection.

**Operator:** National Oceanic and Atmospheric Administration (NOAA).

**First Launch:** May 23, 1962.

**IOC:** 1965.

**Constellation:** two low Earth orbit (LEO).

**Design Life:** 48 months.

**Launch Vehicle:** Delta IV; Atlas V.

**Operational Location:** NOAA Satellite Operations

Facility, Suitland, Md.

**Orbit Altitude:** approx 527 miles.

**Contractor:** Lockheed Martin, Northrop Grumman.

**Power Plant:** solar arrays generating 1,200-1,300 watts.

**Dimensions:** length 25 ft (with array deployed), width 4 ft.

**Weight:** 2,545 lb, incl 772-lb sensor; 2,270 lb with 592-lb sensor payload.

**Performance:** polar orbits, cover Earth in about 6 hr, primary sensor scans 1,800-mile wide area.

#### COMMENTARY

Provides timely and high-quality weather information to strategic and tactical combat units worldwide. Uses operational linescan sensor to image cloud cover in visible and thermal IR and analyze cloud patterns. Equipped with microwave imagers and sounders and a suite of space environment sensors that provide critical land, sea, and space environment data.

#### Extant Variant(s)

■ 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. Last launched in 2009. Two spacecraft (DMSP-19 and DMSP-20) remain, with one slated for launch in spring 2014. USAF is considering requirements for a follow-on system.

### Defense Satellite Communications System

**Brief:** Joint service satellite system that provides high-capacity communications for deployed air, land, and sea forces.

**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/eight currently operational.

**Design Life:** 10 yr (III).

**Launch Vehicle:** Atlas II and EELV.

**Operational Location:** Schriever AFB, Colo.

**Orbit Altitude:** 22,000+ miles in geosynchronous orbit.

**Contractor:** Lockheed Martin.

**Power Plant:** solar arrays generating 1,269 watts, decreasing to 980 watts after 10 yr; 1,500 watts (SLEP).

**Dimensions:** rectangular body 6 x 6 x 7 ft, 38-ft span with solar arrays deployed

**Weight:** 2,580 lb; 2,716 lb (SLEP).

**Performance:** employ six independent SHF transponder channels for secure voice and high-rate data communications.

#### COMMENTARY

Workhorse of US military's SHF communications. Provides military communications to troops in the field and commanders worldwide.

#### Extant Variant(s)

■ DSCS III. Most recent configuration. Final (of 14) DSCS IIIs launched in 2003. Final four satellites received SLEP, providing higher power amplifiers, more sensitive receivers, and increased antenna connection options. Also carries a single channel transponder to disseminate emergency action and force direction messages to nuclear-capable forces.

### Defense Support Program

**Brief:** An early warning spacecraft in geosynchronous orbit that provides alert of possible ballistic missile attack on US forces or homeland.

**Function:** Strategic and tactical launch detection.

**Operator:** AFSPC.

**First Launch:** November 1970.

**IOC:** circa 1972.

**Constellation:** classified.

**Design Life:** Three yr requirement and five yr goal.

**Launch Vehicle:** Titan IV with inertial upper stage; Delta IV Heavy EELV.

**Operational Location:** Buckley AFB, Colo.; Schriever AFB, Colo.

**Orbit Altitude:** Geosynchronous at 22,000+ miles.

**Contractor:** TRW (now Northrop Grumman), Aerojet.

**Power Plant:** solar arrays generating 1,485 watts.

**Dimensions:** diameter 22 ft, height 32.8 ft, with solar paddles deployed.

**Weight:** approx 5,200 lb.

**Performance:** uses IR sensors to sense heat from missile and booster plumes against Earth's background.

#### COMMENTARY

Key part of North American and theater early warning systems. Capable of detecting missile launches and nuclear detonations. Originally aimed at Soviet military. Used extensively in 1991 Gulf War to detect theater missile launches against coalition forces. The 23rd and final DSP satellite launched in December 2007.

#### Extant Variant(s)

■ Block 5. Nine satellites in period 1989-present. This latest variant is more survivable than predecessors, includes a medium wavelength IR sensor for more mission utility, and accommodates 6,000 detectors.

### Global Positioning System

**Brief:** A US space-based radio-positioning system that provides 24-hour worldwide highly accurate three-dimensional location information and precision velocity and timing services to military and civilian users.

**Function:** Worldwide navigation, timing, and velocity data.

**Operator:** AFSPC.

**First Launch:** Feb. 22, 1978.

**IOC:** Dec. 9, 1993.

**Constellation:** 27 spacecraft.

**Design Life:** 7.5 yr (II/IIA); 12 yr (IIF); 7.5 yr (IIR/IIR-M); 15 yr (IIIA).

**Launch Vehicle:** Delta II, Delta IV.

**Operational Location:** Schriever AFB, Colo.

**Orbit Altitude:** 10,900 miles.

**Contractor:** Boeing (II, IIA, IIF), Lockheed Martin (IIR, IIR-M, IIIA).

**Power Plant:** solar panels generating 700 watts (II/IIA); 1,136 watts (IIR/IIR-M); up to 2,900 watts (IIF).

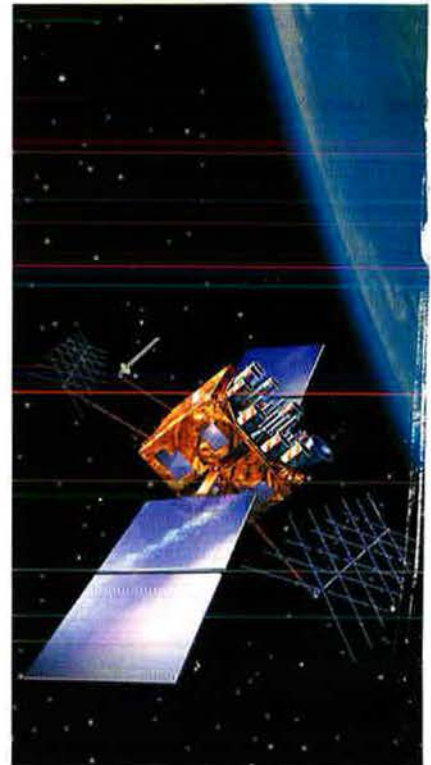
**Dimensions:** (IIR/IIR-M) 5 x 6.3 x 6.25 ft, span incl solar panels 38 ft; (IIF) 9.6 ft x 6.5 ft x 12.9 ft, span incl solar panels 43.1 ft.

**Weight:** on orbit, 2,370 lb (IIR/IIR-M); 3,439 lb (IIF).

**Performance:** orbit 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 hr, and location to within a few ft.

#### COMMENTARY

Fundamental contribution to precision bombing, CSAR, mapping, and rendezvous. Provides accurate three-dimensional (latitude, longitude, and



**GPS** (US government illustration)





**Milstar** (Lockheed Martin illustration)

urate three-dimensional (latitude, longitude, and altitude) position, velocity, and time data in an uninterrupted way.

**Extant Variant(s)**

■ GPS Block IIA. Launched first in 1997. Current constellation includes 11 IIAs launched to replace original GPS Block I series.

■ GPS Block IIF. 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 first launched in 2010, second in 2011, third in 2012, fourth in May 2013, and fifth on Feb. 20, 2014, leaving seven (one awaiting launch, five in storage, and one in temporary storage awaiting completion).

■ GPS Block IIR-M. First launched in 2005 and last in 2009. Upgrades included two new signals, enhanced encryption and anti-jamming capabilities, and second civil signal.

■ GPS Block IIIA. Future generation expected to provide improved accuracy, availability, integrity, and resistance to jamming. Lockheed Martin and Raytheon completed the first launch readiness exercise in September 2013. First launch slated for 2014.

**Milstar Satellite Communications System**

**Brief:** A joint service satcom system that provides global, secure, protected, and jam-resistant strategic and tactical communications.

**Function:** Communications.

**Operator:** AFSPC.

**First Launch:** Feb. 7, 1994.

**IOC:** July 1997 (Milstar I).

**Constellation:** five.

**Design Life:** 10 yr.

**Launch Vehicle:** Titan IV/Centaur.

**Operational Location:** Schriever AFB, Colo.

**Orbit Altitude:** Geosynchronous at 22,000+ miles.

**Contractor:** Lockheed Martin, Boeing, TRW (now Northrop Grumman).

**Power Plant:** 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 2 channels.

**COMMENTARY**

backbone of strategic-tactical DOD communications, provides secure, anti-jam communications around the world. Uses cross-linked satellites, eliminating the need for ground relay stations. Offers 24-hour-a-day

capability. Last of six satellites launched in 2003.

**Extant Variant(s)**

■ Block I. Two Milstar I satellites launched in the period 1994-95. Both still active.

■ Block II. Four Milstar II satellites launched in period 1999-2003. First one was placed in nonuseable orbit. Other three are still active.

**Space Based Infrared System**

**Brief:** Advanced surveillance system for missile warning, missile defense, battlespace characterization, and technical intelligence. System includes IR sensor payloads on host satellites in highly elliptical orbit (HEO) and two IR sensors each on dedicated satellites in geosynchronous Earth orbit (GEO).

**Function:** space surveillance.

**Operator:** AFSPC.

**First Launch:** GEO 1, May 2011.

**IOC:** HEO 1, Dec. 5, 2008. (Increment 1, Dec. 8, 2001)

**Constellation:** four GEO sats, two HEO sensors (hosted).

**Design Life:** n/a.

**Launch Vehicle:** GEO, Atlas V.

**Operational Location:** Buckley AFB and Schriever AFB, Colo.

**Orbit Altitude:** Geosynchronous and high elliptical.

**Contractor:** Lockheed Martin, Northrop Grumman.

**Power Plant:** solar array, 2,435 watts (GEO).

**Dimensions:** GEO 7 x 6.3 x 19.7 ft.

**Weight:** 5,603 lb (GEO on orbit).

**COMMENTARY**

Follow-on to the Defense Support Program satellite. System includes GEO satellites, HEO hosted payloads, and ground assets. HEO sensor detects launch of submarine-launched ballistic missiles (SLBMs) from the North Polar region and can be tasked for other IR detection missions. GEO scanning IR sensor performs strategic missile warning mission, global technical intelligence, and initial phase for the strategic missile defense mission, providing two times the revisit rate and three times the sensitivity of DSP.

**Extant Variant(s)**

■ SBIRS HEO. HEO-1 and HEO-2 payloads went into operation in 2008 and 2009, respectively. USAF delivered HEO-3 to the host in June 2013, with delivery of HEO-4 expected in May 2015.

■ SBIRS GEO. USAF launched the GEO-1 satellite in 2011; officials say the quality of its data is exceeding performance expectations. GEO-2 launched in March 2013 and was accepted for operations. Delivery of GEO-3 slated for September 2015 and GEO-4 in September 2016.

**Space Based Surveillance System**

**Brief:** Space-based capability to provide metric and characterization data on objects in space.

**Function:** Space surveillance and object identification.

**Operator:** AFSPC.

**First Launch:** Sept. 25, 2010.

**IOC:** Aug. 17, 2012.

**Constellation:** one LEO satellite.

**Design Life:** seven years.

**Launch Vehicle:** Minotaur IV.

**Operational Location:** Schriever AFB, Colo.

**Orbit Altitude:** 390 miles, sun-synchronous orbit.

**Contractor:** Boeing (system integration, ground segment, operations and sustainment); Ball Aerospace (satellite).

**Power Plant:** 750 watts, powered from solar arrays and batteries.

**Dimensions:** height approx 10 ft; 10 ft x 3.2 ft, plus solar panels.

**Weight:** approx 2,273 lb.

**COMMENTARY**

Designed to track and collect optical signatures of Earth-orbiting objects, including space debris, from a space-based platform. First operational satellite (SBSS Block 10) launched in September 2010. In March 2011, USAF announced satellite control authority had transferred to 1st SOPS at Schriever, culminating the on-orbit initialization, checkout, calibration, and system characterization process. AFSPC is working to extend SBSS service life to cover a potential four-year gap in coverage before it can launch a follow-on

spacecraft in 2021—the earliest date based on projected funding.

**Wideband Global SATCOM**

**Brief:** Satellites that provide high-capacity communications for deployed forces (air, land, and sea).

**Function:** Communications.

**Operator:** AFSPC.

**First Launch:** October 2007.

**IOC:** April 16, 2008.

**Constellation:** eight satellites.

**Design Life:** 14 years.

**Launch Vehicle:** Atlas V, Delta IV.

**Operational Location:** Schriever AFB, Colo.

**Orbit Altitude:** Geosynchronous at 22,000+ miles.

**Contractor:** Boeing.

**Power Plant:** 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.

**COMMENTARY**

Designed to provide worldwide communications coverage for tactical and fixed users, augmenting and then replacing DSCS X-band frequency service and 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.

**Extant Variant(s)**

■ Block I. Three satellites (SV-1 thru SV-3) launched in October 2007, April 2009, and December 2009. SV-1 was in service over the Pacific Ocean region in April 2008; SV-2 over the Middle East in August 2009; and SV-3 over Europe and Africa in June 2010.

■ Block II. Comprises satellites modified to better support the airborne ISR mission. SV-4 satellite launched in January 2012 and became operational in July 2012, covering the Indian Ocean area. USAF launched SV-5 and SV-6 (purchased by Australia) in May and August 2013, respectively. The US also has entered into partnership with Canada, Denmark, Luxembourg, Netherlands, and New Zealand. Block II follow-on sats, SV-7 to SV-10, are expected to launch over FY15 to FY18 and be operational by 2019.



**WGS** (Boeing illustration)



# Leaders Through the Years



## 2014 USAF Almanac

### The Nation's Air Arm and Its Early Leaders

Designation	Commander	Dates of Service
<b>Aeronautical Division, US Signal Corps</b> Aug. 1, 1907-July 18, 1914	<b>Chief, Aeronautical Division</b> Capt. Charles deForest Chandler Capt. Arthur S. Cowan Capt. Charles deForest Chandler Maj. Samuel Reber	Aug. 1, 1907-June 30, 1910 July 1, 1910-June 19, 1911 June 20, 1911-Sept. 9, 1913 Sept. 10, 1913-July 17, 1914
<b>Aviation Section, US Signal Corps<sup>a</sup></b> July 18, 1914-May 20, 1918	<b>Chief, Aviation Section</b> Lt. Col. Samuel Reber Lt. Col. George O. Squier Lt. Col. John B. Bennet Maj. Benjamin D. Foulois Brig. Gen. Arthur I. Dade Col. Lawrence Brown	July 18, 1914-May 5, 1916 May 20, 1916-Feb. 19, 1917 Feb. 19, 1917-June 30, 1917 June 30, 1917-Nov. 12, 1917 Nov. 12, 1917-Feb. 27, 1918 Feb. 27, 1918-May 20, 1918
<b>Division of Military Aeronautics, Secretary of War</b> May 20, 1918-May 24, 1918	<b>Director of Military Aeronautics</b> Maj. Gen. William L. Kenly (Kept same title three months into absorption by Air Service)	May 20, 1918-August 1918
<b>Air Service</b> May 24, 1918-July 2, 1926	<b>Director of Air Service</b> John D. Ryan Maj. Gen. Charles T. Menoher  <b>Chief of Air Service</b> Maj. Gen. Charles T. Menoher Maj. Gen. Mason M. Patrick	Aug. 28, 1918-Nov. 27, 1918 Jan. 2, 1919-June 4, 1920  June 4, 1920-Oct. 4, 1921 Oct. 5, 1921-July 2, 1926
<b>Air Corps<sup>b</sup></b> July 2, 1926-Sept. 18, 1947	<b>Chief of Air Corps</b> Maj. Gen. Mason M. Patrick Maj. Gen. James E. Fechet Maj. Gen. Benjamin D. Foulois Maj. Gen. Oscar Westover Maj. Gen. Henry H. Arnold	July 2, 1926-Dec. 13, 1927 Dec. 14, 1927-Dec. 19, 1931 Dec. 20, 1931-Dec. 21, 1935 Dec. 22, 1935-Sept. 21, 1938 Sept. 29, 1938-June 20, 1941
<b>Army Air Forces</b> June 20, 1941-Sept. 18, 1947	<b>Chief, Army Air Forces</b> Lt. Gen. Henry H. Arnold  <b>Commanding General, AAF</b> Gen. of the Army Henry H. Arnold <sup>c</sup> Gen. Carl A. Spaatz	June 20, 1941-March 9, 1942  March 9, 1942-Feb. 9, 1946 Feb. 9, 1946-Sept. 26, 1947
<b>United States Air Force</b> Sept. 18, 1947	<b>Chief of Staff</b> Gen. Carl A. Spaatz	Sept. 26, 1947-April 29, 1948

<sup>a</sup>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.

<sup>b</sup>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.

<sup>c</sup>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

Stuart Symington	Sept. 18, 1947	April 24, 1950	John J. Welch Jr. (acting)	April 29, 1989	May 21, 1989
Thomas K. Finletter	April 24, 1950	Jan. 20, 1953	Donald B. Rice	May 22, 1989	Jan. 20, 1993
Harold E. Talbott	Feb. 4, 1953	Aug. 13, 1955	Michael B. Donley (acting)	Jan. 20, 1993	July 13, 1993
Donald A. Quarles	Aug. 15, 1955	April 30, 1957	Gen. Merrill A. McPeak (acting)	July 14, 1993	Aug. 5, 1993
James H. Douglas Jr.	May 1, 1957	Dec. 10, 1959	Sheila E. Widnall	Aug. 6, 1993	Oct. 31, 1997
Rudley C. Sharp	Dec. 11, 1959	Jan. 20, 1961	F. Whitten Peters*	Nov. 1, 1997	Jan. 20, 2001
Eugene M. Zuckert	Jan. 23, 1961	Sept. 30, 1965	Lawrence J. Delaney (acting)	Jan. 20, 2001	June 1, 2001
Harold Brown	Oct. 1, 1965	Feb. 14, 1969	James G. Roche	June 1, 2001	Jan. 20, 2005
Robert C. Seamans Jr.	Feb. 15, 1969	May 14, 1973	Peter B. Teets (acting)	Jan. 20, 2005	March 25, 2005
John L. McLucas*	May 15, 1973	Nov. 23, 1975	Michael L. Dominguez (acting)	March 25, 2005	July 29, 2005
James W. Plummer (acting)	Nov. 23, 1975	Jan. 2, 1976	Preston M. Geren (acting)	July 29, 2005	Nov. 3, 2005
Thomas C. Reed	Jan. 2, 1976	April 6, 1977	Michael W. Wynne	Nov. 3, 2005	June 20, 2008
John C. Stetson	April 6, 1977	May 18, 1979	Michael B. Donley*	June 21, 2008	June 21, 2013
James M. Mark*	May 18, 1979	Feb. 9, 1981	Eric Fanning (acting)	June 21, 2013	Dec. 20, 2013
Bernie Orr	Feb. 9, 1981	Nov. 30, 1985	Deborah Lee James	Dec. 20, 2013	
Russell A. Rourke	Dec. 6, 1985	April 7, 1986			
Edward C. Aldridge Jr.*	April 8, 1986	Dec. 16, 1988			
James F. McGovern (acting)	Dec. 16, 1988	April 29, 1989			

\*Served as acting Secretary: McLucas, until July 18, 1973; Mark, until July 26, 1979; Aldridge, until June 9, 1986; Peters, until July 30, 1999; Donley, until Oct. 17, 2008.

## CSAF

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

## Vice CSAF

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

## MSAF

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



# Leaders of Active Major Commands and ANG

## Air Combat Command

Gen. John Michael Loh	June 1, 1992	June 22, 1995
Gen. Joseph W. Ralston	June 23, 1995	Feb. 27, 1996
Lt. Gen. Brett M. Dula (acting)	Feb. 28, 1996	April 4, 1996
Gen. Richard E. Hawley	April 5, 1996	June 11, 1999
Gen. Ralph E. Eberhart	June 11, 1999	Feb. 8, 2000
Gen. John P. Jumper	Feb. 8, 2000	Sept. 6, 2001
Lt. Gen. Donald G. Cook (acting)	Sept. 6, 2001	Nov. 14, 2001
Gen. Hal M. Hornburg	Nov. 14, 2001	Nov. 17, 2004
Lt. Gen. Bruce A. Wright (acting)	Nov. 17, 2004	Feb. 6, 2005
Lt. Gen. William M. Fraser III (acting)	Feb. 6, 2005	May 26, 2005
Gen. Ronald E. Keys	May 26, 2005	Oct. 2, 2007
Gen. John D. W. Corley	Oct. 2, 2007	Sept. 10, 2009
Gen. William M. Fraser III	Sept. 10, 2009	Sept. 13, 2011
Gen. Gilmory Michael Hostage III	Sept. 13, 2011	

## Air Education and Training Command

Lt. Gen. John K. Cannon	April 13, 1946	Oct. 13, 1948
Lt. Gen. Robert W. Harper	Oct. 14, 1948	June 30, 1954
Maj. Gen. Glenn O. Barcus (acting)	July 1, 1954	July 25, 1954
Lt. Gen. Charles T. Myers	July 26, 1954	July 31, 1958
Lt. Gen. Frederic H. Smith Jr.	Aug. 1, 1958	July 31, 1959
Lt. Gen. James E. Briggs	Aug. 1, 1959	July 31, 1963
Lt. Gen. Robert W. Burns	Aug. 1, 1963	Aug. 10, 1964
Lt. Gen. William W. Momyer	Aug. 11, 1964	June 30, 1966
Lt. Gen. Sam Maddux Jr.	July 1, 1966	Aug. 30, 1970
Lt. Gen. George B. Simler	Sept. 1, 1970	Sept. 9, 1972
Lt. Gen. William V. McBride	Sept. 9, 1972	Aug. 31, 1974
Lt. Gen. George H. McKee	Sept. 1, 1974	Aug. 28, 1975
Gen. John W. Roberts	Aug. 29, 1975	April 1, 1979
Gen. Bennie L. Davis	April 1, 1979	July 28, 1981
Gen. Thomas M. Ryan Jr.	July 29, 1981	June 22, 1983
Gen. Andrew P. Iosue	June 23, 1983	Aug. 27, 1986
Lt. Gen. John A. Shaud	Aug. 28, 1986	June 5, 1988
Lt. Gen. Robert C. Oaks	June 6, 1988	June 24, 1990
Lt. Gen. Joseph W. Ashy	June 25, 1990	Dec. 9, 1992
Gen. Henry Viccellio Jr.	Dec. 10, 1992	June 19, 1995
Gen. Billy J. Boles	June 20, 1995	March 17, 1997
Gen. Lloyd W. Newton	March 17, 1997	June 22, 2000
Gen. Hal M. Hornburg	June 22, 2000	Nov. 14, 2001
Lt. Gen. John D. Hopper Jr. (acting)	Nov. 14, 2001	Dec. 17, 2001
Gen. Donald G. Cook	Dec. 17, 2001	June 17, 2005
Gen. William R. Looney III	June 17, 2005	July 2, 2008
Gen. Stephen R. Lorenz	July 2, 2008	Nov. 17, 2010
Gen. Edward A. Rice Jr.	Nov. 17, 2010	Oct. 10, 2013
Gen. Robin Rand	Oct. 10, 2013	

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

## Air Force Global Strike Command

Lt. Gen. Frank G. Klotz	Aug. 7, 2009	Jan. 6, 2011
Lt. Gen. James M. Kowalski	Jan. 6, 2011	Oct. 23, 2013
Lt. Gen. Stephen W. Wilson	Oct. 23, 2013	

Established as Continental Air Forces Dec. 13, 1944. Redesignated Strategic Air Command March 21, 1946. (See SAC in Inactive Major Commands section.) Inactivated June 1, 1992. Redesignated and activated as AFGSC Aug. 7, 2009.

## Air Force Materiel Command

Gen. Ronald W. Yates	July 1, 1992	June 30, 1995
Gen. Henry Viccellio Jr.	June 30, 1995	May 9, 1997
Lt. Gen. Kenneth E. Eickmann (acting)	May 9, 1997	May 29, 1997
Gen. George T. Babbitt Jr.	May 29, 1997	April 20, 2000
Gen. Lester L. Lyles	April 20, 2000	Aug. 22, 2003
Gen. Gregory S. Martin	Aug. 22, 2003	Aug. 19, 2005
Gen. Bruce Carlson	Aug. 19, 2005	Nov. 21, 2008
Gen. Donald J. Hoffman	Nov. 21, 2008	June 5, 2012
Gen. Janet C. Wolfenbarger	June 5, 2012	

## Air Force Reserve Command

Maj. Gen. Rollin B. Moore Jr.	Aug. 1, 1968	Jan. 26, 1972
Brig. Gen. Alfred Verhulst (acting)	Jan. 27, 1972	March 15, 1972
Maj. Gen. Homer I. Lewis	March 16, 1972	April 8, 1972
Maj. Gen. William Lyon	April 16, 1975	April 16, 1975
Maj. Gen. Richard Bodycombe	April 17, 1979	Oct. 31, 1981
Maj. Gen. Sloan R. Gill	Nov. 1, 1982	Oct. 31, 1982
Maj. Gen. Roger P. Scheer	Nov. 1, 1986	Oct. 31, 1991
Maj. Gen. John J. Closner III	Nov. 1, 1990	Oct. 31, 1991
Maj. Gen. Robert A. McIntosh	Nov. 1, 1994	June 9, 1991
Maj. Gen. David R. Smith (acting)	June 9, 1998	Sept. 25, 1991
Lt. Gen. James E. Sherrard III	Sept. 25, 1998	June 1, 2001
Maj. Gen. J. J. Batbie Jr. (acting)	June 1, 2004	June 24, 2001
Lt. Gen. John A. Bradley	June 24, 2004	June 24, 2001
Lt. Gen. Charles E. Stenner Jr.	June 24, 2008	July 30, 2011
Lt. Gen. James F. Jackson	July 30, 2012	

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

## Air Force Space Command

Gen. James V. Hartinger	Sept. 1, 1982	July 30, 1982
Gen. Robert T. Herres	July 30, 1984	Oct. 1, 1982
Maj. Gen. Maurice C. Padden	Oct. 1, 1986	Oct. 29, 1982
Lt. Gen. Donald J. Kutyna	Oct. 29, 1987	March 29, 1991
Lt. Gen. Thomas S. Moorman Jr.	March 29, 1990	March 23, 1991
Gen. Donald J. Kutyna	March 23, 1992	June 30, 1991
Gen. Charles A. Horner	June 30, 1992	Sept. 13, 1991
Gen. Joseph W. Ashy	Sept. 13, 1994	Aug. 26, 1991
Gen. Howell M. Estes III	Aug. 26, 1996	Aug. 14, 1991
Gen. Richard B. Myers	Aug. 14, 1998	Feb. 22, 2001
Gen. Ralph E. Eberhart	Feb. 22, 2000	April 19, 2001
Gen. Lance W. Lord	April 19, 2002	April 1, 2001
Lt. Gen. Frank G. Klotz (acting)	April 1, 2006	June 26, 2001
Gen. Kevin P. Chilton	June 26, 2006	Oct. 3, 2001
Lt. Gen. Michael A. Hamel (acting)	Oct. 3, 2007	Oct. 12, 2001
Gen. C. Robert Kehler	Oct. 12, 2007	Jan. 5, 2011
Gen. William L. Shelton	Jan. 5, 2011	

## 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, 1991
Maj. Gen. James L. Hobson Jr.	July 22, 1994	July 9, 1991
Maj. Gen. Charles R. Holland	July 9, 1997	Aug. 5, 1991
Lt. Gen. Maxwell C. Bailey	Aug. 5, 1999	Jan. 16, 2001
Lt. Gen. Paul V. Hester	Jan. 16, 2002	July 1, 2001
Lt. Gen. Michael W. Wooley	July 1, 2004	Nov. 27, 2001
Lt. Gen. Donald C. Wurster	Nov. 27, 2007	June 24, 2011
Lt. Gen. Eric E. Fiel	June 24, 2011	

## Air Mobility Command

Gen. Hansford T. Johnson	June 1, 1992	Aug. 22, 1992
Gen. Ronald R. Fogleman	Aug. 23, 1992	Oct. 17, 1992
Gen. Robert L. Rutherford	Oct. 18, 1994	July 15, 1992
Gen. Walter Kross	July 15, 1996	Aug. 3, 1992
Gen. Charles T. Robertson Jr.	Aug. 3, 1998	Nov. 5, 2001
Gen. John W. Handy	Nov. 5, 2001	Sept. 7, 2001
Lt. Gen. Christopher A. Kelly (acting)	Sept. 7, 2005	Oct. 14, 2001
Gen. Duncan J. McNabb	Oct. 14, 2005	Sept. 7, 2001
Gen. Arthur J. Lichte	Sept. 7, 2007	Nov. 20, 2001
Gen. Raymond E. Johns Jr.	Nov. 20, 2009	Nov. 30, 2011
Gen. Paul J. Seiva	Nov. 30, 2012	

*An F-16 takes off from Misawa AB, Japan, for practice attacking ground targets.*



## Air National Guard

Col. William A. R. Robertson	Nov. 28, 1945	October 1948
Maj. Gen. George G. Finch	October 1948	Sept. 25, 1950
Maj. Gen. Earl T. Ricks	Oct. 13, 1950	Jan. 4, 1954
Maj. Gen. Winston P. Wilson	Jan. 26, 1954	Aug. 5, 1962
Maj. Gen. I. G. Brown	Aug. 6, 1962	April 19, 1974
Maj. Gen. John J. Pesch	April 20, 1974	Jan. 31, 1977
Maj. Gen. John T. Guice	Feb. 1, 1977	April 1, 1981
Maj. Gen. John B. Conaway	April 1, 1981	Nov. 1, 1988
Maj. Gen. Philip G. Killey	Nov. 1, 1988	Jan. 28, 1994
Maj. Gen. Donald W. Shepperd	Jan. 28, 1994	Jan. 28, 1998
Maj. Gen. Paul A. Weaver Jr.	Jan. 28, 1998	Dec. 3, 2001
Brig. Gen. David A. Brubaker (acting)	Dec. 3, 2001	June 3, 2002
Brig. Gen. Daniel James III	June 3, 2002	May 20, 2006
Brig. Gen. Craig R. McKinley	May 20, 2006	Nov. 17, 2008
Maj. Gen. Emmett R. Titshaw Jr. (acting)	Nov. 17, 2008	Feb. 2, 2009
Brig. Gen. Harry M. Wyatt III	Feb. 2, 2009	March 22, 2013
Brig. Gen. Stanley E. Clarke III	March 22, 2013	

## Pacific Air Forces

Brig. Gen. Ennis C. Whitehead	Dec. 30, 1945	April 25, 1949
Brig. Gen. George E. Stratemeyer	April 26, 1949	May 20, 1951
Brig. Gen. Earle E. Partridge (acting)	May 21, 1951	June 9, 1951
Brig. Gen. Otto P. Weyland	June 10, 1951	March 25, 1954
Brig. Gen. Earle E. Partridge	March 26, 1954	May 31, 1955
Brig. Gen. Laurence S. Kuter	June 1, 1955	July 31, 1959
Brig. Gen. Emmett O'Donnell Jr.	Aug. 1, 1959	July 31, 1963
Brig. Gen. Jacob E. Smart	Aug. 1, 1963	July 31, 1964
Brig. Gen. Hunter Harris Jr.	Aug. 1, 1964	Jan. 31, 1967
Brig. Gen. John D. Ryan	Feb. 1, 1967	July 31, 1968
Brig. Gen. Joseph J. Nazzaro	Aug. 1, 1968	July 31, 1971
Brig. Gen. Lucius D. Clay Jr.	Aug. 1, 1971	Sept. 30, 1973
Brig. Gen. John W. Vogt	Oct. 1, 1973	June 30, 1974
Brig. Gen. Louis L. Wilson Jr.	July 1, 1974	May 31, 1977
Brig. Gen. James A. Hill	June 1, 1977	June 14, 1978
Brig. Gen. James D. Hughes	June 15, 1978	July 1, 1981
Brig. Gen. Arnold W. Braswell	July 1, 1981	Sept. 30, 1983
Brig. Gen. Jerome F. O'Malley	Oct. 8, 1983	Nov. 1, 1984
Brig. Gen. Robert W. Bazley	Nov. 1, 1984	Dec. 16, 1986
Brig. Gen. Jack I. Gregory	Dec. 16, 1986	July 22, 1988
Brig. Gen. Merrill A. McPeak	July 22, 1988	Oct. 30, 1990
Brig. Gen. James B. Davis	Nov. 5, 1990	Feb. 19, 1991
Brig. Gen. Jimmie V. Adams	Feb. 19, 1991	Jan. 25, 1993
Brig. Gen. Robert L. Rutherford	Jan. 26, 1993	Oct. 12, 1994
Brig. Gen. John G. Lorber	Oct. 12, 1994	July 7, 1997
Brig. Gen. Richard B. Myers	July 7, 1997	July 23, 1998
Brig. Gen. Patrick K. Gamble	July 23, 1998	April 9, 2001
Brig. Gen. Lansford E. Trapp (acting)	April 9, 2001	May 4, 2001
Brig. Gen. William J. Begert	May 4, 2001	July 2, 2004
Brig. Gen. Paul V. Hester	July 2, 2004	Nov. 30, 2007
Brig. Gen. Carrol H. Chandler	Nov. 30, 2007	Aug. 19, 2009
Brig. Gen. Gary L. North	Aug. 19, 2009	Aug. 3, 2012
Brig. Gen. Herbert J. "Hawk" Carlisle	Aug. 3, 2012	

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



USAF photo by SSgt. Nathan Lipscomb

## US Air Forces in Europe-Air Forces Africa

Brig. Gen. John F. McBlain (acting)	Aug. 14, 1947	Oct. 20, 1947
Lt. Gen. Curtis E. LeMay	Oct. 20, 1947	Oct. 15, 1948
Lt. Gen. John K. Cannon	Oct. 16, 1948	Jan. 20, 1951
Gen. Lauris Norstad	Jan. 21, 1951	July 26, 1953
Lt. Gen. William H. Tunner	July 27, 1953	June 30, 1957
Gen. Frank F. Everest	July 1, 1957	July 31, 1959
Gen. Frederic H. Smith Jr.	Aug. 1, 1959	June 30, 1961
Gen. Truman H. Landon	July 1, 1961	July 31, 1963
Gen. Gabriel P. Disosway	Aug. 1, 1963	July 31, 1965
Gen. Bruce K. Holloway	Aug. 1, 1965	July 31, 1966
Gen. Maurice A. Preston	Aug. 1, 1966	July 31, 1968
Gen. Horace M. Wade	Aug. 1, 1968	Jan. 31, 1969
Gen. Joseph R. Holzapple	Feb. 1, 1969	Aug. 31, 1971
Gen. David C. Jones	Sept. 1, 1971	June 30, 1974
Gen. John W. Vogt	July 1, 1974	Aug. 31, 1975
Gen. Richard H. Ellis	Sept. 1, 1975	July 31, 1977
Gen. William J. Evans	Aug. 1, 1977	Aug. 1, 1978
Gen. John W. Pauly	Aug. 1, 1978	Aug. 1, 1980
Gen. Charles A. Gabriel	Aug. 1, 1980	June 30, 1982
Gen. Billy M. Minter	July 1, 1982	Nov. 1, 1984
Gen. Charles L. Donnelly Jr.	Nov. 1, 1984	May 1, 1987
Gen. William L. Kirk	May 1, 1987	April 12, 1989
Gen. Michael J. Dugan	April 12, 1989	June 26, 1990
Gen. Robert C. Oaks	June 26, 1990	July 29, 1994
Gen. James L. Jamerson	July 29, 1994	July 16, 1995
Gen. Richard E. Hawley	July 17, 1995	April 4, 1996
Gen. Michael E. Ryan	April 4, 1996	Oct. 5, 1997
Lt. Gen. William J. Begert (acting)	Oct. 6, 1997	Dec. 5, 1997
Gen. John P. Jumper	Dec. 5, 1997	Jan. 13, 2000
Gen. Gregory S. Martin	Jan. 13, 2000	Aug. 12, 2003
Gen. Robert H. Foglesong	Aug. 12, 2003	Dec. 6, 2005
Gen. William T. Hobbins	Dec. 6, 2005	Dec. 10, 2007
Maj. Gen. Marc E. Rogers (acting)	Dec. 10, 2007	Jan. 17, 2008
Gen. Roger A. Brady	Jan. 17, 2008	Dec. 13, 2010
Gen. Mark A. Welsh III	Dec. 13, 2010	July 31, 2012
Gen. Philip M. Breedlove	July 31, 2012	May 10, 2013
Lt. Gen. Noel T. Jones (acting)	May 10, 2013	Aug. 2, 2013
Gen. Frank Gorenc	Aug. 2, 2013	

Activated as 8th Air Force (1942). Redesignated: Eighth Air Force Sept. 18, 1942; US Strategic Air Forces in Europe (1944); USAFE Aug. 7, 1945; USAFE-AFAFRICA, April 20, 2012.

### US and German soldiers load into a USAF C-130J at Ramstein AB, Germany, before a NATO exercise.



USAF photo by MSgt. Wayne Clark



# Leaders of Inactive Major Commands

## Air (Aerospace) Defense Command

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

Established March 21, 1946. Assigned to Continental Air Command 1948. Discontinued 1950. Regained Majcom status 1951. Redesignated Aerospace Defense Command Jan. 15, 1968. Inactivated March 31, 1980.

## Air Force Communications Command

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

Formerly Air Force Communications Service. Redesignated Air Force Communications Command 1979. Changed to Field Operating Agency July 1, 1991.

## Air Force Logistics Command

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

Antecedents: AAF Materiel and Services 1944; AAF Technical Service Command 1944; Air Technical Service Command 1945; Air Materiel Command 1946; Air Force Logistics Command 1961. Inactivated July 1, 1992.

## Air Force Systems Command

Maj. Gen. David M. Schlatter	Feb. 1, 1950	June 24, 1951
Lt. Gen. Earle E. Partridge	June 24, 1951	June 20, 1951
Lt. Gen. Donald L. Putt	June 30, 1953	April 14, 1954
Lt. Gen. Thomas S. Power	April 15, 1954	June 30, 1955
Maj. Gen. John W. Sessums (acting)	July 1, 1957	July 31, 1957
Lt. Gen. Samuel E. Anderson	Aug. 1, 1957	March 9, 1958
Maj. Gen. John W. Sessums (acting)	March 10, 1959	April 24, 1959
Gen. Bernard A. Schriever	April 25, 1959	Aug. 31, 1961
Gen. James Ferguson	Sept. 1, 1966	Aug. 30, 1971
Gen. George S. Brown	Sept. 1, 1970	July 31, 1971
Gen. Samuel C. Phillips	Aug. 1, 1973	Aug. 31, 1971
Gen. William J. Evans	Sept. 1, 1975	July 31, 1977
Gen. Lew Allen Jr.	Aug. 1, 1977	March 13, 1977
Gen. Alton D. Slay	March 14, 1978	Feb. 1, 1981
Gen. Robert T. Marsh	Feb. 1, 1981	Aug. 1, 1981
Gen. Lawrence A. Skantze	Aug. 1, 1984	July 17, 1987
Gen. Bernard P. Randolph	July 17, 1987	April 1, 1991
Gen. Ronald W. Yates	April 1, 1990	July 1, 1991

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 1946
Maj. Gen. William E. Kepner	August 1948	June 1951
Maj. Gen. Bryant L. Boatner	July 1950	July 1951
Maj. Gen. Patrick W. Timberlake	July 1952	April 1951
Maj. Gen. Robert W. Burns	August 1955	July 1951

Designated a center December 1957.

## Air University

Maj. Gen. Muir S. Fairchild	March 15, 1946	May 17, 1946
Maj. Gen. Robert W. Harper	May 17, 1948	Oct. 15, 1946
Gen. George C. Kenney	Oct. 16, 1948	July 27, 1951
Lt. Gen. Idwal H. Edwards	July 28, 1951	Feb. 28, 1951
Maj. Gen. John DeF. Barker (acting)	March 1, 1953	April 14, 1951
Lt. Gen. Laurence S. Kuter	April 15, 1953	May 31, 1951
Lt. Gen. Dean C. Strother	June 1, 1955	June 30, 1951
Lt. Gen. Walter E. Todd	July 15, 1958	July 31, 1961
Lt. Gen. Troup Miller Jr.	Aug. 1, 1961	Dec. 31, 1961
Lt. Gen. Ralph P. Swofford Jr.	Jan. 1, 1964	July 31, 1961
Lt. Gen. John W. Carpenter III	Aug. 1, 1965	July 31, 1961
Lt. Gen. Albert P. Clark	Aug. 1, 1968	July 31, 1971
Lt. Gen. Alvan C. Gillem II	Aug. 1, 1970	Oct. 31, 1971
Lt. Gen. F. Michael Rogers	Nov. 1, 1973	Aug. 31, 1971
Lt. Gen. Raymond B. Furlong	Sept. 1, 1975	July 1, 1971
Lt. Gen. Stanley M. Umstead	July 1, 1979	July 24, 1971
Lt. Gen. Charles G. Cleveland	July 24, 1981	Aug. 1, 1981
Lt. Gen. Thomas C. Richards	Aug. 1, 1984	Nov. 6, 1981
Lt. Gen. Truman Spangrud	Nov. 6, 1986	July 12, 1981
Lt. Gen. Ralph E. Havens	July 12, 1988	Oct. 6, 1981
Maj. Gen. David C. Reed	Oct. 6, 1989	Jan. 4, 1981
Lt. Gen. Charles G. Boyd	Jan. 4, 1990	Oct. 26, 1981
Lt. Gen. Jay W. Kelley	Oct. 27, 1992	June 30, 1981

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, 1976 regained July 1, 1983; lost again July 1, 1993.

## Alaskan Air Command

Brig. Gen. Joseph H. Atkinson	Oct. 1, 1946	Feb. 25, 1946
Brig. Gen. Frank A. Armstrong Jr.	Feb. 26, 1949	Dec. 27, 1951
Maj. Gen. William D. Old	Dec. 27, 1950	Oct. 14, 1951
Brig. Gen. W. R. Agee	Oct. 27, 1952	Feb. 26, 1951
Maj. Gen. George R. Acheson	Feb. 26, 1953	Feb. 1, 1951
Brig. Gen. T. Alan Bennett (acting)	Feb. 1, 1956	Feb. 24, 1951
Lt. Gen. Joseph H. Atkinson	Feb. 24, 1956	July 16, 1951
Maj. Gen. Frank A. Armstrong Jr.	July 17, 1956	Oct. 23, 1951
Maj. Gen. James H. Davies	Oct. 24, 1956	June 27, 1951
Lt. Gen. Frank A. Armstrong Jr.	June 28, 1957	Aug. 18, 1951



rig. Gen. Kenneth H. Gibson	Aug. 19, 1957	Aug. 13, 1958
laj. Gen. C. F. Necrason	Aug. 14, 1958	July 19, 1961
rig. Gen. Jack A. Gibbs (acting)	July 20, 1961	July 25, 1961
laj. Gen. Wendell W. Bowman	July 26, 1961	Aug. 8, 1963
ol. Alfred Walton (acting)	Aug. 9, 1963	Aug. 14, 1963
laj. Gen. James C. Jensen	Aug. 15, 1963	Nov. 14, 1966
laj. Gen. Thomas E. Moore	Nov. 15, 1966	July 24, 1969
laj. Gen. Joseph A. Cunningham	July 25, 1969	July 31, 1972
aj. Gen. Donavon F. Smith	Aug. 1, 1972	June 5, 1973
laj. Gen. Charles W. Carson Jr.	June 18, 1973	March 2, 1974
ol. David T. Stockman (acting)	March 3, 1974	March 18, 1974
aj. Gen. Jack K. Gamble	March 19, 1974	June 30, 1975
l. Gen. James E. Hill	July 1, 1975	Oct. 14, 1976
l. Gen. M. L. Boswell	Oct. 15, 1976	June 30, 1978
l. Gen. Winfield W. Scott Jr.	July 1, 1978	April 1, 1981
l. Gen. Lynwood E. Clark	April 1, 1981	Aug. 31, 1983
l. Gen. Bruce K. Brown	Sept. 1, 1983	Sept. 26, 1985
l. Gen. David L. Nichols	Sept. 27, 1985	May 22, 1988
l. Gen. Thomas G. McInerney	May 22, 1988	Aug. 9, 1990

Activated as Alaskan Air Force (1942). Redesignated: Eleventh Air Force (1942); Alaskan Air Command (1945); 11th Air Force Aug. 9, 1990, under PACAF.

### Continental Air Command

l. Gen. George E. Stratemeyer	Dec. 1, 1948	April 15, 1949
l. Gen. Ennis C. Whitehead	April 15, 1949	Dec. 14, 1950
aj. Gen. Willis H. Hale	Dec. 14, 1950	Feb. 18, 1952
l. Gen. Leon W. Johnson	Feb. 18, 1952	Dec. 14, 1955
l. Gen. Charles B. Stone III	Dec. 15, 1955	June 30, 1957
l. Gen. William E. Hall	July 1, 1957	Sept. 30, 1961
l. Gen. Gordon A. Blake	Sept. 30, 1961	June 30, 1962
l. Gen. Edward J. Timberlake	July 1, 1962	June 19, 1965
aj. Gen. Albert T. Wilson Jr. (acting)	June 19, 1965	Aug. 18, 1965
l. Gen. Cecil H. Childre	Aug. 18, 1965	May 1966
aj. Gen. J. Stanley Holtoner (acting)	May 1966	July 30, 1966
l. Gen. Henry Viccellio Sr.	Aug. 1, 1966	Aug. 1, 1968

Established Dec. 1, 1948. Inactivated Aug. 1, 1968.

**in Alaskan Air Command F-82H Twin Mustang over Alaska in the early 1950s.**

### Electronic Security Command/ Air Force Intelligence Command

Col. Roy H. Lynn	Oct. 26, 1948	July 5, 1949
Col. Travis M. Hetherington	July 6, 1949	Feb. 21, 1951
Maj. Gen. Roy H. Lynn	Feb. 22, 1951	Feb. 13, 1953
Maj. Gen. Harold H. Bassett	Feb. 14, 1953	Jan. 3, 1957
Maj. Gen. Gordon L. Blake	Jan. 4, 1957	Aug. 5, 1959
Maj. Gen. John B. Ackerman	Aug. 6, 1959	Sept. 20, 1959
Maj. Gen. Millard Lewis	Sept. 21, 1959	Aug. 31, 1962
Maj. Gen. Richard P. Klocko	Sept. 1, 1962	Oct. 15, 1965
Maj. Gen. Louis E. Coira	Oct. 16, 1965	July 18, 1969
Maj. Gen. Carl W. Stapleton	July 19, 1969	Feb. 23, 1973
Maj. Gen. Walter T. Galligan	Feb. 24, 1973	May 16, 1974
Maj. Gen. Howard P. Smith	May 17, 1974	July 31, 1975
Maj. Gen. Kenneth D. Burns	Aug. 1, 1975	Jan. 18, 1979
Maj. Gen. Doyle E. Larson	Jan. 19, 1979	July 31, 1983
Maj. Gen. John B. Marks	Aug. 1, 1983	April 16, 1985
Maj. Gen. Paul H. Martin	April 17, 1985	Aug. 14, 1989
Maj. Gen. Gary W. O'Shaughnessy	Aug. 15, 1989	June 1, 1993
Maj. Gen. Kenneth A. Minihan	June 2, 1993	Oct. 1, 1993

Formerly USAF Security Service. Redesignated: Electronic Security Command Aug. 1, 1979; Air Force Intelligence Command Oct. 1, 1991. Changed to FOA, Air Intelligence Agency Oct. 1, 1993.

### Headquarters Command

Brig. Gen. Burton M. Hovey	Jan. 3, 1946	Dec. 13, 1948
Brig. Gen. Sydney D. Grubbs	Dec. 14, 1948	Oct. 1, 1950
Brig. Gen. Morris J. Lee	Oct. 2, 1950	June 13, 1952
Brig. Gen. Stoyte O. Ross	June 14, 1952	July 4, 1956
Maj. Gen. Reuben C. Hood Jr.	Aug. 1, 1956	June 30, 1959
Maj. Gen. Brooke E. Allen	Aug. 3, 1959	Dec. 31, 1965
Maj. Gen. Rollen H. Anthis	Jan. 10, 1966	Nov. 30, 1967
Maj. Gen. Milton B. Adams	Dec. 1, 1967	June 30, 1968
Maj. Gen. Nils O. Ohman	July 5, 1968	April 30, 1972
Maj. Gen. John L. Locke	May 1, 1972	Feb. 25, 1974
Maj. Gen. Maurice R. Reilly	Feb. 26, 1974	August 1975
Maj. Gen. William C. Norris	Sept. 1, 1975	June 30, 1976

Established as Bolling Field Command (1946). Redesignated Headquarters Command, USAF, March 17, 1948. Inactivated 1976.



Photo by Henry Varnell via Warren Thompson





**A Military Airlift Command C-130, C-141, and C-5 on the ramp in 1986.**

### Military Airlift Command

Maj. Gen. Robert W. Harper	July 1, 1947	June 1, 1948
Lt. Gen. Laurence S. Kuter	June 1, 1948	Oct. 28, 1951
Lt. Gen. Joseph Smith	Nov. 15, 1951	June 30, 1958
Lt. Gen. William H. Tunner	July 1, 1958	May 31, 1960
Gen. Joe W. Kelly Jr.	June 1, 1960	July 18, 1964
Gen. Howell M. Estes Jr.	July 19, 1964	July 31, 1969
Gen. Jack J. Catton	Aug. 1, 1969	Sept. 12, 1972
Lt. Gen. Jay T. Robbins (acting)	Sept. 12, 1972	Sept. 25, 1972
Gen. Paul K. Carlton	Sept. 26, 1972	March 31, 1977
Gen. William G. Moore Jr.	April 1, 1977	June 30, 1979
Gen. Robert E. Huyser	July 1, 1979	June 26, 1981
Gen. James R. Allen	June 26, 1981	June 30, 1983
Gen. Thomas M. Ryan Jr.	July 1, 1983	Sept. 19, 1985
Gen. Duane H. Cassidy	Sept. 20, 1985	Sept. 20, 1989
Gen. Hansford T. Johnson	Sept. 20, 1989	June 1, 1992

Antecedents: AAC Ferrying Command (1941); AAF Ferrying Command (1942); Air Transport Command (1942); Military Air Transport Service (June 1, 1948); Military Airlift Command (Jan. 1, 1966). Inactivated June 1, 1992.

### Northeast Air Command

Maj. Gen. Lyman P. Whitten	Oct. 6, 1950	March 14, 1952
Maj. Gen. Charles T. Myers	March 14, 1952	July 26, 1954
Lt. Gen. Glenn O. Barcus	July 26, 1954	March 31, 1957

Newfoundland Base Command, part of Military Air Transport Service, reorganized and redesignated Northeast Air Command, a new major command, Oct. 1, 1950. Inactivated March 31, 1957.

### Pacific Air Command/Seventh Air Force

Maj. Gen. Ralph H. Wooten	May 22, 1947	Aug. 31, 1948
Brig. Gen. Robert F. Travis	Sept. 1, 1948	June 1, 1949

Antecedents: Hawaiian Air Force (1940); 7th/Seventh Air Force (1942); Pacific Air Command (Dec. 15, 1947). Discontinued June 1, 1949.

### Strategic Air Command

Gen. George C. Kenney	March 21, 1946	Oct. 18, 1948
Gen. Curtis F. LeMay	Oct. 19, 1948	June 30, 1957
Gen. Thomas S. Power	July 1, 1957	Nov. 30, 1964
Gen. John D. Ryan	Dec. 1, 1964	Jan. 31, 1967
Gen. Joseph J. Nazzaro	Feb. 1, 1967	July 28, 1968
Gen. Bruce K. Holloway	July 29, 1968	April 30, 1972
Gen. John C. Meyer	May 1, 1972	July 31, 1974
Gen. Russell E. Dougherty	Aug. 1, 1974	July 31, 1977

Gen. Richard H. Ellis	Aug. 1, 1977	July 31, 1981
Gen. Bennie L. Davis	Aug. 1, 1981	July 31, 1985
Gen. Larry D. Welch	Aug. 1, 1985	June 30, 1986
Gen. John T. Chain	July 1, 1986	Jan. 31, 1991
Gen. George L. Butler	Feb. 1, 1991	June 1, 1992

Established as Continental Air Forces Dec. 13, 1944. Redesignated Strategic Air Command March 21, 1946. Inactivated June 1, 1992. Redesignated and activated Air Force Global Strike Command Aug. 7, 2009. (See AFGSC entry.)

### Tactical Air Command

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

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

### US Air Forces Southern Command/Caribbean

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

Antecedents: Panama Canal Air Force (1940); Caribbean Air Force (1941); Sixth Air Force (1942); Caribbean Air Command (July 31, 1946); US Air Forces Southern Command (July 8, 1963). Inactivated Jan. 1, 1976.



# Headquarters DOD Leaders

## Secretaries of Defense

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

## Chairmen of the Joint Chiefs of Staff

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

## Vice Chairmen of the Joint Chiefs of Staff

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



*The Joint Chiefs of Staff in 1961 meet with President John Kennedy. L-r: USMC Gen. David Shoup; USAF Gen. Thomas White, CJCS Army Gen. Lyman Lemnitzer; Kennedy; Adm. Arleigh Burke; and Army Gen. George Decker.*

John F. Kennedy Presidential Library photo



# Leaders of Unified Command, National Guard Bureau, and NORAD

## US Africa Command

Gen. William E. Ward, USA	Oct. 1, 2008	March 9, 2011
Gen. Carter F. Ham, USA	March 9, 2011	April 5, 2013
Gen. David M. Rodriguez, USA	April 5, 2013	

## US Central Command

Gen. Robert C. Kingston, USA	Jan. 1, 1983	Nov. 27, 1985
Gen. George B. Crist, USMC	Nov. 27, 1985	Nov. 23, 1988
Gen. H. Norman Schwarzkopf, USA	Nov. 23, 1988	Aug. 9, 1991
Gen. Joseph P. Hoar, USMC	Aug. 9, 1991	Aug. 5, 1994
Gen. J. H. Binford Peay III, USA	Aug. 5, 1994	Aug. 13, 1997
Gen. Anthony C. Zinni, USMC	Aug. 13, 1997	July 6, 2000
Gen. Tommy R. Franks, USA	July 6, 2000	July 7, 2003
Gen. John P. Abizaid, USA	July 7, 2003	March 16, 2007
Adm. William J. Fallon, USN	March 16, 2007	March 31, 2008
Lt. Gen. Martin E. Dempsey, USA (acting)	March 31, 2008	Oct. 31, 2008
Gen. David H. Petraeus, USA	Oct. 31, 2008	June 30, 2010
Lt. Gen. John R. Allen, USMC (acting)	June 30, 2010	Aug. 11, 2010
Gen. James N. Mattis, USMC	Aug. 11, 2010	March 22, 2013
Gen. Lloyd J. Austin III, USA	March 22, 2013	

## US European Command

Gen. Matthew B. Ridgway, USA	Aug. 1, 1952	July 11, 1953
Gen. Alfred M. Gruenther, USA	July 11, 1953	Nov. 20, 1956
Gen. Lauris Norstad, USAF	Nov. 20, 1956	Nov. 1, 1962
Gen. Lyman L. Lemnitzer, USA	Nov. 1, 1962	May 5, 1969
Gen. Andrew J. Goodpaster, USA	May 5, 1969	Nov. 1, 1974
Gen. Alexander M. Haig Jr., USA	Nov. 1, 1974	June 27, 1979
Gen. Bernard W. Rogers, USA	June 27, 1979	June 25, 1987
Gen. John R. Galvin, USA	June 25, 1987	June 23, 1992
Gen. John M. Shalikashvili, USA	June 23, 1992	Oct. 21, 1993
Gen. George A. Joulwan, USA	Oct. 21, 1993	July 10, 1997
Gen. Wesley K. Clark, USA	July 10, 1997	May 2, 2000
Gen. Joseph W. Ralston, USAF	May 2, 2000	Jan. 16, 2003
Gen. James L. Jones, USMC	Jan. 16, 2003	Dec. 4, 2006
Gen. Bantz J. Craddock, USA	Dec. 4, 2006	June 30, 2009
Adm. James G. Stavridis, USN	June 30, 2009	May 10, 2013
Gen. Philip M. Breedlove	May 10, 2013	

## US Northern Command

Gen. Ralph E. Eberhart, USAF	Oct. 1, 2002	Nov. 5, 2004
Adm. Timothy J. Keating, USN	Nov. 5, 2004	March 23, 2007
Gen. Victor E. Renuart Jr., USAF	March 23, 2007	May 19, 2010
Adm. James A. Winnefeld Jr., USN	May 19, 2010	Aug. 4, 2011
Gen. Charles H. Jacoby Jr., USA	Aug. 4, 2011	

## US Pacific Command

Adm. John H. Towers, USN	Jan. 1, 1947	Feb. 28, 1947
Adm. Louis E. Denfeld, USN	Feb. 28, 1947	Dec. 3, 1947
Adm. Dewitt C. Ramsey, USN	Dec. 3, 1947	April 30, 1949
Adm. Arthur W. Radford, USN	April 30, 1949	July 10, 1953
Adm. Felix B. Stump, USN	July 10, 1953	July 31, 1958
Adm. Harry D. Felt, USN	July 31, 1958	June 30, 1964
Adm. U. S. Grant Sharp, USN	June 30, 1964	July 31, 1968
Adm. John S. McCain Jr., USN	July 31, 1968	Sept. 1, 1972
Adm. Noel A. M. Gayler, USN	Sept. 1, 1972	Aug. 30, 1976
Adm. Maurice E. Weisner, USN	Aug. 30, 1976	Oct. 31, 1979
Adm. Robert L. J. Long, USN	Oct. 31, 1979	July 1, 1983
Adm. William J. Crowe Jr., USN	July 1, 1983	Sept. 18, 1985
Adm. Ronald J. Hays Jr., USN	Sept. 18, 1985	Sept. 30, 1988
Adm. Huntington Hardisty, USN	Sept. 30, 1988	March 1, 1991
Adm. Charles R. Larson, USN	March 1, 1991	July 11, 1994
Lt. Gen. Harold T. Fields, USA (acting)	July 11, 1994	July 19, 1994
Adm. Richard C. Macke, USN	July 19, 1994	Jan. 31, 1996
Adm. Joseph W. Prueher, USN	Jan. 31, 1996	Feb. 20, 1999
Adm. Dennis C. Blair, USN	Feb. 20, 1999	May 2, 2002

Adm. Thomas B. Fargo, USN	May 2, 2002	Feb. 26, 2005
Adm. William J. Fallon, USN	Feb. 26, 2005	March 12, 2007
Lt. Gen. Daniel P. Leaf, USAF (acting)	March 12, 2007	March 26, 2007
Adm. Timothy J. Keating, USN	March 26, 2007	Oct. 19, 2009
Adm. Robert F. Willard, USN	Oct. 19, 2009	March 9, 2012
Adm. Samuel J. Locklear III, USN	March 9, 2012	

## US Southern Command

Lt. Gen. Willis D. Crittenger, USA	Nov. 1, 1947	June 28, 1948
Lt. Gen. Matthew B. Ridgway, USA	June 28, 1948	Oct. 1, 1949
Lt. Gen. William H. H. Morris, USA	Oct. 1, 1949	April 1, 1952
Lt. Gen. Horace L. McBride, USA	April 1, 1952	June 15, 1954
Lt. Gen. William K. Harrison Jr., USA	June 15, 1954	Jan. 5, 1957
Lt. Gen. Robert M. Montague, USA	Jan. 5, 1957	Feb. 20, 1958
Maj. Gen. Truman H. Landon, USAF (acting)	Feb. 20, 1958	April 1, 1958
Lt. Gen. Ridgely Gaither, USA	April 1, 1958	July 15, 1960
Lt. Gen. Robert F. Sink, USA	July 15, 1960	Feb. 1, 1961
Gen. Andrew P. O'Meara, USA	Feb. 1, 1961	Feb. 22, 1965
Gen. Robert W. Porter Jr., USA	Feb. 22, 1965	Feb. 18, 1969
Gen. George R. Mather, USA	Feb. 18, 1969	Sept. 20, 1971
Gen. George V. Underwood, USA	Sept. 20, 1971	Jan. 17, 1973
Gen. William D. Posson, USA	Jan. 17, 1973	Aug. 1, 1975
Lt. Gen. Dennis P. McAuliffe, USA	Aug. 1, 1975	Oct. 1, 1979
Lt. Gen. Wallace H. Nutting, USA	Oct. 1, 1979	May 24, 1983
Gen. Paul F. Gorman, USA	May 24, 1983	March 1, 1985
Gen. John R. Galvin, USA	March 1, 1985	June 6, 1987
Gen. Fred F. Woerner, USA	June 6, 1987	Oct. 1, 1989
Gen. Maxwell R. Thurman, USA	Oct. 1, 1989	Nov. 21, 1990
Gen. George A. Joulwan, USA	Nov. 21, 1990	October 1993
Maj. Gen. W. T. Worthington, USAF (acting)	October 1993	Feb. 17, 1994
Gen. Barry R. McCaffrey, USA	Feb. 17, 1994	March 1, 1996
RAdm. James B. Perkins III, USN (acting)	March 1, 1996	June 26, 1996
Gen. Wesley K. Clark, USA	June 26, 1996	July 13, 1997
RAdm. Walter F. Doran, USN (acting)	July 13, 1997	Sept. 25, 1997
Gen. Charles E. Wilhelm, USMC	Sept. 25, 1997	Sept. 8, 2000
Gen. Peter Pace, USMC	Sept. 8, 2000	Sept. 30, 2001
Maj. Gen. G. D. Speer, USA (acting)	Sept. 30, 2001	Aug. 18, 2002
Gen. James T. Hill, USA	Aug. 18, 2002	Nov. 9, 2004
Gen. Bantz J. Craddock, USA	Nov. 9, 2004	Oct. 19, 2006
Adm. James G. Stavridis, USN	Oct. 19, 2006	June 25, 2009
Gen. Douglas M. Fraser, USAF	June 25, 2009	Nov. 19, 2012
Gen. John F. Kelly, USMC	Nov. 19, 2012	

Formerly US Caribbean Command (Nov. 1, 1947). Redesignated June 6, 1963.

## US Special Operations Command

Gen. James J. Lindsay, USA	April 16, 1987	June 27, 1990
Gen. Carl W. Stiner, USA	June 27, 1990	May 20, 1993
Gen. Wayne A. Downing, USA	May 20, 1993	Feb. 29, 1996
Gen. Henry H. Shelton, USA	Feb. 29, 1996	Sept. 25, 1997
Gen. Peter J. Schoomaker, USA	Nov. 5, 1997	Oct. 27, 2000
Gen. Charles R. Holland, USAF	Oct. 27, 2000	Sept. 2, 2003
Gen. Bryan D. Brown, USA	Sept. 2, 2003	July 9, 2007
Adm. Eric T. Olson, USN	July 9, 2007	Aug. 15, 2011
Adm. William H. McRaven, USN	Aug. 15, 2011	

## 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, 1996
Adm. Richard W. Mies, USN	June 26, 1996	Nov. 30, 2001
Adm. James O. Ellis Jr., USN	Nov. 30, 2001	July 9, 2004
Gen. James E. Cartwright, USMC	July 9, 2004	Aug. 10, 2007
Lt. Gen. C. Robert Kehler, USAF (acting)	Aug. 10, 2007	Oct. 3, 2007
Gen. Kevin P. Chilton, USAF	Oct. 3, 2007	Jan. 28, 2011
Gen. C. Robert Kehler, USAF	Jan. 28, 2011	Nov. 15, 2013
Adm. Cecil D. Haney, USN	Nov. 15, 2013	

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



## US Transportation Command

Gen. Duane H. Cassidy, USAF	July 1, 1987	Sept. 21, 1989
Gen. H. T. Johnson, USAF	Sept. 22, 1989	Aug. 24, 1992
Gen. Ronald R. Fogleman, USAF	Aug. 25, 1992	Oct. 17, 1994
Gen. Robert L. Rutherford, USAF	Oct. 18, 1994	July 14, 1996
Gen. Walter Kross, USAF	July 15, 1996	Aug. 2, 1998
Gen. Charles T. Robertson Jr., USAF	Aug. 3, 1998	Nov. 5, 2001
Gen. John W. Handy, USAF	Nov. 5, 2001	Sept. 7, 2005
Gen. Norton A. Schwartz, USAF	Sept. 7, 2005	Aug. 11, 2008
VAdm. Ann E. Rondeau, USN (acting)	Aug. 12, 2008	Sept. 4, 2008
Gen. Duncan J. McNabb, USAF	Sept. 5, 2008	Oct. 14, 2011
Gen. William M. Fraser III, USAF	Oct. 14, 2011	

## National Guard Bureau

Maj. Gen. Butler B. Miltonberger, USA	Feb. 1, 1946	Sept. 29, 1947
Maj. Gen. Kenneth F. Cramer, USA	Sept. 30, 1947	Sept. 4, 1950
Maj. Gen. Raymond H. Fleming, USA	Sept. 5, 1951	Feb. 15, 1953
Maj. Gen. Earl T. Ricks, USAF (acting)	Feb. 16, 1953	June 21, 1953
Maj. Gen. Edgar C. Erickson, USA	June 22, 1953	May 31, 1959
Maj. Gen. Winston P. Wilson, USAF (acting)	June 1, 1959	July 19, 1959
Maj. Gen. Donald W. McGowan, USA	July 20, 1959	Aug. 30, 1963
Maj. Gen. Winston P. Wilson, USAF	Aug. 31, 1963	Aug. 31, 1971
Maj. Gen. Francis S. Greenlief, USA	Sept. 1, 1971	June 23, 1974
Lt. Gen. La Vern E. Weber, USA	Aug. 16, 1974	Aug. 15, 1982
Lt. Gen. Emmett H. Walker Jr., USA	Aug. 16, 1982	Aug. 15, 1986
Lt. Gen. Herbert R. Temple Jr., USA	Aug. 16, 1986	Jan. 31, 1990
Lt. Gen. John B. Conaway, USAF	Feb. 1, 1990	Dec. 1, 1993
Maj. Gen. Raymond F. Rees, USA (acting)	Jan. 1, 1994	July 31, 1994
Lt. Gen. Edward D. Baca, USA	Oct. 1, 1994	July 31, 1998
Lt. Gen. Russell C. Davis, USAF	Aug. 4, 1998	Aug. 3, 2002
Maj. Gen. Raymond F. Rees, USA (acting)	Aug. 4, 2002	April 10, 2003

Lt. Gen. H. Steven Blum, USA	April 11, 2003	Nov. 16, 2008
Gen. Craig R. McKinley, USAF	Nov. 17, 2008	Sept. 7, 2012
Gen. Frank J. Grass, USA	Sept. 7, 2012	

Served as acting chief: Fleming until Aug. 14, 1951.

## North American Aerospace Defense Command

Gen. Earle E. Partridge, USAF	Sept. 12, 1957	July 30, 1959
Gen. Laurence S. Kuter, USAF	Aug. 1, 1959	July 30, 1962
Gen. John K. Gerhart, USAF	Aug. 1, 1962	March 30, 1965
Gen. Dean C. Strother, USAF	April 1, 1965	July 29, 1966
Gen. Raymond J. Reeves, USAF	Aug. 1, 1966	July 31, 1969
Gen. Seth J. McKee, USAF	Aug. 1, 1969	Sept. 30, 1973
Gen. Lucius D. Clay Jr., USAF	Oct. 1, 1973	Aug. 29, 1975
Gen. Daniel James Jr., USAF	Sept. 1, 1975	Dec. 5, 1977
Gen. James E. Hill, USAF	Dec. 6, 1977	Dec. 31, 1979
Gen. James V. Hartinger, USAF	Jan. 1, 1980	July 30, 1984
Gen. Robert T. Herres, USAF	July 30, 1984	Feb. 5, 1987
Gen. John L. Piotrowski, USAF	Feb. 6, 1987	March 30, 1990
Gen. Donald J. Kutyna, USAF	April 1, 1990	June 30, 1992
Gen. Charles A. Horner, USAF	June 30, 1992	Sept. 12, 1994
Gen. Joseph W. Ashy, USAF	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes III, USAF	Aug. 27, 1996	Aug. 13, 1998
Gen. Richard B. Myers, USAF	Aug. 14, 1998	Feb. 22, 2000
Gen. Ralph E. Eberhart, USAF	Feb. 22, 2000	Nov. 5, 2004
Adm. Timothy J. Keating, USN	Nov. 5, 2004	March 23, 2007
Gen. Victor E. Renuart Jr., USAF	March 23, 2007	May 19, 2010
Adm. James A. Winnefeld Jr., USN	May 19, 2010	Aug. 4, 2011
Gen. Charles H. Jacoby Jr., USA	Aug. 4, 2011	

*A1C Melvin Durham, Delaware ANG, works on a C-130 at New Castle County Arpt., Del.*



USAF photo by SSgt Nathan Bright



# Leaders of Inactive Unified Commands

## Alaskan Command

Maj. Gen. Howard A. Craig, USAF	Jan. 1, 1947	Oct. 17, 1947
Lt. Gen. Nathan F. Twining, USAF	Oct. 17, 1947	July 1, 1950
Lt. Gen. William E. Kepner, USAF	July 1, 1950	March 1, 1953
Lt. Gen. Joseph A. Atkinson, USAF	March 1, 1953	Oct. 1, 1956
Lt. Gen. Frank A. Armstrong Jr., USAF	Oct. 1, 1956	Aug. 1, 1961
Lt. Gen. George W. Mundy, USAF	Aug. 1, 1961	Aug. 1, 1963
Lt. Gen. Raymond J. Reeves, USAF	Aug. 1, 1963	July 28, 1966
Lt. Gen. Glenn 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.

*Continental Air Defense Command's forces were in part provided by USAF assets like this F-101B.*



## US Joint Forces Command

Adm. William H. P. Blandy, USN	Dec. 1, 1947	Feb. 1, 1950
Adm. William M. Fechteler, USN	Feb. 1, 1950	Aug. 15, 1951
Adm. Lynde D. McCormick, USN	Aug. 15, 1951	April 12, 1954
Adm. Jerauld Wright, USN	April 12, 1954	Feb. 28, 1960
Adm. Robert L. Dennison, USN	Feb. 28, 1960	April 30, 1963
Adm. Harold P. Smith, USN	April 30, 1963	April 30, 1965
Adm. Thomas H. Moorer, USN	April 30, 1965	June 17, 1967
Adm. Ephraim P. Holmes, USN	June 17, 1967	Sept. 30, 1970
Adm. Charles K. Duncan, USN	Sept. 30, 1970	Oct. 31, 1972
Adm. Ralph W. Cousins, USN	Oct. 31, 1972	May 30, 1975
Adm. Isaac C. Kidd Jr., USN	May 30, 1975	Sept. 30, 1978
Adm. Harry D. Train II, USN	Sept. 30, 1978	Sept. 30, 1982
Adm. Wesley D. McDonald, USN	Sept. 30, 1982	Nov. 27, 1985
Adm. Lee Baggett Jr., USN	Nov. 27, 1985	Nov. 22, 1988
Adm. Frank B. Kelso II, USN	Nov. 22, 1988	May 18, 1990
Adm. Leon A. Edney, USN	May 18, 1990	July 13, 1992
Adm. Paul D. Miller, USN	July 13, 1992	Oct. 31, 1994
Gen. John J. Sheehan, USMC	Oct. 31, 1994	Sept. 24, 1997
Adm. Harold W. Gehman Jr., USN	Sept. 24, 1997	Sept. 5, 2000
Gen. William F. Kernan, USA	Sept. 5, 2000	Oct. 2, 2002
Adm. Edmund P. Giambastiani Jr., USN	Oct. 2, 2002	Aug. 1, 2005
Lt. Gen. Robert W. Wagner, USA (acting)	Aug. 1, 2005	Nov. 10, 2005
Gen. Lance L. Smith, USAF	Nov. 10, 2005	Nov. 9, 2007
Gen. James N. Mattis, USMC	Nov. 9, 2007	Aug. 8, 2010
Lt. Gen. Keith L. Huber, USA (acting)	Aug. 8, 2010	Oct. 29, 2010
Gen. Raymond T. Odierno, USA	Oct. 29, 2010	Aug. 4, 2011

Formerly US Atlantic Command, established Dec. 1, 1947. Redesignated US Joint Forces Command Oct. 7, 1999. Disestablished Aug. 4, 2011.

## US Readiness Command

Gen. John L. Throckmorton, USA	Jan. 1, 1972	Feb. 1, 1972
Gen. Bruce Palmer Jr., USA	Feb. 1, 1973	Dec. 9, 1974
Gen. John J. Hennessey, USA	Dec. 9, 1974	Aug. 1, 1979
Gen. Volney F. Warner, USA	Aug. 1, 1979	Aug. 1, 1981
Gen. Donn A. Starry, USA	Aug. 1, 1981	June 22, 1983
Gen. Wallace H. Nutting, USA	June 22, 1983	June 28, 1985
Gen. Fred K. Mahaffey, USA	June 28, 1985	Sept. 30, 1986
Lt. Gen. Harry A. Goodall, USAF (acting)	Sept. 30, 1986	Oct. 10, 1986
Gen. James J. Lindsay, USA	Oct. 10, 1986	Sept. 30, 1987

Assumed functions of US Strike Command. Disestablished Sept. 30, 1987.

## US Space Command

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

Disestablished Oct. 1, 2002. Functions assumed by US Strategic Command.

## US Strike Command

Gen. Paul D. Adams, USA	Oct. 9, 1961	Nov. 1, 1961
Gen. Theodore J. Conway, USA	Nov. 1, 1961	Aug. 1, 1961
Gen. John L. Throckmorton, USA	Aug. 1, 1969	Dec. 31, 1971

Established December 1961. Disestablished Dec. 31, 1971. Functions assumed by US Readiness Command.



# Guide to Aces and Heroes

■ 2014 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
<b>World War I</b>			
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
<b>World War II</b>			
Baker, Lt. Col. Addison E.	Chicago	Aug. 1, 1943	Ploesti, Romania
Bong, Maj. Richard I.	Superior, Wis.	Oct. 10-Nov. 15, 1944	Southwest Pacific
Carswell, Maj. Horace S. Jr.	Fort Worth, Tex.	Oct. 26, 1944	South China Sea
Castle, Brig. Gen. Frederick W.	Manila, Philippines	Dec. 24, 1944	Liège, Belgium
Cheli, Maj. Ralph	San Francisco	Aug. 18, 1943	Wewak, New Guinea
Craw, Col. Demas T.	Traverse City, Mich.	Nov. 8, 1942	Port Lyautey, French Morocco
Doolittle, Lt. Col. James H.	Alameda, Calif.	April 18, 1942	Tokyo
Erwin, SSgt. Henry E.	Adamsville, Ala.	April 12, 1945	Koriyama, Japan
Femoyer, 2nd Lt. Robert E.	Huntington, W.Va.	Nov. 2, 1944	Merseburg, Germany
Gott, 1st Lt. Donald J.	Arnett, Okla.	Nov. 9, 1944	Saarbrücken, Germany
Hamilton, Maj. Pierpont M.	Tuxedo Park, N.Y.	Nov. 8, 1942	Port Lyautey, French Morocco
Howard, Lt. Col. James H.	Canton, China	Jan. 11, 1944	Oschersleben, Germany
Hughes, 2nd Lt. Lloyd H.	Alexandria, La.	Aug. 1, 1943	Ploesti, Romania



Harold Goettler



Frank Luke



Frederick Castle





Neel Kearby



Louis Sebille



George Day

\*Living Medal of Honor recipient

## World War II (continued)

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

## Korea

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

## Vietnam

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



## USAF Recipients of the Distinguished Service Cross

### World War I

Abernathy, 2nd Lt. Thomas J.  
 Aldrich, 1st Lt. Perry H.  
 Alexander, 1st Lt. Arthur H.  
 Alexander, 1st Lt. Stirling C.  
 Allen, 1st Lt. Gardner P.  
 Andrew, 1st Lt. Flynn L. A.  
 Armstrong, 1st Lt. Rodney M.  
 Arthur, Capt. Dogan H. (2)  
 Atwater, 1st Lt. Benjamin L.  
 Avery, 1st Lt. Walter L.  
 Babcock, 1st Lt. Philip R.  
 Backus, 1st Lt. David H. (2)  
 Badham, 1st Lt. William T.  
 Baer, 1st Lt. Paul F. (2)  
 Bagby, 1st Lt. Ralph B.  
 Bartholf, 1st Lt. Herbert B.  
 Baucum, 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.  
 Broomefield, 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.  
 Cassidy, 1st Lt. Thomas G. (2)  
 Castleman, 1st Lt. John R.  
 Chambers, 1st Lt. Reed M. (4)  
 Chapman, 2nd Lt. Charles W. Jr.  
 Clapp, 2nd Lt. Kenneth S.  
 Clarke, 1st Lt. Sheldon V.  
 Clay, 1st Lt. Henry R.  
 Coleman, 1st Lt. Wallace A.  
 Conover, 1st Lt. Harvey  
 Cook, Capt. Everett R.  
 Cook, Capt. Harvey W. (2)  
 Coolidge, Capt. Hamilton  
 Cousins, 1st Lt. John W.  
 Creech, 1st Lt. Jesse O.  
 Curtis, 1st Lt. Edward P.  
 Cutter, 1st Lt. Edward B.  
 Dawson, 1st Lt. Leo H. (2)  
 De Castro, 2nd Lt. Ralph E.  
 Diekema, 1st Lt. Willis A.  
 Dillon, 1st Lt. Raymond P.  
 D'Olive, 1st Lt. Charles R.  
 Donaldson, 2nd Lt. John O.  
 Douglass, Capt. Kingman  
 Dowd, 2nd Lt. Meredith L.  
 Drew, 1st Lt. Charles W.  
 Duckstein, 1st Lt. Arthur W.  
 Easterbrook, 1st Lt. Arthur E. (2)  
 Eaton, 1st Lt. Warren E.  
 Elliott, 1st Lt. Robert P.  
 Erwin, 1st Lt. William P. (2)  
 Este, 1st Lt. J. Dickinson  
 Farnsworth, 1st Lt. Thomas H.  
 Ferrenbach, 1st Lt. Leo  
 Fisher, Capt. George F.  
 Fleeson, 2nd Lt. Howard T. (2)  
 Follette, 1st Lt. Justin P.  
 Fontaine, 1st Lt. Hugh L. (2)  
 Ford, Capt. Christopher W.  
 Frank, 1st Lt. William F.  
 Frost, 1st Lt. John  
 Furlow, 1st Lt. George W. (2)

Gaylord, 1st Lt. Bradley J.  
 George, 1st Lt. Harold H.  
 Giroux, 1st Lt. Ernest A.  
 Goldthwaite, 1st Lt. George E.  
 Grant, 1st Lt. Alfred A.  
 Graveline, Sfc. Fred C.  
 Greist, 1st Lt. Edwards H.  
 Grey, Capt. Charles G.  
 Gundelach, 1st Lt. Andre H.  
 Guthrie, 1st Lt. Murray K. (3)  
 Hall, Capt. James N.  
 Hambleton, 1st Lt. John A. (2)  
 Hamilton, 1st Lt. Lloyd A.  
 Hammond, 1st Lt. Leonard C.  
 Hart, 2nd Lt. Percival G.  
 Hartney, Maj. Harold E.  
 Harwood, 1st Lt. Benjamin P.  
 Haslett, Capt. Elmer R.  
 Hays, 2nd Lt. Frank K.  
 Healy, 1st Lt. James A.  
 Henderson, 1st Lt. Phil A.  
 Herbert, 1st Lt. Thomas J.  
 Higgs, 1st Lt. James A. Jr.  
 Hill, Capt. Maury  
 Hill, 1st Lt. Raymond C.  
 Hitchcock, 2nd Lt. Roger W.  
 Holden, 1st Lt. Kenneth H.  
 Holden, 1st Lt. Lansing C. Jr. (2)  
 Holland, 1st Lt. Spessard L.  
 Hoover, 1st Lt. William J.  
 Hopkins, 2nd Lt. Stephen T.  
 Hudson, 1st Lt. Donald  
 Hunter, 1st Lt. Frank O'D. (5)  
 Irving, 1st Lt. Livingston G.  
 Jeffers, 1st Lt. John N.  
 Jervy, 1st Lt. Thomas M.  
 Jones, 2nd Lt. Arthur H.  
 Jones, 2nd Lt. Clinton (2)  
 Jordan, 2nd Lt. John W.  
 Kahle, 1st Lt. Clarence C.  
 Kaye, 1st Lt. Samuel Jr. (2)  
 Keating, 1st Lt. James A.  
 Kelty, 1st Lt. Asher E.  
 Kenney, 1st Lt. George C.  
 Kindley, 1st Lt. Field E. (2)  
 Kinney, 1st Lt. Clair A.  
 Kinsley, 2nd Lt. Wilbert E.  
 Knotts, 2nd Lt. Howard C.  
 Knowles, 1st Lt. James Jr.  
 Lake, 2nd Lt. Horace A.  
 Lambert, 1st Lt. John H.  
 Landis, Capt. Reed G.  
 Larner, 1st Lt. Gorman D. (2)  
 Lawson, Capt. Walter R.  
 Lee, 2nd Lt. John B.  
 Lindsay, 1st Lt. Robert O.  
 Littauer, Maj. Kenneth P.  
 Llewellyn, Capt. Frank A.  
 Lowry, 2nd Lt. Francis B.  
 Luke, 2nd Lt. Frank Jr. (2)  
 MacArthur, 2nd Lt. John K.  
 MacBrayne, 1st Lt. Winfred C.  
 Manning, 1st Lt. James F. Jr.  
 Maughan, 1st Lt. Russell L.  
 McClendon, 1st Lt. Joel H.  
 McDermott, 2nd Lt. Cleveland W.

McDevitt, 1st Lt. James A.  
 McDougall, 1st Lt. Harry O.  
 McKay, 2nd Lt. Elmore K.  
 McKay, 1st Lt. James R.  
 McMurry, 1st Lt. Ora R. (2)  
 Meissner, 1st Lt. James A. (2)  
 Mell, 1st Lt. Patrick H.  
 Michener, 1st Lt. John H.  
 Mitchell, Capt. John  
 Mitchell, Brig. Gen. William  
 Moore, 1st Lt. Edward R.  
 Morris, 2nd Lt. Edward M.  
 Morse, 2nd Lt. Guy E.  
 Myers, 1st Lt. Oscar B.  
 Neel, 2nd Lt. Roland H.  
 Neibling, 1st Lt. Harlow P.  
 Neidecker, 1st Lt. Bertrande C.  
 Nichols, Sfc. Harold O.  
 Nixon, 1st Lt. George R.  
 Norris, 2nd Lt. Sigbert A. G.  
 Norton, 1st Lt. Fred W.  
 Noyes, Capt. Stephen H.  
 Nutt, 1st Lt. Alan  
 O'Donnell, 2nd Lt. Paul J.  
 O'Neill, 1st Lt. Ralph A. (3)  
 Orr, 1st Lt. Edward  
 Page, Capt. Richard C. M.  
 Palmer, 2nd Lt. Joseph A.  
 Palmer, 1st Lt. William W.  
 Paradise, 1st Lt. Robert C.  
 Patterson, 1st Lt. Alfred B. Jr. (2)  
 Payne, 1st Lt. Karl C.  
 Pegues, 1st Lt. Josiah J.  
 Pendell, 1st Lt. Elmer  
 Peterson, Capt. David M. (2)  
 Petree, 1st Lt. Harris E.  
 Phelps, 1st Lt. Glenn  
 Phillips, 1st Lt. George R.  
 Plummer, 2nd Lt. Charles W.  
 Plush, 1st Lt. Lewis C.  
 Polley, 1st Lt. Britton  
 Ponder, 1st Lt. William T.  
 Porter, 2nd Lt. Charles P. (2)  
 Porter, 2nd Lt. Earl W.  
 Porter, 2nd Lt. Kenneth L.  
 Potter, 1st Lt. William C.  
 Preston, 2nd Lt. Glen A. (3)  
 Putnam, 1st Lt. David E.  
 Pyne, 1st Lt. Percy R.  
 Quinn, 1st Lt. John J.  
 Raible, 1st Lt. Joseph C. Jr.  
 Ralston, 1st Lt. Orville A.  
 Rancourt, 1st Lt. John I.  
 Rath, 2nd Lt. Howard G.  
 Raymond, 1st Lt. Robert F.  
 Reeves, 1st Lt. Dache M.  
 Reynolds, Capt. Clearton H.  
 Reynolds, Maj. John N. (2)  
 Richardson, 2nd Lt. James M.  
 Rickenbacker, Capt. Edward V. (7)  
 Rooney, 1st Lt. Paul N. A.  
 Rorison, 1st Lt. Harmon C.  
 Ross, 1st Lt. Cleo J.

Numbers in parentheses are total DSCs received by the individual.



Reed Chambers



Rucker, 1st Lt. Edward W.  
 Rummell, 1st Lt. Leslie J.  
 Saunders, Capt. William H.  
 Schenck, 1st Lt. Alexander P.  
 Schoen, 1st Lt. Karl J.  
 Seaver, 1st Lt. Arthur F.  
 Sellers, 1st Lt. Cecil G.  
 Sewall, 1st Lt. Sumner (2)  
 Shelby, 1st Lt. Richard D.  
 Simon, 1st Lt. Louis C. Jr. (2)  
 Snyder, 1st Lt. John H.  
 Spaatz, Maj. Carl A.  
 Springs, 1st Lt. Elliott W.  
 Steele, 2nd Lt. Richard W.  
 Stenseth, 1st Lt. Martinus  
 Stevens, 2nd Lt. John H.  
 Stokes, 1st Lt. John Y. Jr.  
 Stout, 1st Lt. Penrose V.  
 Stovall, 1st Lt. William H.  
 Strahm, Maj. Victor H.  
 Suiter, 1st Lt. Wilbur C.  
 Swaab, 1st Lt. Jacques M.  
 Taylor, 1st Lt. William H. Jr.  
 Taylor, 1st Lt. W. J. R.  
 Ten Eyck, 2nd Lt. Walton B. Jr.  
 Thaw, Maj. William (2)  
 Thomas, 2nd Lt. Gerald P.  
 Thompson, 2nd Lt. Robert E.  
 Tillman, 2nd Lt. Fred A.  
 Tittman, 1st Lt. Harold H.  
 Tobin, 1st Lt. Edgar G.  
 Treadwell, 1st Lt. Alvin H.  
 Vail, 1st Lt. William H.  
 Vaughn, 1st Lt. George A.  
 Vernam, 1st Lt. Remington D.  
 Wallis, Capt. James E. Jr.  
 Waring, 1st Lt. William W.  
 Warner, 1st Lt. Donald D.  
 Way, 2nd Lt. Pennington H.  
 Wehner, 1st Lt. Joseph F. (2)  
 White, 2nd Lt. Wilbert W. (2)  
 Williams, 1st Lt. Bertram  
 Winslow, 2nd Lt. Alan F.  
 Wright, 1st Lt. Burdette S.  
 Wright, 1st Lt. Chester E. (2)  
 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.  
 Beam, 1st Lt. Ralph E.  
 Beck, 1st Lt. Joseph A. II  
 Beckham, Capt. Walter C.



**Richard Bong**

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. Louis 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.



**Donald Blakeslee**



Dahlberg, Capt. Kenneth H.  
 Dale, 2nd Lt. Jack D.  
 Dallas, Capt. Frederick W. Jr.  
 Dalton, SSgt. Malcolm C.  
 Daniell, 1st Lt. J. S.  
 Danver, SSgt. Edison K.  
 Davies, Lt. Col. John H.  
 Davis, Capt. Clayton E.  
 Davis, 1st Sgt. Robert R.  
 Davis, 1st Lt. Robert T.  
 Dawkins, 2nd Lt. Cecil H.  
 Deal, 2nd Lt. James F.  
 Decker, SSgt. Richard C.  
 DeGenaro, 2nd Lt. August V.  
 Dello-Buono, 2nd Lt. Thomas J.  
 Dent, Capt. Elliott E. Jr.  
 Diehl, Capt. John H. Jr. (2)  
 Dillman, TSgt. Forrest E.  
 Dinn, 1st Lt. Wallace S.  
 Dixon, Capt. Robert J.  
 Doherty, Maj. William K.  
 Dolk, 1st Lt. Carl E.  
 Donaldson, 2nd Lt. I. B. Jack  
 Donegan, 1st Lt. John M.  
 Dorwart, 1st Lt. Robert J.  
 Douglas, Lt. Col. Paul P. Jr. (2)  
 Dregne, Col. Irwin H.  
 Drier, Capt. William C.  
 Dubisher, Capt. Francis E.  
 Dufrane, 1st Lt. John L. Jr.  
 Dunagan, 1st Lt. Sidney W.  
 Dunaway, 1st Lt. John S.  
 Duncan, 2nd Lt. Daniel D.  
 Duncan, Maj. Glen E.  
 Dunham, Maj. William D.  
 Dunn, 1st Lt. Edward B.  
 Dunn, Sgt. Jack D.  
 Dunn, Capt. John A.  
 Durand, 2nd Lt. Edward D.  
 Durand, SSgt. Frederick W.  
 Duval, 1st Lt. Jessie B.  
 Dyer, 1st Lt. Fred W.  
 Dyess, Maj. William E. (2)  
 Eagleston, Capt. Glen T.  
 Eareckson, Col. William O.  
 Eaton, Lt. Col. Frederick C. Jr.  
 Eckrich, 2nd Lt. James F.  
 Edeburn, F.O. Harry E.  
 Elam, Maj. Daniel F.  
 Ellis, 1st Lt. Lewis N.  
 Ellis, Lt. Col. Richard H.  
 Embree, SSgt. Hoy D.  
 Emerson, 2nd Lt. Elwood R.  
 Emmer, Capt. Wallace N.  
 Endres, Pvt. Robert J.  
 Engel, 2nd Lt. Russel W.  
 England, 2nd Lt. George H.  
 Ent, Brig. Gen. Uzal G.  
 Erickson, 2nd Lt. Irving A.  
 Evans, Capt. John G.  
 Exon, Maj. Arthur E.  
 Faaires, SSgt. George D.  
 Falletta, 2nd Lt. Charlie  
 Fegan, SSgt. Robert W.  
 Ferguson, 1st Lt. William H. Jr.  
 Fields, Maj. Virgil C. Jr.  
 Fletcher, 1st Lt. Leo C.  
 Forrest, Brig. Gen. Nathan B. III  
 Forti, SSgt. Joseph J.  
 Fowler, Lt. Col. Gordon W.

Fox, TSgt. Edward K.  
 Fox, 1st Lt. Joseph M.  
 Frazier, SSgt. James L.  
 French, TSgt. Clifford E.  
 Fridge, Maj. Benjamin W.  
 Fries, Cpl. Robert A.  
 Fry, Capt. Robert M.  
 Fulmer, 2nd Lt. Edward S.  
 Gabreski, Maj. Francis S.  
 Gallagher, 1st Lt. Robert J.  
 Galloway, TSgt. Paul E.  
 Gambonini, 2nd Lt. Paul B.  
 Garris, 2nd Lt. Benjamin L.  
 Garry, 1st Lt. William J.  
 Gatterdam, Maj. Richard P.  
 Gause, 1st Lt. Damon J.  
 Gautier, Capt. George J.  
 Gay, Capt. William M.  
 Geiser, Capt. Anthony W.  
 Gentile, Capt. Dominic S. (2)  
 Gerrits, 2nd Lt. James F.  
 Gettys, SSgt. Richard O.  
 Gibbs, Maj. David R.  
 Gibson, 1st Lt. Balfour C.  
 Gies, 2nd Lt. Carl P.  
 Gilliland, Capt. Leown A.  
 Gilpin, 2nd Lt. John A.  
 Glades, TSgt. Harry V.  
 Glass, Capt. Walter L. Jr.  
 Globet, Maj. George E.  
 Glover, 2nd Lt. John G.  
 Gogoj, SSgt. John J.  
 Goldberg, 2nd Lt. Hyman M.  
 Gooden, 1st Lt. Clarence W.  
 Goodson, Maj. James A.  
 Gowder, 2nd Lt. Charles F.  
 Grashio, 2nd Lt. Samuel C.  
 Gray, Maj. Leon W.  
 Green, Maj. Herschel H.  
 Greene, 1st Lt. George B. Jr.  
 Grundmann, 1st Lt. Hugh S.  
 Guilfoil, SSgt. William K.  
 Haberle, 2nd Lt. Frank J.  
 Hageman, 1st Lt. Earl L. Jr.  
 Hagerstrom, 1st Lt. James P.  
 Hahn, Maj. Delbert H.  
 Hall, Lt. Col. Donald P. (2)  
 Hall, 2nd Lt. Jack W.  
 Hambleton, Capt. Roscoe L.  
 Haning, 1st Lt. William F. Jr.  
 Hanson, 1st Lt. Robert T.  
 Hantman, 1st Lt. Sidney  
 Hardison, Maj. Felix M.  
 Hargis, 2nd Lt. William D. Jr.  
 Harriger, 1st Lt. Robert L.  
 Harrington, 1st Lt. Archibald A.  
 Harris, TSgt. Arizona T.  
 Harrison, SSgt. Edgar E.  
 Harrison, SSgt. James A.  
 Hascall, TSgt. Alva S.  
 Hasek, 1st Lt. Ivan S. Jr.  
 Hass, 1st Lt. Floyd N.  
 Hatch, 1st Lt. Herbert B. Jr.  
 Hawke, 2nd Lt. Thomas C.  
 Hawthorne, Maj. Harry J.  
 Hedlund, Maj. Earl C.  
 Heidger, Maj. Luther C.  
 Helder, 2nd Lt. Ronald L.  
 Heller, 1st Lt. Edwin L.  
 Helmick, 1st Lt. Frederick E.

Helmick, Capt. George H.  
 Henderson, Cpl. Ivan W.  
 Hendricks, Maj. Randall W.  
 Henebry, Maj. John P.  
 Henry, TSgt. Maurice V.  
 Herlevic, TSgt. Frank A.  
 Herres, F.O. Francis E.  
 Herriott, 2nd Lt. Harold T.  
 Herron, 1st Lt. Christian I.  
 Herron, 1st Lt. Edwin R.  
 Hicks, F.O. Paul L.  
 Hill, Maj. David L.  
 Hill, Maj. James E.  
 Hill, Capt. Robert J.  
 Hillebrand, 1st Lt. Mahlon A.  
 Hillsinger, Lt. Col. Loren B.  
 Hinze, Capt. Frederick S. Jr.  
 Hippy, Maj. William G.  
 Hively, Capt. Howard D.  
 Hoag, 2nd Lt. Carl L. Jr.  
 Hodge, Maj. Dexter L.  
 Hodges, 1st Lt. Charles W.  
 Hoenshell, 1st Lt. Carl C.  
 Hoevet, Maj. Dean C.  
 Hoff, SSgt. Thomas A.  
 Holbury, Capt. Robert J.  
 Holliday, Cpl. Robert L.  
 Holmes, Capt. Walter T.  
 Holsberg, 2nd Lt. Wilfred G.  
 Holub, TSgt. Anthony  
 Homer, Capt. Cyril F.  
 Hoover, Maj. John R.  
 Horton, 1st Lt. Robert W.  
 House, 2nd Lt. A. T.  
 Hovde, Maj. William J.  
 Howat, 2nd Lt. Kenneth W.  
 Howell, 1st Lt. John J.  
 Hubbard, Capt. Ronald D.  
 Hudson, 2nd Lt. Charles S.  
 Huffstickler, Sgt. Benjamin F.  
 Hughes, 2nd Lt. Charles W.  
 Hull, 2nd Lt. Charles T.  
 Hull, 2nd Lt. Jack T.  
 Ingelido, Lt. Col. Michael J.  
 Inman, SSgt. Harold R.  
 Irons, MSgt. John P.  
 Jackson, 1st Lt. Roland B.  
 James, SSgt. Joseph H. Jr.  
 Jamison, 1st Lt. Roger W.  
 Jernigan, Capt. William D. J. Jr.  
 Jewell, 1st Lt. Kenneth G.  
 Johnson, Capt. Albert L.  
 Johnson, Maj. Gerald R. (2)  
 Johnson, Capt. Gerald W.  
 Johnson, Capt. Robert S.  
 Johnson, 2nd Lt. Russell H.  
 Johnson, SSgt. Theron E.  
 Johnson, SSgt. Thomas E.  
 Johnson, 1st Lt. William H.  
 Johnston, Maj. Robert D.  
 Johnston, 1st Lt. Ruby E.  
 Jolly, 1st Lt. Hoyt A. Jr.  
 Jones, 1st Lt. Charles T.  
 Jones, 1st Lt. Cyril W. Jr.  
 Jones, 1st Lt. William Jr.  
 Joyce, Cpl. John D.  
 Juchheim, 1st Lt. Alwin M.  
 Judy, 2nd Lt. James D.  
 Kase, TSgt. Louis N.  
 Kaufman, Sgt. Robert P.

### Rank Abbreviations

1st Lt.	First Lieutenant
1st Sgt.	First Sergeant
2nd Lt.	Second Lieutenant
Brig. Gen.	Brigadier General
Capt.	Captain
Col.	Colonel
Cpl.	Corporal
F.O.	Flight Officer
Lt. Col.	Lieutenant Colonel
Lt. Gen.	Lieutenant General
Maj.	Major
Maj. Gen.	Major General
MSgt.	Master Sergeant
Pfc.	Private First Class
Pvt.	Private
Sfc.	Sergeant First Class
Sgt.	Sergeant
SSgt.	Staff Sergeant
TSgt.	Technical Sergeant

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  
 Kovacic, TSgt. Steve H.  
 Kramer, 1st Lt. Vernon J.  
 Krause, Maj. John E.  
 Krug, 2nd Lt. Richard M.  
 Kunkle, 2nd Lt. James K.  
 Lackness, 1st Lt. Berdines  
 Ladisic, SSgt. Peter  
 Lael, 1st Lt. Francis V.  
 LaFleur, 1st Lt. Joseph V.  
 Lambert, SSgt. James V.  
 Land, 2nd Lt. George R.  
 Landry, 2nd Lt. Larry D. Jr.  
 Lannon, TSgt. Louis A.  
 Larson, 1st Lt. Harold B.  
 Latham, Capt. John L. Jr.  
 Lauraine, 1st Lt. Loye J.  
 Laven, 1st Lt. George Jr.  
 Ledford, Capt. Jack C.  
 LeMay, Col. Curtis E.  
 Leverette, Maj. William L.  
 Levi, 1st Lt. Nelson  
 Liimatainen, Sgt. Alvar A.  
 Lillis, Cpl. Joseph D.  
 Lines, 1st Lt. Ted E.  
 Lipscomb, 1st Lt. Paul M.



## USAF Recipients of the Distinguished Service Cross

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. Allen 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.  
 McLaughlin, 2nd Lt. John A.  
 McLeod, Sgt. Stanley A.  
 McMahan, 1st Lt. Darrell E.  
 McMahan, 2nd Lt. Robert F.  
 McNeese, Capt. Richard A.  
 McNeese, 1st Lt. Harold G.  
 Meals, Capt. Elbert O.  
 Megura, 1st Lt. Nicholas  
 Melo, Cpl. Frank L. Jr.  
 Merkel, Capt. Howard W.  
 Merrill, 1st Lt. John O.  
 Meyer, Lt. Col. John C. (3)  
 Middlebrook, Capt. Garrett E.  
 Middleditch, 1st Lt. Lyman Jr.  
 Miles, Capt. James E.  
 Miller, 2nd Lt. Guy M.  
 Miller, Capt. Robert E.  
 Millikan, 1st Lt. Willard W.  
 Milton, Lt. Col. Theodore R.

Mitchell, Capt. John W.  
 Mix, TSgt. Joseph E.  
 Moats, 1st Lt. Sanford K.  
 Mohler, TSgt. William A.  
 Mohon, Sgt. Ernest M. Jr.  
 Momyer, Col. William W.  
 Monkton, Capt. Lyle  
 Montgomery, Lt. Col. Robert P.  
 Mooney, Capt. Robert C.  
 Moore, Sgt. Carl W.  
 Moore, 1st Lt. Clarence J.  
 Moore, 1st Lt. Joseph H.  
 Moore, 1st Lt. Pren L.  
 Moore, 2nd Lt. William W.  
 Moran, 1st Lt. Harold D.  
 Morehead, 2nd Lt. James B.  
 Morgan, Maj. Marion W.  
 Morris, Capt. James M.  
 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.  
 Pawloski, Capt. Edward J.  
 Pear, 2nd Lt. Sidney A.  
 Pearson, 1st Lt. John M.  
 Pederson, 2nd Lt. Harold L.  
 Pell, Maj. Floyd J.  
 Perdomo, 1st Lt. Oscar F.  
 Peres, 2nd Lt. Jack R.  
 Perry, 2nd Lt. Elton S.  
 Peters, 1st Lt. Hobert O.  
 Petersen, SSgt. Jacob  
 Peterson, Lt. Col. Chesley G.  
 Petty, 2nd Lt. Charles A.  
 Phillips, TSgt. Claude B.

Phillips, TSgt. Hubert E.  
 Phillips, Capt. Reginald H.  
 Pickard, Maj. John G.  
 Pierce, 1st Lt. Sammy A.  
 Pittman, 1st Lt. Charles K.  
 Ploetz, 1st Lt. Frederick F.  
 Polifka, Lt. Col. Karl L.  
 Poore, 1st Lt. Wesley A.  
 Posey, Lt. Col. James T.  
 Post, Capt. Arthur L.  
 Potter, SSgt. A. J.  
 Potts, Maj. Ramsey D. Jr.  
 Preddy, Maj. George E.  
 Price, 1st Lt. Herbert M.  
 Price, 1st Lt. Raymond E.  
 Priest, 2nd Lt. Royce W.  
 Prince, 1st Lt. George A.  
 Prince, TSgt. William H.  
 Pugh, Sgt. Herbert W.  
 Putnam, Capt. Walter B.  
 Radtke, 1st Lt. Dean M.  
 Rahner, 2nd Lt. Raymond M.  
 Ramey, 1st Lt. Gordon A.  
 Ramey, Brig. Gen. Howard K.  
 Ramey, Col. Roger M.  
 Randerson, Maj. Luther W.  
 Rankin, 1st Lt. Robert J.  
 Rau, 1st Lt. Oscar J.  
 Rauschkolb, 1st Lt. Frank  
 Ray, 2nd Lt. Charles P.  
 Ray, 1st Lt. John W.  
 Reams, 1st Lt. Luther S.  
 Reeder, 1st Lt. Sumner H.  
 Reeves, TSgt. Charles T.  
 Rice, 2nd Lt. Burt H.  
 Richards, 2nd Lt. Conrad B.  
 Ridolfi, SSgt. Peter J.  
 Righetti, Col. Elwyn G.  
 Rist, 2nd Lt. Robert P.  
 Ritchey, 1st Lt. Andrew J.  
 Robbins, 1st Lt. Jay T. (2)  
 Roberts, Capt. Daniel T.  
 Roberts, Maj. Eugene P.  
 Robinson, Lt. Col. Stanley K.  
 Roche, Capt. John R.

Rogers, Lt. Col. Arthur H.  
 Rogers, 2nd Lt. Robert J.  
 Roller, SSgt. John R.  
 Rorer, 1st Lt. George A. Jr.  
 Rose, 1st Lt. Dudley E.  
 Rose, 2nd Lt. Henry J.  
 Rosenthal, Maj. Robert  
 Royce, Brig. Gen. Ralph  
 Ruegg, 1st Lt. Robert G.  
 Sacks, 2nd Lt. Seymour  
 Sanford, Sgt. James T.  
 Sanford, Capt. William L.  
 Sans, SSgt. Charles H.  
 Saunders, SSgt. Lester W.  
 Schellin, SSgt. Roy L.  
 Schild, 1st Lt. William C.  
 Schilling, Lt. Col. David C. (2)  
 Schiltz, 1st Lt. Glenn D. Jr.  
 Scholz, 1st Lt. Richard J.  
 Schreiber, Capt. Leroy A.  
 Schulman, 2nd Lt. Herbert E.  
 Schuman, 2nd Lt. John P.  
 Sconiers, 2nd Lt. Ewart T.  
 Seaman, 1st Lt. Theodore L.  
 Seith, Capt. Louis T.  
 Seitz, Cpl. Bernard C.  
 Sellers, 2nd Lt. Thomas D.  
 Sewart, Maj. Allan J. Jr.  
 Shaw, Capt. William S.  
 Shelton, 2nd Lt. Stephen C.  
 Shingler, Maj. Herbert I.  
 Shirey, SSgt. Harry R.  
 Shubin, 1st Lt. Murray J.  
 Silva, MSgt. Louis T.  
 Simeral, Maj. George A.  
 Sims, 2nd Lt. Tommie J.  
 Skinner, TSgt. William E.  
 Slade, 1st Lt. Richard J.  
 Slessor, 2nd Lt. Lee D.  
 Smart, Col. Jacob E.  
 Smith, 1st Lt. Donovan F.  
 Smith, SSgt. Edmond H.  
 Smith, Maj. George A.  
 Smith, 2nd Lt. Harry W.  
 Smith, Sgt. Jack E.



John Meyer



Smith, 1st Lt. James R.  
 Smith, SSgt. Mack H.  
 Smith, 1st Lt. Stephen M.  
 Snyder, TSgt. Donald L.  
 Spencer, 2nd Lt. Charles W.  
 Spencer, 2nd Lt. Dale F.  
 Sprague, Lt. Col. Charles A.  
 Stach, Maj. Paul J.  
 Starczweski, 1st Lt. Phillip R.  
 Starks, 2nd Lt. Richard F.  
 Steele, 1st Lt. Henry P.  
 Steen, SSgt. Zerrill J.  
 Steffy, 1st Lt. Robert F.  
 Stewart, Maj. James C.  
 Stewart, 1st Lt. Walter T.  
 Stipe, Sgt. Leon D.  
 Stireman, SSgt. John O.  
 Storovich, SSgt. Robert D.  
 Strand, 1st Lt. Robert E.  
 Strasburger, 1st Lt. Alvin  
 Stricker, 1st Lt. Thomas A.  
 Strickland, 1st Lt. Robert F.  
 Strother, Capt. Donald R.  
 Sullivan, 2nd Lt. Leroy R.  
 Sussky, 1st Lt. Ira M.  
 Swain, Cpl. Andrew J.  
 Sweney, Lt. Col. Walter C. Jr.  
 Talbott, Capt. Carlos M.  
 Tapp, Maj. James B.  
 Taylor, 2nd Lt. Kenneth M.  
 Taylor, 1st Lt. Robert L.  
 Tennille, Maj. William G. Jr.  
 Thomas, Capt. Jay P.  
 Thornbrough, Capt. George W.  
 Hornell, 1st Lt. John F. Jr.  
 Tibbets, Col. Paul W. Jr.  
 Tidwell, SSgt. Billy M.  
 Tiedemann, 1st Lt. John R.  
 Tompkins, 1st Lt. Frederick L.  
 Tomey, SSgt. Winston M.  
 Touth, 2nd Lt. Leo J. Jr.  
 Travis, Brig. Gen. Robert F.  
 Tringham, 2nd Lt. Charles E.  
 Trout, 1st Lt. Chester E.  
 Troy, SSgt. Edward P.  
 Tule, Lt. Col. Clinton U.  
 Tuluck, Capt. John H. Jr.  
 Tushman, 1st Lt. Thomas J.  
 Tuffy, 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.  
 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.  
 Wlegand, 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.  
 Yulie, 2nd Lt. John W.  
 Yearwood, Lt. Col. Roy W.  
 Yevich, SSgt. Edward S.  
 Zdzankukas, 1st Lt. Vincent R.  
 Zemke, Col. Hubert



George Welch

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.

#### 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.  
 Freiligh, 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

## JSAF Recipients of the Air Force Cross

### World War II

Brown, 2nd Lt. Charles L.  
 Brew, 1st Lt. Urban L.  
 Sloan, Lt. Col. William J.

### Cuba Crisis

Anderson, Maj. Rudolph Jr.

### Vietnam War

Jams, TSgt. Victor R.  
 Lee, Maj. Richard K.  
 Nelson, Lt. Col. John V.  
 Armstrong, Maj. Larry D.  
 Terberry, Lt. Col. Edwin L.  
 Auer, Lt. Col. Allan R.  
 Aldwin, Maj. Robert L.



Rudolph Anderson

Beale, Maj. Robert S.  
 Black, A3C Arthur N.  
 Bode, Maj. John R.  
 Boyd, Capt. Charles G.  
 Boyd, Lt. Col. William Jr.  
 Brickel, Lt. Col. James R.  
 Britt, Maj. 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.  
 Cherry, Col. Fred V.  
 Clarke, Maj. Colin A.  
 Clay, SSgt. Eugene L.  
 Cobell, Lt. Col. Earl G.  
 Cody, Capt. Howard R.  
 Collins, Capt. Willard M.  
 Conley, Lt. Col. Eugene O.  
 Conran, Maj. Philip J.  
 Cooper, Lt. Col. William E.  
 Corder, Capt. John A.  
 Courtney, Capt. Terence F.  
 Crawford, Barry F. Jr.  
 Curtis, Capt. Thomas J.  
 Dallman, Lt. Col. Howard M.  
 Day, Col. George E.





**Duane Hackney**

Dayton, Maj. Thomas E.  
 DeBellevue, Capt. Charles B.  
 DeTar, Maj. Dean E.  
 Donelson, Capt. Nicholas J.  
 Donohue, Maj. Frederic M.  
 Dorsett, Capt. Tracey K. Jr.  
 Draeger, Capt. Walter F. Jr.  
 Dramesi, Col. John A. (2)  
 Engle, Capt. Charles E.  
 Eppinger, Maj. Dale L.  
 Etzel, Capt. Gregory A. M.  
 Feinstein, Capt. Jeffrey S.  
 Feuerriegel, Lt. Col. Karl T.  
 Finck, Maj. George C.  
 Firse, Capt. John A.  
 Fish, Sgt. Michael E.  
 Fleener, Capt. Delbert W.  
 Flynn, Lt. Gen. John P.  
 Francisco, Capt. Michael C.  
 Funderburk, Capt. Leonard J.  
 Gamlin, Sgt. Theodore R.  
 Gibson, Maj. James K.  
 Gilroy, Capt. Kevin A.  
 Gonzales, Maj. Leonard A.  
 Green, Maj. Joe B.  
 Griggs, Maj. Jerry M.  
 Gruver, Capt. John C.  
 Guarino, Col. Lawrence N.  
 Gustafson, Maj. Gerald C.  
 Guy, Col. Theodore W.  
 Hackney, A2C Duane D.  
 Hackney, Maj. Hunter F.  
 Hall, 1st Lt. James H.  
 Hamilton, Col. John S.  
 Harding, Maj. James C.  
 Harp, Capt. Tilford W.

Henning, Capt. Hal P.  
 Hickman, Capt. Vincent J.  
 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.  
 McNerney, Lt. Col. James E. Jr.  
 McKnight, Lt. Col. George G.  
 McTasney, Capt. John B.  
 Mehr, Maj. Richard L.  
 Mitchell, Maj. Carl B.  
 Mize, Capt. John D.  
 Mongillo, Maj. Paul J.  
 Moorberg, Capt. Monte L.  
 Nagel, Capt. Richard A. Jr.  
 Newman, Sgt. Thomas A.  
 Norris, Lt. Col. William C.  
 O'Mara, Capt. Oliver E.  
 Olds, Col. Robin  
 Olsen, Maj. Don P.  
 Orrell, Capt. Bennie D.  
 Parr, Col. Ralph S. Jr.  
 Personett, Capt. Joseph A.  
 Peterson, Capt. Delbert R.  
 Pogreba, Lt. Col. Dean A.

Poling, Capt. Richard L.  
 Price, Capt. Donald S.  
 Richardson, Sgt. Dennis M.  
 Richter, 1st Lt. Karl W.  
 Risner, Lt. Col. Robinson (2)  
 Ritchie, Capt. Richard S.  
 Robinson, A1C William A.  
 Robinson, Maj. William P.  
 Ronca, Maj. Robert F.  
 Rowan, Maj. John M.  
 Schaneberg, Capt. Leroy C.  
 Schmidt, Col. Norman  
 Schurr, Lt. Col. Harry W.  
 Scott, Capt. Travis H. Jr.  
 Sellers, Maj. Jerry A.  
 Sellers, Capt. Kenneth H.  
 Shannon, Capt. Fred  
 Shaub, SSgt. Charles L.  
 Smith, TSgt. Donald G.  
 Smith, Lt. Col. Robert W.  
 Smith, Capt. Ronald E.  
 Smith, Capt. Rowland F. Jr.  
 Smith, Maj. Weston T.  
 Stevens, Capt. Donald D.  
 Stocks, Maj. Bruce D.  
 Storz, Lt. Col. Ronald E.  
 Stovall, Capt. Dale C.  
 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.



**Barry Crawford Jr.**

Wofford, Maj. Travis  
 Wood, Maj. Patrick H.  
 Worrell, 1st Lt. Rowland H. III  
 Wright, Capt. Garth A.  
 Wright, TSgt. LeRoy  
 York, Maj. Glen P.

**Mayaguez Incident**

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

**Operation Desert Storm**

Andrews, Capt. Bill  
 Johnson, Capt. Paul T.

**Somalia**

Wilkinson, TSgt. Timothy A.

**Operation Enduring Freedom**

Chapman, TSgt. John A.  
 Crawford, Capt. Barry F. Jr.  
 Cunningham, SrA. Jason D.  
 Rhyner, SSgt. Zachary J.  
 Gutierrez, SSgt. Robert Jr.



**Timothy A. Wilkinson**

**USAF Recipients of Special Congressional Medals (highest noncombat award)**

Name and Rank*	Type	Date Approved	Achievement
Eaker, Lt. Gen. Ira C.	Gold	Oct. 10, 1978	Distinguished aviation pioneer and Air Force leader
Lindbergh, Col. Charles A.	Gold	May 4, 1928	Achievements, specifically New York City-Paris flight (May 20-21, 1927)
Mitchell, Brig. Gen. William	Gold	Aug. 8, 1946	Outstanding pioneer service and foresight in American military aviation
Tuskegee Airmen	Gold	April 11, 2006	Unique military record, inspiring revolutionary reform in US armed forces
Women's Airforce Service Pilots	Gold	July 2, 2009	Pioneering military service and exemplary record
Yeager, Brig. Gen. Charles E.	Silver	Dec. 23, 1975	Risking life, piloting X-1 aircraft faster than speed of sound (Oct. 14, 1947)

\* Rank at time of award



# Air Force Aces

## Some Famous Firsts

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



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



Right: Manuel Fernandez Jr.

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

This record does not include some 300 pilots credited by Eighth Air Force in World War II with destroying aircraft on the ground. Eighth was the only numbered air force to count ground kills, and the Air Force subsequently limited its official recognition of World War II aces to air-to-air victories.

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

The criteria that the Air Force established for awarding aerial victory credits varied from war to war.

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

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

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

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



## American Aces of World War I



**Eddie Rickenbacker (26)**

Rickenbacker, Capt. Edward V.	26
Luke, 2nd Lt. Frank Jr.	18
Vaughn, 1st Lt. George A.	13
Kindley, 1st Lt. Field E.	12
Springs, 1st Lt. Elliott W.	12
Landis, 1st Lt. Reed G.	10
Swaab, 1st Lt. Jacques M.	10
Baer, 1st Lt. Paul P.	9
Cassady, 1st Lt. Thomas G.	9
Hamilton, 1st Lt. Lloyd A.	9
Wright, 1st Lt. Chester E.	9
Clay, 1st Lt. Henry R. Jr.	8
Coolidge, Capt. Hamilton	8
Donaldson, 2nd Lt. John O.	8
Erwin, 1st Lt. William P.	8
Hunter, 1st Lt. Frank O'D.	8
Jones, 2nd Lt. Clinton	8
Meissner, Capt. James A.	8
Stenseth, 1st Lt. Martinus	8
White, 2nd Lt. Wilbert W.	8
Burdick, 2nd Lt. Howard	7

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

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



**Elliott Springs (12)**

## Army Air Forces Aces of World War II



**Don Gentile (19.83)**

Ranks are as of last victory in World War II.

Bong, Maj. Richard I.	40	Lynch, Lt. Col. Thomas J.	20
McGuire, Maj. Thomas B. Jr.	38	Westbrook, Lt. Col. Robert B.	20
Gabreski, Lt. Col. Francis S.	28	Gentile, Capt. Don S.	19.8
Johnson, Capt. Robert S.	27	Duncan, Col. Glenn E.	19.5
MacDonald, Col. Charles H.	27	Carson, Capt. Leonard K.	18.5
Preddy, Maj. George E.	20.03	Cagleston, Maj. Glenn T.	18.5
Meyer, Lt. Col. John C.	24	Beckham, Maj. Walter C.	18
Schilling, Col. David C.	22.5	Green, Maj. Herschel H.	18
Johnson, Lt. Col. Gerald R.	22	Herbst, Lt. Col. John C.	18
Kearby, Col. Neel E.	22	Zemke, Col. Hubert	17.7
Robbins, Maj. Jay I.	22	England, Maj. John B.	17.5
Christensen, Capt. Fred J.	21.5	Beeson, Capt. Duane W.	17.3
Wetmore, Capt. Ray S.	21.25	Thornell, 1st Lt. John F. Jr.	17.2
Voll, Capt. John J.	21	Varnell, Capt. James S. Jr.	17
Mahurin, Maj. Walker M.	20.75	Johnson, Maj. Gerald W.	16.5



## Army Air Forces Aces of World War II

Godfrey, Capt. John T.	16.33
Anderson, Capt. Clarence E. Jr.	16.25
Dunham, Lt. Col. William D.	16
Harris, Lt. Col. Bill	16
Melch, 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
Dragg, Maj. Edward	15
Hahlberg, Capt. Kenneth H.	15
Foy, Maj. Robert W.	15
Hofer, 2nd Lt. Ralph K.	15
Tomer, Capt. Cyril F.	15
Anders, Lt. Col. John D.	14.5
Howers, Capt. Joe H.	14.5
Brown, Capt. Henry W.	14.2
Drarr, 1st Lt. Bruce W.	14
Jurtis, Maj. Robert C.	14
DeHaven, Capt. Robert M.	14
Simmer, Capt. Wallace N.	14
Woodson, Maj. James A.	14
Jeffrey, Lt. Col. Arthur F.	14
McComas, Lt. Col. Edward O.	14
Roberts, Capt. Daniel T. Jr.	14
Vest, Capt. Richard L.	14
Bochkay, Maj. Donald H.	13.83
Strait, Maj. Donald J.	13.5
Ryan, Capt. Donald S.	13.33
Carpenter, Maj. George	13.33
Brooks, 1st Lt. James L.	13
Lampshire, Capt. John F. Jr.	13
Lead, Capt. Cotesworth B. Jr.	13
Holloway, Col. Bruce K.	13
Millikan, Capt. Willard W.	13
Loran, 1st Lt. Glennon T.	13
Arker, Capt. Harry A.	13
Stephens, Maj. Robert W.	13
Williamson, Capt. Felix D.	13
Rueland, Maj. Lowell K.	12.5
Rown, Maj. Quince L.	12.33
Rezas, 1st Lt. Michael	12



L-r: Richard Peterson (15.5), Leonard Carson (18.5), John England (17.5), and Clarence Anderson Jr. (16.25).

Chase, Lt. Col. Levi R.	12	McDonald, Maj. Norman L.	11.5
East, Capt. Clyde B.	12	Stewart, Maj. James C.	11.5
Gleason, Capt. George W.	12	Yeager, Capt. Charles E.	11.5
Hively, Maj. Howard D.	12	Norley, Maj. Louis H.	11.33
Ladd, Capt. Kenneth G.	12	Frantz, 1st Lt. Carl M.	11
Moore, Maj. Robert W.	12	Goebel, Capt. Robert J.	11
Olds, Maj. Robin	12	Lawler, Capt. John B.	11
Schreiber, Capt. Leroy A.	12	Lent, 1st Lt. Francis J.	11
Skogstad, 1st Lt. Norman C.	12	Leverette, Lt. Col. William L.	11
Sloan, 1st Lt. William J.	12	Loisel, Maj. John S.	11
Watkins, Capt. James A.	12	Lowry, 1st Lt. Wayne L.	11
Megura, Capt. Nicholas	11.83	McCorkle, Col. Charles M.	11
Blakeslee, Col. Donald J. M.	11.5	McKennon, Maj. Pierce W.	11
Conger, Maj. Paul A.	11.5	Mitchell, Lt. Col. John W.	11
Kirla, 1st Lt. John A.	11.5	Molland, Capt. Leland P.	11
		Quirk, Capt. Michael J.	11
		Riddle, 1st Lt. Robert E.	11
		Shubin, 1st Lt. Murray J.	11
		Smith, Capt. Cornelius M. Jr.	11
		Sparks, 1st Lt. Kenneth C.	11
		Turner, Maj. Richard E.	11
		O'Connor, Capt. Frank Q.	10.75
		Ceuleers, Lt. Col. George F.	10.5
		Clark, Lt. Col. James A. Jr.	10.5
		Doersch, Capt. George A.	10.5
		Halton, Maj. William T.	10.5
		Hovde, Maj. William J.	10.5
		Littge, Capt. Raymond H.	10.5
		Storch, Lt. Col. John A.	10.5
		Glover, Maj. Fred W.	10.33
		Anderson, 1st Lt. Charles F.	10
		Aschenbrener, Capt. Robert W.	10
		Blickenstaff, Lt. Col. Wayne K.	10
		England, Maj. James J.	10



John Godfrey (16.33)



Hubert Zemke (17.75)



## Army Air Forces Aces of World War II



Jack Ilfrey (8)

Giroux, Capt. William K.	10
*Gladych, Squadron Leader Michael	10
Goehausen, Capt. Walter J. Jr.	10
Harris, Capt. Ernest A.	10
Lines, 1st Lt. Ted E.	10
Rankin, 1st Lt. Robert J.	10
Reynolds, 1st Lt. Andrew J.	10
Scott, Col. Robert L. Jr.	10
Stanch, Capt. Paul M.	10
Summer, Capt. Elliot	10
Bankey, Capt. Ernest E. Jr.	9.5
Spencer, 1st Lt. Dale F.	9.5
Adams, Capt. Fletcher E.	9
Andrew, Maj. Stephen W.	9
Banks, Maj. William M.	9
Beyer, Capt. William R.	9
Boggs, Capt. Hampton E.	9
Champlin, Capt. Frederic F.	9
Collins, Maj. Frank J.	9
Curdes, 1st Lt. Louis E.	9
Dahl, Capt. Perry J.	9
DalGLISH, Maj. James B.	9
Dunkin, Capt. Richard W.	9
Emmons, 1st Lt. Eugene H.	9
Fanning, 1st Lt. Grover E.	9
Feld, 1st Lt. Sylvan	9
Fiebelkorn, 1st Lt. Ernest C.	9
Forster, 1st Lt. Joseph M.	9
Gallup, Lt. Col. Kenneth W.	9
Hill, Capt. Allen E.	9
Hurlbut, Flight Officer Frank D.	9
Juchheim, Capt. Alwin M.	9
Kiser, Capt. George E.	9
Lesicka, 1st Lt. Joseph J.	9
Meroney, Capt. Virgil K.	9
Morrill, 1st Lt. Stanley B.	9
Overfield, 1st Lt. Loyd J.	9
Paris, Capt. Joel B. III	9
Roberts, Lt. Col. Eugene P.	9
Smith, Lt. Col. Meryl M.	9
Stewart, Capt. John S.	9
White, Capt. Robert H.	9
Wolfe, Capt. Judge E.	9

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

Bennett, Capt. Joseph H.	8.5
Cesky, Capt. Charles J.	8.5
Durschli, Capt. Frederick J. Jr.	8.5
Hayes, Lt. Col. Thomas L. Jr.	8.5
Hoefker, Capt. John H.	8.5
Jenkins, 2nd Lt. Otto D.	8.5
Johnson, 1st Lt. Arthur G. Jr.	8.5
Luksic, 1st Lt. Carl J.	8.5
McDowell, 1st Lt. Don	8.5
McGrattan, Capt. Bernard L.	8.5
Moats, 1st Lt. Sanford K.	8.5
Schlegel, Capt. Albert L.	8.5
Ainlay, 1st Lt. John M.	8
Allen, 1st Lt. David W.	8
Benz, Maj. Walter G. Jr.	8
Booth, 1st Lt. Robert J.	8
Bostwick, Maj. George E.	8
Broadhead, Maj. Joseph E.	8
Carroll, 1st Lt. Walter J. Jr.	8
Cruikshank, Maj. Arthur W. Jr.	8
Damstrom, 1st Lt. Fernley H.	8
Douglas, Lt. Col. Paul P. Jr.	8
Elder, Maj. John L. Jr.	8
Fiedler, Capt. Arthur C. Jr.	8
Fowle, 1st Lt. James M.	8
Gardner, Capt. William A.	8
Gaunt, Capt. Frank L.	8
Gerard, Capt. Francis R.	8
Grosshuesch, Capt. Leroy V.	8
Harris, Capt. Frederick A.	8
Hart, 1st Lt. Kenneth F.	8
Ilfrey, Capt. Jack M.	8
Jackson, Maj. Michael J.	8
Jones, Capt. John L.	8
Kinnard, Lt. Col. Claiborne H. Jr.	8
Maloney, Capt. Thomas E.	8
Momyer, Col. William W.	8
Morehead, 1st Lt. James B.	8
Novotny, 1st Lt. George P.	8
O'Neill, 1st Lt. John G.	8
Paisley, 1st Lt. Melvyn R.	8
Richardson, Maj. Elmer W.	8
Roddy, Capt. Edward F.	8
Rowland, Col. Robert R.	8
Sangermano, 1st Lt. Philip	8



Boyd Wagner (8)

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

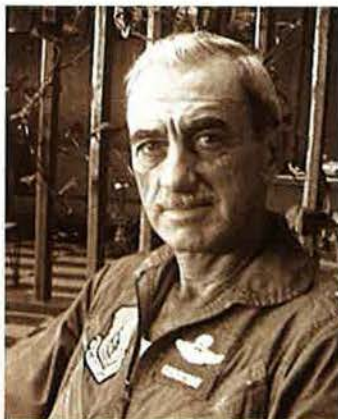


Robert Scott Jr. (10)



Garrison, 1st Lt. Vermont 7.33  
 Morris, Capt. James M. 7.33  
 Goodnight, 1st Lt. Robert E. 7.25  
 Adams, Capt. Burnell W. 7  
 Allen, 1st Lt. Calvin D. Jr. 7  
 Anderson, 1st Lt. William Y. 7  
 Becker, Capt. Robert H. 7  
 Blair, Capt. Samuel V. 7  
 Browning, Capt. James W. 7  
 Carder, 1st Lt. John B. 7  
 Chapman, Maj. Philip G. 7  
 Cramer, Maj. Darrell S. 7  
 Crenshaw, 1st Lt. Claude J. 7  
 Davis, 1st Lt. George A. Jr. 7  
 Dean, 1st Lt. Zach W. 7  
 Duke, Capt. Walter F. 7  
 Dunaway, 1st Lt. John S. 7  
 Edens, 2nd Lt. Billy G. 7  
 Elliott, 1st Lt. Vincent T. 7  
 Fisher, Capt. Edwin O. 7  
 Fisk, Capt. Jack A. 7  
 Franklin, 1st Lt. Dwaine R. 7  
 Graham, Lt. Col. Gordon M. 7  
 Grant, 1st Lt. Marvin E. 7  
 Gregg, 1st Lt. Lee O. 7  
 Griffin, Maj. Joseph H. 7  
 Hennon, Capt. William J. 7  
 Hill, Maj. Frank A. 7  
 Hockery, Capt. John J. 7  
 Howard, Col. James H. 7  
 Jackson, Lt. Col. Willie O. Jr. 7  
 Jamison, Capt. Gilbert L. 7  
 Jett, Capt. Verl E. 7  
 Johnson, Capt. Clarence O. 7  
 Keen, 1st Lt. Robert J. 7  
 King, Capt. Benjamin H. 7  
 Kinsey, 2nd Lt. Claude R. Jr. 7  
 Klibbe, 2nd Lt. Frank W. 7  
 Kuentzel, 2nd Lt. Ward A. 7  
 Lamb, Capt. Robert A. 7  
 Lewis, Maj. Warren R. 7  
 Lewis, Lt. Col. William H. 7  
 Liebers, 2nd Lt. Lawrence P. 7  
 Little, 1st Lt. James W. 7  
 Lombard, Maj. John D. 7  
 Maguire, Capt. William J. 7  
 Marshall, Maj. Bert W. Jr. 7  
 McLaughlin, Capt. Murray D. 7  
 Moore, Maj. John T. 7  
 O'Brien, 1st Lt. Gilbert M. 7  
 Older, Lt. Col. Charles H. 7  
 Pierce, 1st Lt. Joseph F. 7  
 Pierce, 1st Lt. Sammy A. 7  
 Poindexter, Capt. James N. 7  
 Popek, Maj. Edward S. 7  
 Purdy, 1st Lt. John E. 7  
 Reynolds, 1st Lt. Robert 7  
 Rogers, Capt. Felix M. 7  
 Ross, Maj. Herbert E. 7  
 Sears, 1st Lt. Meldrum L. 7  
 Shafer, Lt. Col. Dale E. Jr. 7  
 Shipman, 1st Lt. Ernest 7  
 Shuler, 1st Lt. Lucien B. 7  
 Simmons, 1st Lt. John M. 7  
 Smith, Maj. Leslie C. 7  
 Smith, 1st Lt. Richard E. 7  
 Stone, 2nd Lt. Robert J. 7  
 Strand, Capt. William H. 7  
 Suluck, 1st Lt. John H. 7  
 Turner, Lt. Col. William L. 7

Tyler, 1st Lt. Gerald E. 7  
 Vaughn, Maj. Harley C. 7  
 Waters, 1st Lt. Edward T. 7  
 Wheadon, Capt. Elmer M. 7  
 Whittaker, Capt. Roy E. 7  
 Wicker, Maj. Samuel J. 7  
 Wilkinson, Capt. James W. 7  
 Wire, 1st Lt. Calvin C. 7  
 Woods, Lt. Col. Sidney S. 7  
 Woody, Capt. Robert E. 7  
 Zoerb, Capt. Daniel J. 7  
 Murphy, Lt. Col. John B. 6.75  
 Cummings, Capt. Donald M. 6.5  
 Gray, Maj. Rockford V. 6.5  
 Hoffman, 1st Lt. James E. Jr. 6.5  
 Hubbard, Lt. Col. Mark E. 6.5  
 Hunt, 1st Lt. Edward E. 6.5  
 Koenig, 1st Lt. Charles W. 6.5  
 Kruzel, Lt. Col. Joseph J. 6.5  
 Moseley, Capt. Mark L. 6.5  
 Rader, 1st Lt. Valentine S. 6.5  
 Riley, 1st Lt. Paul S. 6.5  
 Welden, 1st Lt. Robert D. 6.25  
 Adams, 1st Lt. Charles E. Jr. 6  
 Alison, Lt. Col. John R. 6  
 Anderson, 1st Lt. Wyman D. 6  
 Andrews, 1st Lt. Stanley O. 6  
 Baker, 1st Lt. Ellis C. Jr. 6  
 Baseler, Lt. Col. Robert L. 6  
 Bille, Maj. Henry S. 6  
 Blumer, Capt. Laurence E. 6  
 Brown, 1st Lt. Harley L. 6  
 Brown, Capt. Harry W. 6  
 Brown, Capt. Meade M. 6  
 Buck, Capt. George T. Jr. 6  
 Callaway, Maj. Raymond H. 6  
 Campbell, 1st Lt. Richard A. 6  
 Candelaria, 1st Lt. Richard G. 6  
 Care, Capt. Raymond C. 6  
 Carlson, Capt. Kendall E. 6  
 Carter, Capt. James R. 6  
 Chick, Lt. Col. Lewis W. Jr. 6  
 Coffey, Lt. Col. Robert L. Jr. 6  
 Collinsworth, Capt. J. D. 6  
 Cook, Capt. Walter V. 6  
 Crawford, 2nd Lt. Ray 6  
 Crim, Maj. Harry C. Jr. 6  
 Cundy, 1st Lt. Arthur C. 6  
 Czarnecki, 1st Lt. Edward J. 6  
 Davis, 1st Lt. Barrie S. 6  
 Dean, 2nd Lt. Cecil O. 6  
 Degraffenreid, 2nd Lt. Edwin L. 6



Vermont Garrison (17.33, WWII and Korea)



Urban Drew (6)

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



## Army Air Forces Aces of World War II



John Allison (6), David Hill (6), and Albert Baumler (5)

Murphy, Capt. Alva C.	6
Ohr, Capt. Fred F.	6
Olson, Capt. Norman E.	6
Pietz, 1st Lt. John Jr.	6
Pissanos, 1st Lt. Spiros N.	6
Pugh, Capt. John F.	6
Reed, Capt. William N.	6
Reeves, 1st Lt. Horace B.	6
Reeves, 1st Lt. Leonard R.	6
Roberson, 1st Lt. Arval J.	6
Scheible, Capt. Wilbur R.	6
Schildt, 1st Lt. William J.	6
Schimanski, Capt. Robert G.	6
Simmons, 1st Lt. William J.	6
Smith, 1st Lt. John C.	6
Starck, Capt. Walter E.	6
Starnes, Capt. James R.	6
Taylor, Capt. Ralph G. Jr.	6
Thwaites, Capt. David F.	6
Turley, 2nd Lt. Grant M.	6
Vincent, Col. Clinton D.	6
Wainwright, 2nd Lt. John H. Jr.	6
Walker, 1st Lt. Thomas H.	6
Wandrey, Capt. Ralph H.	6
Welch, Capt. Robert E.	6
Wenige, 1st Lt. Arthur E.	6
Whalen, 1st Lt. William E.	6
White, 2nd Lt. Thomas A.	6
Williams, 1st Lt. James M.	6
Witt, Capt. Lynn E. Jr.	6
Wright, Capt. Ellis W. Jr.	6
Zubarik, 1st Lt. Charles J.	6
Fortier, Capt. Norman J.	5.83
Koraleski, Capt. Walter J. Jr.	5.53
Amoss, 1st Lt. Dudley M.	5.5
Bickel, 1st Lt. Carl G.	5.5
Burdick, 1st Lt. Clinton D.	5.5
Buttke, Capt. Robert L.	5.5
Compton, Capt. Gordon B.	5.5
Edwards, 1st Lt. Edward B. Jr.	5.5
Gailer, 1st Lt. Frank L.	5.5
Graham, Capt. Lindol F.	5.5
Hatala, Capt. Paul R.	5.5
Heller, Capt. Edwin L.	5.5
Holmes, 1st Lt. Besby F.	5.5
Horne, 1st Lt. Francis W.	5.5

King, 1st Lt. William B.	5.5
Lampe, 1st Lt. Richard C.	5.5
Lanphier, Capt. Thomas G. Jr.	5.5
Lenfest, Capt. Charles W.	5.5
Long, Capt. Maurice G.	5.5
McCauley, 1st Lt. Frank E.	5.5
Minchew, Capt. Leslie D.	5.5
O'Brien, Capt. William R.	5.5
Pascoe, 1st Lt. James J.	5.5
Pompetti, 1st Lt. Peter E.	5.5
Ruder, 1st Lt. Leroy A.	5.5
Shoup, 1st Lt. Robert L.	5.5
Smith, 1st Lt. Donovan F.	5.5
Tanner, Capt. William F.	5.5
Vanden Heuvel, 1st Lt. George R.	5.5
Waits, 1st Lt. Joe W.	5.5
Wang, 1st Lt. Kuang Fu	5.5
Winks, 1st Lt. Robert P.	5.5
Biel, 1st Lt. Hipolitus T.	5.33
Vinson, Capt. Arnold E.	5.33
Dorris, Maj. Harry W.	5.25
Miller, 2nd Lt. Thomas F.	5.25
Thompson, 1st Lt. Robert D.	5.25
Duffy, Capt. James E. Jr.	5.2
Abernathy, Capt. Robert W.	5



Clinton Vincent (6)

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





**Robert Ammon (5)**

Fisk, Capt. Harry E. 5  
 Flack, Capt. Nelson D. Jr. 5  
 Ford, Maj. Claude E. 5  
 Gardner, Maj. Warner F. 5  
 Gerick, 2nd Lt. Steven 5  
 Holson, Capt. Grover D. 5  
 Ibb, 1st Lt. Robert D. 5  
 Iaden, 1st Lt. Cyrus R. 5  
 Iodrich, 1st Lt. Burdett C. 5  
 Iordon, Capt. Mathew M. Jr. 5  
 Iraham, 2nd Lt. Robert F. 5  
 Iriffith, 1st Lt. Robert C. 5  
 Iross, Capt. Clayton K. 5  
 Irosvenor, Capt. William Jr. 5  
 Iupton, 1st Lt. Cheatham W. 5  
 Iammer, 1st Lt. Samuel E. 5  
 Ianna, 2nd Lt. Harry T. 5  
 Ianseman, 1st Lt. Chris J. 5  
 Iarrington, 1st Lt. Archibald A. 5  
 Iarris, Capt. Thomas L. 5  
 Iartley, Capt. Raymond E. Jr. 5  
 Iatch, 2nd Lt. Herbert B. Jr. 5  
 Iauver, 1st Lt. Charles D. 5  
 Iaworth, 1st Lt. Russell C. 5  
 Iendricks, Maj. Randall W. 5  
 Iill, Maj. James E. 5  
 Iiro, Maj. Edwin W. 5  
 Inatio, 1st Lt. Myron M. 5  
 Iodges, Capt. William R. 5  
 Ioffman, 1st Lt. Cullen J. 5  
 Iouse, 1st Lt. A. T. Jr. 5  
 Iowe, 1st Lt. David W. 5  
 Ioyt, Capt. Edward R. 5  
 Iunter, Capt. Alvaro J. 5  
 Iard, 2nd Lt. Joe W. 5  
 Iohnson, Capt. Evan M. V. 5  
 Iones, Capt. Curran L. 5  
 Iones, Capt. Frank C. 5  
 Iones, Capt. Lynn F. 5  
 Iones, 2nd Lt. Warren L. 5  
 Iulian, Maj. William H. 5  
 Iennedy, 1st Lt. Daniel 5  
 Iing, Maj. Charles W. 5  
 Iing, 1st Lt. David L. 5  
 Iirby, 1st Lt. Marion F. 5  
 Iirkland, 1st Lt. Lenton F. Jr. 5  
 Inapp, Capt. Robert H. 5  
 Inott, 1st Lt. Carroll S. 5  
 Iopsel, 1st Lt. Edward H. 5  
 Iathrope, 2nd Lt. Franklin C. 5  
 Iazear, 1st Lt. Earl R. Jr. 5

Lee, 1st Lt. Richard J. 5  
 Leikness, Capt. Marlow J. 5  
 Lenox, 2nd Lt. Jack Jr. 5  
 Liles, Maj. Robert L. 5  
 London, Capt. Charles P. 5  
 Loving, Capt. George G. Jr. 5  
 Lutton, 1st Lt. Lowell C. 5  
 Mackay, 2nd Lt. John A. 5  
 Magoffin, Col. Morton D. 5  
 Mahon, Capt. Keith 5  
 Mahony, Lt. Col. Grant 5  
 Mankin, Capt. Jack C. 5  
 Markham, Capt. Gene E. 5  
 Marsh, 1st Lt. Lester C. 5  
 Martin, Col. Kenneth R. 5  
 Mason, Col. Joe L. 5  
 Mathis, 1st Lt. William H. 5  
 Mathre, 2nd Lt. Milden E. 5  
 Matte, 1st Lt. Joseph Z. 5  
 Maxwell, Capt. Chester K. 5  
 McArthur, 1st Lt. Paul G. 5  
 McArthur, Capt. T. H. 5  
 McDonough, Maj. William F. 5  
 McElroy, Capt. James N. 5  
 McGinn, Lt. Col. John L. 5  
 McGuyrt, 1st Lt. John W. Jr. 5  
 McMinn, Flight Officer Evan D. 5  
 Merritt, Maj. George L. Jr. 5  
 Miller, 1st Lt. Everett 5  
 Miller, Capt. Joseph E. Jr. 5  
 Milliken, 1st Lt. Robert C. 5  
 Monk, 1st Lt. Franklin H. 5  
 Mooney, 2nd Lt. Raymond P. 5  
 Morriss, Capt. Paul V. 5  
 Mulhollem, 1st Lt. Robert F. 5  
 Myers, 1st Lt. Jennings L. 5  
 Myers, Lt. Col. Raymond B. 5  
 Nichols, Maj. Franklin A. 5  
 Nollmeyer, Maj. Edward M. 5  
 Oberhansly, Maj. Jack J. 5  
 Olson, 1st Lt. Paul E. 5  
 O'Neill, Capt. Eugene W. Jr. 5  
 O'Neill, 1st Lt. Lawrence F. 5  
 Osher, Capt. Ernest K. 5  
 Overcash, 1st Lt. Robert J. 5  
 Owens, Maj. Joel A. Jr. 5  
 Parham, Capt. Forrest F. 5  
 Paulk, 2nd Lt. Edsel 5  
 Payne, Capt. Carl W. 5  
 Perdomo, 1st Lt. Oscar F. 5  
 Pool, 1st Lt. Kenneth R. 5  
 Porter, 1st Lt. Philip B. 5



**Harrison Thyng (5)**

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



## USAF Aces of the Korean War



**Joseph McConnell (16)**

McConnell, Capt. Joseph C. Jr.	16
Jabara, Maj. James	15
Fernandez, Capt. Manuel J. Jr.	14.5
Davis, Maj. George A. Jr.	14
Baker, Col. Royal N.	13
Blesse, Maj. Frederick C.	10
Fischer, Capt. Harold E.	10
Garrison, Lt. Col. Vermont	10
Johnson, Col. James K.	10
Moore, Capt. Lonnie R.	10

Parr, Capt. Ralph S. Jr.	10
Foster, Capt. Cecil G.	9
Low, 1st Lt. James F.	9
Hagerstrom, Maj. James P.	8.5
Risner, Capt. Robinson	8
Ruddell, Lt. Col. George I.	8
Buttelmann, 1st Lt. Henry	7
Jolley, Capt. Clifford D.	7
Lilley, Capt. Leonard W.	7
Adams, Maj. Donald E.	6.5
Gabreski, Col. Francis S.	6.5
Jones, Lt. Col. George L.	6.5
Marshall, Maj. Winton W.	6.5
*Bolt, Maj. John F.	6
Kasler, 1st Lt. James H.	6
Love, Capt. Robert J.	6
Whisner, Maj. William T. Jr.	5.5
Baldwin, Col. Robert P.	5
Becker, Capt. Richard S.	5
Bettinger, Maj. Stephen L.	5
Cleveland, 1st Lt. Charles G.	5
Creighton, Maj. Richard D.	5
Curtin, Capt. Clyde A.	5
Gibson, Capt. Ralph D.	5
Kincheloe, Capt. Iven C. Jr.	5
Latshaw, Capt. Robert T. Jr.	5
Moore, Capt. Robert H.	5
Overton, Capt. Dolphin D. III	5
Thyng, Col. Harrison R.	5
Wescott, Maj. William H.	5



**Francis Gabreski (6.5)**

\*USMC exchange pilot.

## USAF Aces of the Vietnam War

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



**Jeffrey Feinstein (5)**



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



## AAF/USAF Aces With Victories in More Than One War

	WW II	Korean	Vietnam	Total
Gabreski, Col. Francis S.	28	6.5		34.5
Meyer, Col. John C.	24	2		26
Mahurin, Col. Walker M.	20.75	3.5		24.25
Davis, Maj. George A. Jr.	7	14		21
Whisner, Maj. William T. Jr.	15.5	5.5		21
Eagleston, Col. Glenn T.	18.5	2		20.5
Garrison, Lt. Col. Vermont	7.33	10		17.33
Baker, Col. Royal N.	3.5	13		16.5
Jabara, Maj. James	1.5	15		16.5
Olds, Col. Robin	12		4	16
Mitchell, Col. John W.	11	4		15
Brueland, Maj. Lowell K.	12.5	2		14.5
Hagerstrom, Maj. James P.	6	8.5		14.5
Fovde, 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
Solman, Capt. Philip E.	5	4		9
Teller, Lt. Col. Edwin L.	5.5	3.5		9
Chandler, Maj. Van E.	5	3		8
Hockery, Maj. John J.	7	1		8
Little, Maj. James W.	7	1		8
Creighton, Maj. Richard D.	2	5		7
Emmert, Lt. Col. Benjamin H.	6	1		7
Bettinger, Maj. Stephen L.	1	5		6
Wisscher, Maj. Herman W.	5	1		6
Miles, Capt. Brooks J.	1	4		5
Mattson, Capt. Conrad E.	1	4		5
Shaeffer, Maj. William F.	2	3		5



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

## Leading Air Service/AAF/USAF Aces of All Wars

Long, Maj. Richard I.	40	WW II	Godfrey, Capt. John T.	16.33	WW II
McGuire, Maj. Thomas B. Jr.	38	WW II	Anderson, Capt. Clarence E. Jr.	16.25	WW II
Gabreski, Col. Francis S.	34.5	WW II, Korea	Dunham, Lt. Col. William D.	16	WW II
Johnson, Capt. Robert S.	27	WW II	Harris, Lt. Col. Bill	16	WW II
MacDonald, Col. Charles H.	27	WW II	McConnell, Capt. Joseph C. Jr.	16	Korea
Reddy, Maj. George E.	26.83	WW II	Olds, Col. Robin	16	WW II, Vietnam
Feyer, Col. John C.	26	WW II, Korea	Welch, Capt. George S.	16	WW II
Lickenbacker, Capt. Edward V.	26	WW I	Beerbower, Capt. Don M.	15.5	WW II
Mahurin, Col. Walker M.	24.25	WW II, Korea	Brown, Maj. Samuel J.	15.5	WW II
Chilling, Col. David C.	22.5	WW II	Peterson, Capt. Richard A.	15.5	WW II
Johnson, Lt. Col. Gerald R.	22	WW II	Bradley, Lt. Col. Jack T.	15	WW II
Farby, Col. Neel E.	22	WW II	Cragg, Maj. Edward	15	WW II
Robbins, Maj. Jay T.	22	WW II	Dahlberg, Capt. Kenneth H.	15	WW II
Christensen, Capt. Fred J.	21.5	WW II	Foy, Maj. Robert W.	15	WW II
Jetmore, Capt. Ray S.	21.25	WW II	Hofer, 2nd Lt. Ralph K.	15	WW II
Mavis, Maj. George A. Jr.	21	WW II, Korea	Homer, Capt. Cyril F.	15	WW II
Coll, Capt. John J.	21	WW II			
Whisner, Capt. William T. Jr.	21	WW II, Korea			
Eagleston, Col. Glenn T.	20.5	WW II, Korea			
Finch, Lt. Col. Thomas J.	20	WW II			
Westbrook, Lt. Col. Robert B.	20	WW II			
Montele, Capt. Don S.	19.83	WW II			
Uncan, Col. Glenn E.	19.5	WW II			
Arson, Capt. Leonard K.	18.5	WW II			
Eckham, Maj. Walter C.	18	WW II			
Green, Maj. Herschel H.	18	WW II			
Herbst, Lt. Col. John C.	18	WW II			
Wike, 2nd Lt. Frank Jr.	18	WW I			
Emke, Col. Hubert	17.75	WW II			
England, Maj. John B.	17.5	WW II			
Keelson, Capt. Duane W.	17.33	WW II			
Garrison, Lt. Col. Vermont	17.33	WW II, Korea			
Hornell, 1st Lt. John F. Jr.	17.25	WW II			
Arnell, Capt. James S. Jr.	17	WW II			
Baker, Col. Royal N.	16.5	WW II, Korea			
Jabara, Maj. James	16.5	WW II, Korea			
Johnson, Maj. Gerald W.	16.5	WW II			



**Fred Christensen (21.5)**



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# CSAR in Afghanistan

Meet the “Guardian Angels” and “Pedros” of Operation Enduring Freedom.

By Department of Defense photographers

*Since 2001, when USAF assets and special operations teams first carried the fight to al Qaeda and their Taliban hosts as part of Operation Enduring Freedom, Air Force combat search and rescue (CSAR) airmen have flown countless missions. Today, the small community of HH-60 Pave Hawk aircrews (“Pedros”) and “Guardian Angels”—pararescuemen, combat rescue officers, and survival, evasion, resistance, and escape specialists—are among the most battle-hardened and decorated military members across the services.*



*USAF pararescuemen (PJs) from the 83rd Expeditionary Rescue Squadron at Ragram Airfield, Afghanistan, provide security on a Nov. 7, 2012, mission, as an HH-60 Pave Hawk passes above the site. PJs are not identified here due to operational security concerns.*



*111 PJs with the 83rd ERQS secure the area on a hilltop after being lowered from an HH-60 Pave Hawk on Nov. 7, 2012. PJs are highly trained battlefield airmen frequently tasked to both secure landing zones and help evacuate injured patients—often under fire. PJs are the only combat forces in the Department of Defense specifically organized, trained, equipped, and postured to conduct “full spectrum personnel recovery” or PR, according to the Air Force. 121 A PJ from the 83rd ERQS is lowered on a hoist from a Pave Hawk during the November mission.*



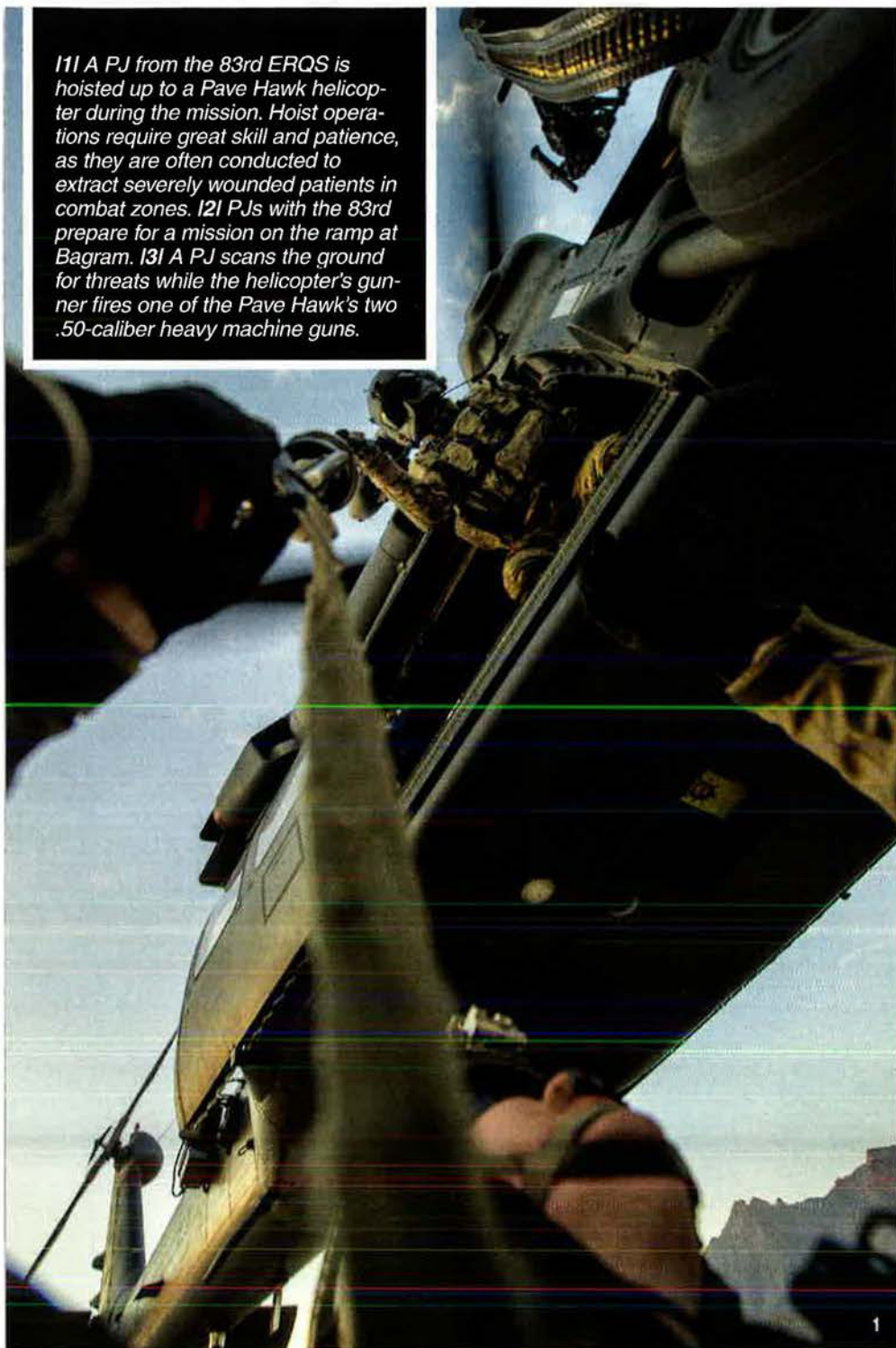
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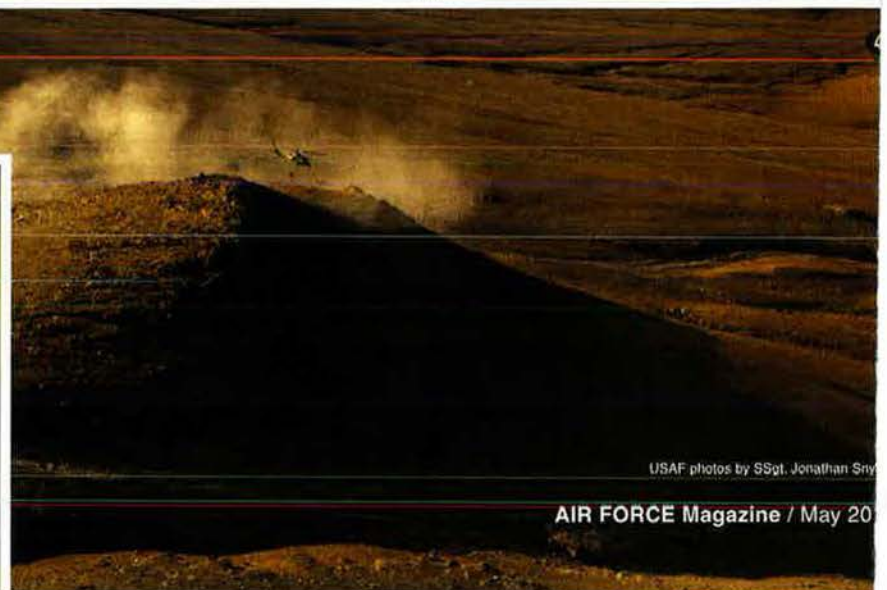
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*111 A PJ from the 83rd ERQS is hoisted up to a Pave Hawk helicopter during the mission. Hoist operations require great skill and patience, as they are often conducted to extract severely wounded patients in combat zones. 121 PJs with the 83rd prepare for a mission on the ramp at Bagram. 131 A PJ scans the ground for threats while the helicopter's gunner fires one of the Pave Hawk's two .50-caliber heavy machine guns.*

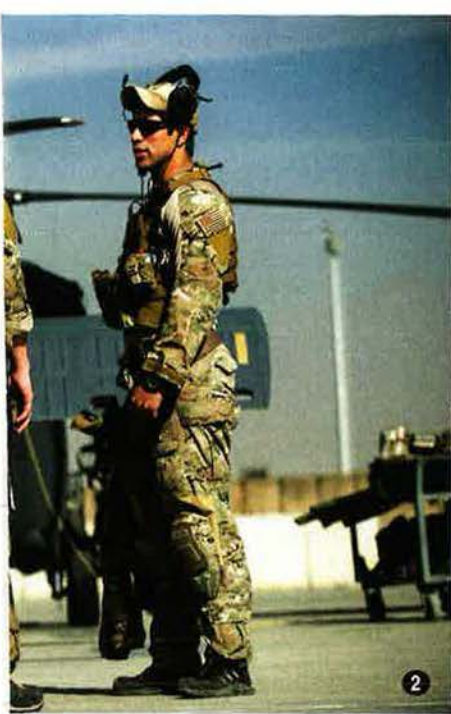


*141 A Pave Hawk with the 83rd drops off PJs on top of a hill during a mission. 151 A Pave Hawk makes an approach during the same mission. The Pave Hawk is a specialized HH-60 with a refueling boom, medical gear, defensive systems, and guns. With full kit, it tips the scales at more than 20,000 pounds.*



USAF photos by SSgt. Jonathan Sny





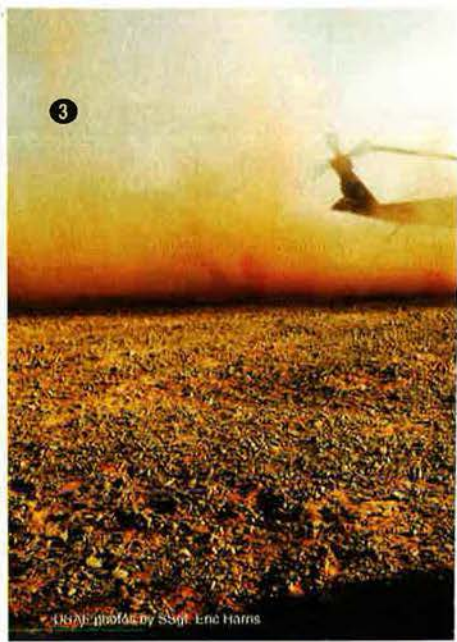
161 (Four set, clockwise from bottom): A PJ secures a mission site with an M203 grenade launcher. Another PJ is lowered from a Pave Hawk via a hoist during the same mission. PJs at Bagram check their gear harness prior to a mission on Nov. 6, 2012. Another PJ from the 83rd scans for threats from the ground as his Pave Hawk flies to its mission objective. 171 At Bagram, a PJ from the 83rd ERQS prepares for a mission. PJs are assigned to special tactics squadrons and units in the Active Duty, Air Guard, and Reserve sector and often operate with other US and allied special operations forces.





1

*111 PJs lower a stretcher for a medical evacuation in Nuristan province, Afghanistan, April 13, 2012. In the operation, Afghan National Army commandos and coalition special operations forces defeated insurgents who were overrunning a village. PJ and HH-60 crews routinely collaborate with other SOF and Afghan forces during joint operations. 121 PJs evacuate an Afghan commando injured during the operation.*



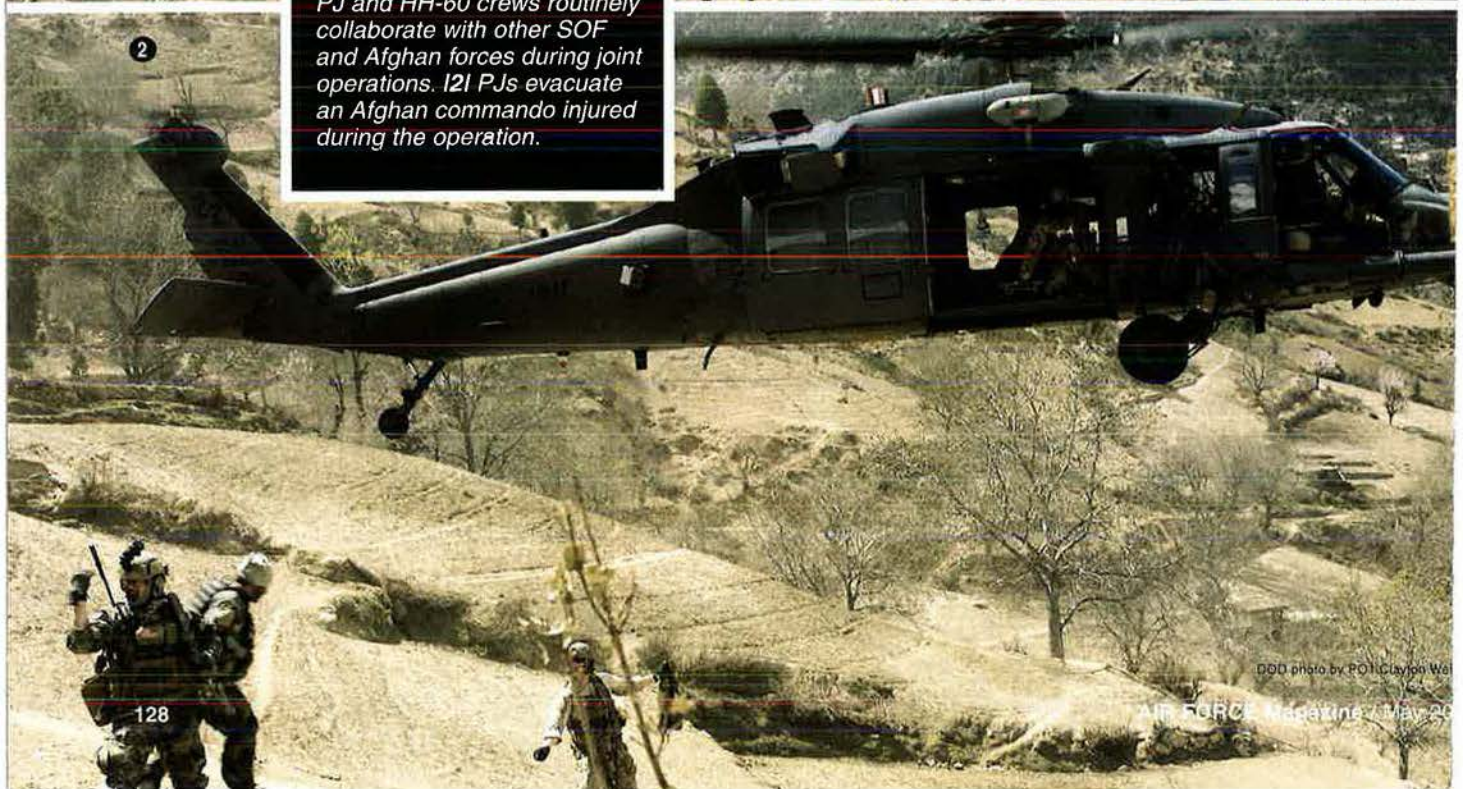
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USAF photo by SSGT Eric Harris



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DOD photo by PO1 Clayton Weis



2

DOD photo by PO1 Clayton Weis





*131 An airman from the 46th ERQS covers a simulated casualty to protect him from dirt and dust during a mass casualty exercise near Kandahar, Afghanistan, as a Pave Hawk takes off in the background on Dec. 24, 2010. USAF rescue airmen train vigorously to keep up their skills. 141 A combat rescue officer preps for a landing near Kandahar aboard a Pave Hawk as part of the casualty drill. 151 An airman kneels between two simulated casualties as an HH-60 lands in the background during the drill.*



*161 Airmen move a simulated casualty onto a litter during the qualification scenario. 171 A Pave Hawk picks up PJs from the 46th ERQS and a wounded soldier near Kandahar on Dec. 24, 2010, in brown-out conditions.*







1

USAF photo by SSgt. Manuel S. Moura



*111 An HH-60 Pave Hawk casts a shadow near farm animals as it responds to a medical evacuation request on Jan. 10, 2010, in Kandahar province. Air Force CSAR assets routinely supplement US Army casualty evacuation helicopters, as CASEVAC helicopters marked with red crosses are restricted from carrying heavy weapons, such as the Pave Hawk's .50-caliber guns.*

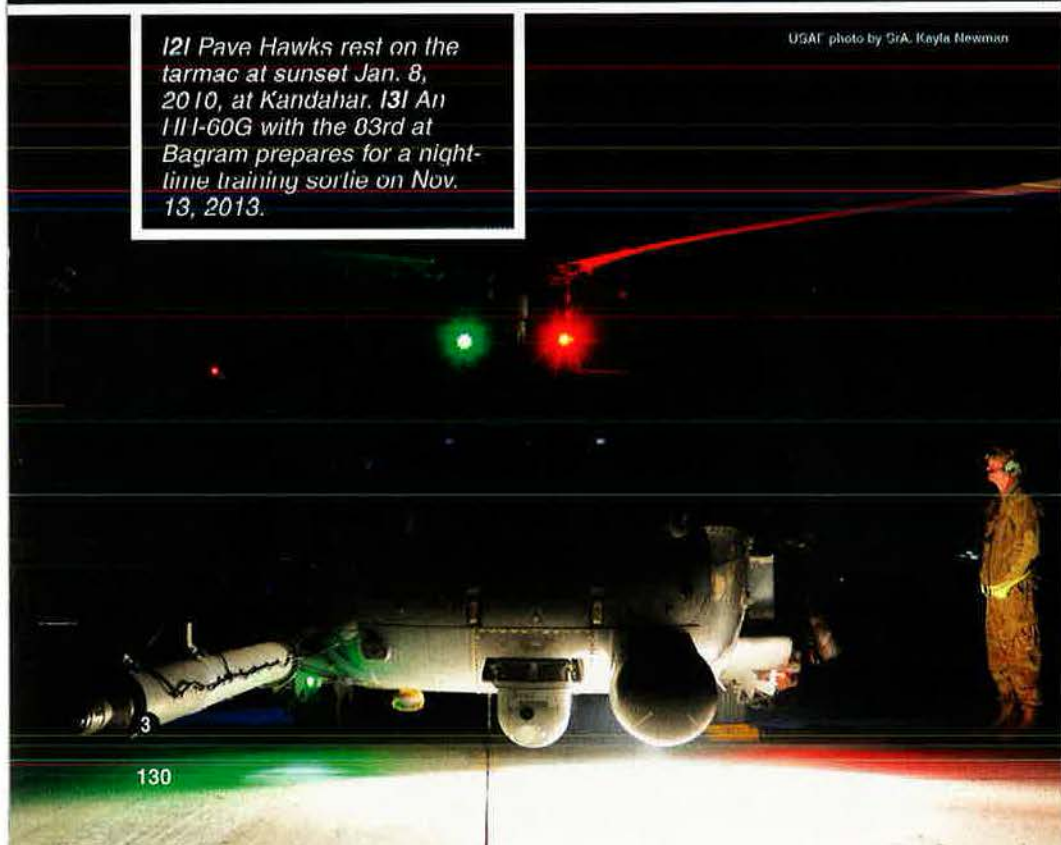


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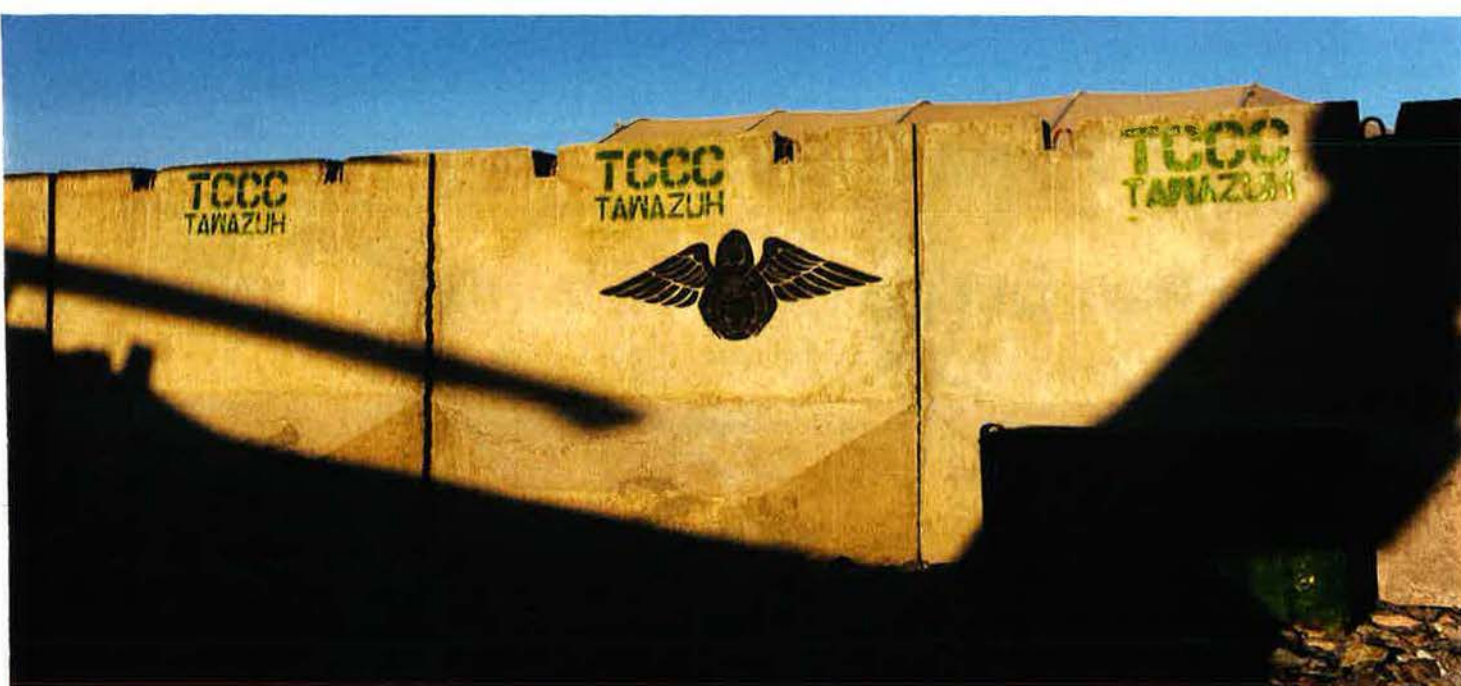
*121 Pave Hawks rest on the tarmac at sunset Jan. 8, 2010, at Kandahar. 131 An IIII-60G with the 03rd at Bagram prepares for a night-line training sortie on Nov. 13, 2013.*

USAF photo by S/A. Keyla Newman

3

130





141 USAF PJs land in Faizabad district in Badakshan province on March 29, 2013. The PJs inspected the area to ensure a sufficient landing zone for operations. 151 An HH-60G casts a shadow on concrete walls surrounding the ramp at Kandahar on Jan. 9, 2010. The logo on the wall is a stylized version of the flashes pararescuemen have on their maroon berets: an angel wrapping its arms around a globe. Missing from the stencil is the PJ motto, "That Others May Live." 161 An HH-60 pilot with the 83rd rushes to his helicopter at the start of a June 12, 2011, mission, as PJs and aircrew prepare to launch the aircraft. It takes an average of less than 10 minutes from the time of alert to have a flight of HH-60s in the air and on the way to pick up wounded.



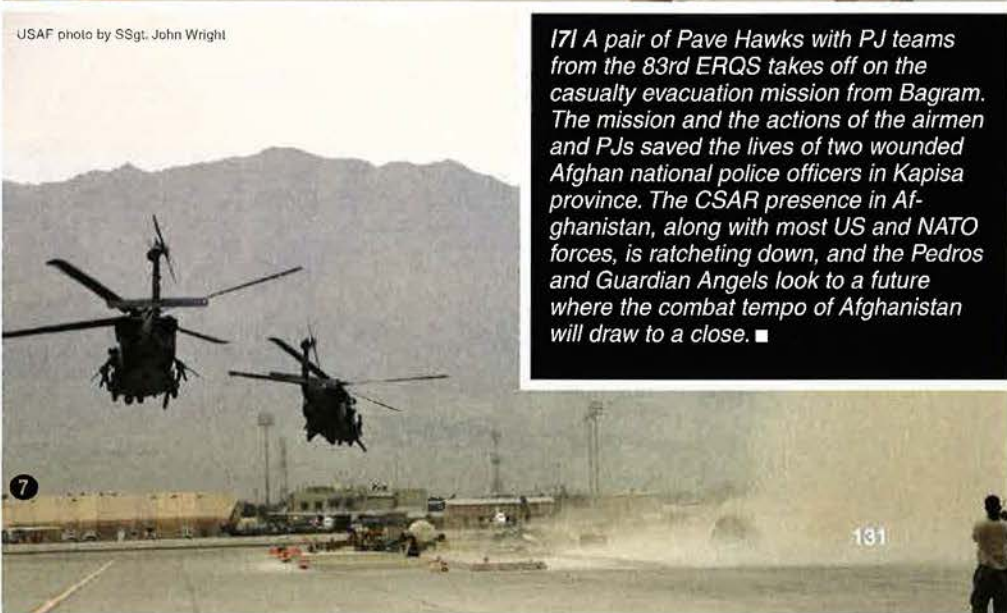
USAF photo by SSgt. John Wright



USAF photo by SSgt. John Wright



US Army photo by Spc. Mitchell Makowicz



171 A pair of *Pave Hawks* with PJ teams from the 83rd ERQS takes off on the casualty evacuation mission from Bagram. The mission and the actions of the airmen and PJs saved the lives of two wounded Afghan national police officers in Kapisa province. The CSAR presence in Afghanistan, along with most US and NATO forces, is ratcheting down, and the *Pedros* and *Guardian Angels* look to a future where the combat tempo of Afghanistan will draw to a close. ■



# Chart Page Special

## Defense Budget at a Glance

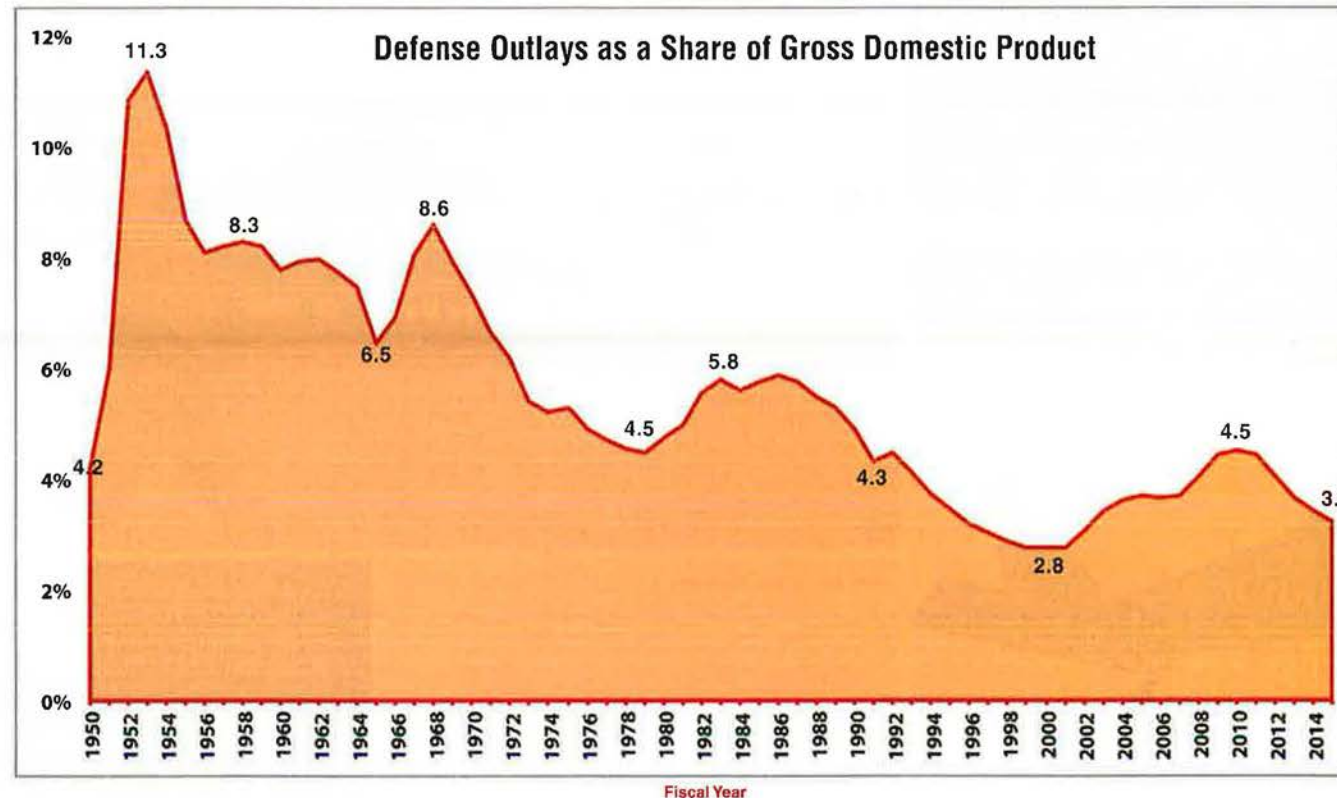
President Obama on March 4 presented Congress a DOD budget request for Fiscal 2015. It seeks \$495.6 billion in budget authority not including war costs and \$575 billion in BA counting war costs. Funding most often is stated in BA—the value of new obligations DOD can incur. (Some are

paid in future years.) Figures can also be expressed in outlays—actual checks written in a given year. “Current dollars” include inflation. With “constant dollars,” inflation has been factored out. Charts address only the Defense Department program.

### Defense Budget Authority

(\$ billions)

	2013	2014	2015	Planned 2016	2017	2018	2019
<b>No War Costs, Current Dollars</b>	\$495.5	\$496.0	\$495.6	\$535.1	\$543.7	\$551.4	\$559.0
<b>No War Costs, Constant FY 2015 Dollars</b>	\$515.5	\$506.4	\$495.6	\$523.9	\$521.1	\$516.3	\$510.9
<b>With War Costs, Current Dollars</b>	\$577.6	\$581.2	\$575.0	\$565.0	\$574.0	\$581.0	\$589.0
<b>With War Costs, Constant FY 2015 Dollars</b>	\$600.9	\$593.4	\$575.0	\$553.1	\$550.1	\$544.0	\$538.3



### Defense Outlays

(\$ billions)

	2013	2014	2015	Planned 2016	2017	2018	2019
<b>Current Dollars</b>	\$607.8	\$593.3	\$584.3	\$557.3	\$547.8	\$549.4	\$556.4
<b>Constant FY 2015 Dollars</b>	\$632.4	\$605.8	\$584.3	\$545.6	\$525.0	\$514.5	\$508.5



**Service Shares**

(Budget authority in billions of constant FY 2015 dollars)

	2013	2014	2015	2016	2017	2018	2019
<b>Dollars</b>							
Air Force	\$151.3	\$137.5	\$137.8	\$145.7	\$144.9	\$143.6	\$142.0
Army	139.3	124.3	120.3	127.2	126.5	125.3	124.0
Navy/Marine Corps	163.6	150.4	147.7	156.1	155.3	153.9	152.3
Defense agencies	99.8	94.2	89.8	94.9	94.4	93.6	92.6
<b>Total</b>	<b>\$515.5</b>	<b>\$506.4</b>	<b>\$495.6</b>	<b>\$523.9</b>	<b>\$521.1</b>	<b>\$516.3</b>	<b>\$510.9</b>
<b>Percentages</b>							
Air Force	29.3%	27.2%	27.8%	27.8%	27.8%	27.8%	27.8%
Army	27.0%	24.5%	24.3%	24.3%	24.3%	24.3%	24.3%
Navy/Marine Corps	31.7%	29.7%	29.8%	29.8%	29.8%	29.8%	29.8%
Defense agencies	19.4%	18.6%	18.1%	18.1%	18.1%	18.1%	18.1%

Note: USAF shares above include non-Blue funding. Outyears estimates based on FY 2015 shares.

**USAF's Blue-only share**

<b>Dollars</b>	\$108.9	\$108.2	\$109.3
<b>Percentages</b>	21.1%	21.4%	22.1%

Note: USAF budget includes Blue dollars, money for programs actually managed by USAF, and non-Blue dollars, money (such as some intelligence and space-related funding) USAF does not manage but that passes through USAF accounts.

**Cutting the Pie: Who Gets What**

(Budget authority in billions of constant FY 2015 dollars)

	2013	2014	2015	2016	2017	2018	2019*
Military personnel	\$140.9	\$138.8	\$135.2	\$145.4	\$145.4	\$145.0	—
O&M	201.8	196.8	198.7	213.2	212.4	209.1	—
Procurement	94.8	94.3	90.4	109.6	112.6	115.4	—
RDT&E	65.9	64.1	63.5	68.0	63.5	60.5	—
Military construction	8.4	8.6	5.4	8.3	8.1	7.5	—
Family housing	1.6	1.4	1.2	1.6	1.5	1.4	—
Other	2.3	2.2	1.2	0.0	-0.4	0.0	—
<b>Total</b>	<b>\$515.5</b>	<b>\$506.4</b>	<b>\$495.6</b>	<b>\$523.9</b>	<b>\$521.1</b>	<b>\$516.3</b>	<b>\$510.9</b>

\*Breakdown not available for 2019.

**Manpower**

(End strength in thousands)

	1990	2000	2013	Est. 2014	Est. 2015	Change 1990-2013
Total Active Duty	2,065	1,384	1,382	1,345	1,309	-683
Air Force	535	356	331	322	311	-204
Army	751	482	532	510	490	-219
Navy	582	373	324	324	324	-258
Marine Corps	197	173	196	189	184	-1
Selected reserves	1,128	865	835	831	821	-293
Civilians (FTE)	997	660	739	755	750	-258

**Operational Training Rates**

	1990	2000	2010	2013	Est. 2014	Est. 2015
<b>Air Force</b>						
Flying hours per crew per month, fighter/attack aircraft	19.5	17.2	19.4	14.8	13.2	12.9
<b>Army</b>						
Flying hours per tactical crew per month	14.2	12.7	12.0	11.6	10.6	10.1
STM*	800.0	669.0	427.0	773.0	616.0	1,072.0
<b>Navy</b>						
Flying hours per tactical crew per month	23.9	20.9	16.6	21.0	17.8	19.7
Ship steaming days per quarter						
Deployed fleet	54.2	50.5	58.0	68.0	45.0	45.0
Nondeployed fleet	28.1	28.0	24.0	24.0	20.0	20.0

Note: Data prior to 2012 is annual tank miles.

**Acronyms and Abbreviations**

<b>AEHF</b>	Advanced Extremely High Frequency
<b>AFRC</b>	Air Force Reserve Command
<b>AGS</b>	Alliance Ground Surveillance
<b>AMRAAM</b>	Advanced Medium-Range Air-to-Air Missile
<b>ANG</b>	Air National Guard
<b>ARNG</b>	Army National Guard
<b>AWACS</b>	Airborne Warning and Control System
<b>BA</b>	budget authority
<b>BCT</b>	Brigade Combat Team
<b>BM</b>	battle management
<b>BUR</b>	Bottom-Up Review
<b>C3</b>	command, control, and communications
<b>CCS</b>	combat coded squadrons
<b>DCGS</b>	Distributed Common Ground System
<b>DMSP</b>	Defense Meteorological Satellite Program
<b>DSRP</b>	Defense Space Reconnaissance Program
<b>EELV</b>	Evolved Expendable Launch Vehicle
<b>FSTM</b>	Full Spectrum Training Mile
<b>FTE</b>	Full-Time Equivalent
<b>FWE</b>	Fighter Wing Equivalent
<b>GPS</b>	Global Positioning System
<b>Helo</b>	helicopter
<b>ICBM</b>	intercontinental ballistic missile
<b>ISR</b>	intelligence, surveillance, and reconnaissance
<b>JASSM</b>	Joint Air-to-Surface Standoff Missile
<b>JDAM</b>	Joint Direct Attack Munition
<b>JSTARS</b>	Joint Surveillance Target Attack Radar System
<b>MEF</b>	Marine Expeditionary Force
<b>O&amp;M</b>	operation and maintenance
<b>PAA</b>	Primary Aircraft Authorized
<b>QDR</b>	Quadrennial Defense Review
<b>RDT&amp;E</b>	research, development, test, and evaluation
<b>SATCOM</b>	satellite communications
<b>SBIRS</b>	Space Based Infrared System
<b>SDB</b>	Small Diameter Bomb
<b>Sigint</b>	signals intelligence
<b>SOF</b>	Special Operations Forces
<b>UAV</b>	unmanned aerial vehicle



### Major USAF Programs RDT&E

(Current million dollars)

Program	2013	2014	2015
<b>Bomber</b>			
B-1B	13.1	12.8	5.4
B-2	279.5	345.3	230.4
B-52	18.0	17.0	55.5
Long-range strike	258.7	359.4	913.7
<b>Fighter/Attack</b>			
A-10	12.3	9.6	0.0
F-15C/D/E	145.0	234.3	330.9
F-16	155.2	112.7	133.1
F-22A	436.4	389.4	330.6
F-35A	1,129.9	631.5	611.7
<b>Helo</b>			
HH-60	32.8	333.6	0.0
<b>ICBM</b>			
Minuteman III	248.9	303.9	229.8
Airborne Recon Systems	88.2	47.2	28.1
Airborne Sigint Enterprise	105.7	100.2	106.8
Air & Space Ops Center	70.9	81.2	127.0
DCGS	66.0	25.6	47.5
E-3 AWACS	47.2	148.4	180.8
E-4	2.2	13.3	28.8
E-8 JSTARS	23.6	23.2	73.1
EC-130 Compass Call	10.7	10.8	14.4
Endurance UAV	74.1	1.0	0.0
MC-12W	0.0	0.0	0.0
MQ-1 Predator	9.1	0.8	1.4
MQ-9 Reaper	130.9	107.3	170.4
NATO AGS	192.6	221.6	232.9
RC-135	0.0	0.0	0.0
RQ-4 Global Hawk	240.2	120.2	244.5
U-2 Dragon Lady	21.7	13.7	5.5
<b>ISR/IM/CS</b>			
C-5	12.2	48.6	38.8
C-17	76.6	97.1	83.8
C-130	14.9	47.7	0.0
C-130J	18.3	22.4	26.7
KC-10	18.5	0.0	2.7
KC-46	1,550.3	1,558.6	776.9
KC-135	0.0	0.0	0.0
<b>Munition</b>			
AGM-158A JASSM	7.1	6.4	15.9
AIM-9X Sidewinder	6.0	12.8	29.7
AIM-120 AMRAAM	68.7	70.6	82.2
GBU-31/32/38 JDAM	0.0	2.5	2.5
GBU-39 SDB	125.1	113.3	68.8
Hellfire	0.0	0.0	0.0
AEHF	211.6	265.6	314.4
Counterspace systems	25.8	22.7	23.8
Cyberspace	63.3	62.6	95.0
DMSP	0.0	0.0	0.0
DSRP	0.0	0.0	0.0
EELV	30.0	24.9	0.0
GPS	693.6	701.2	669.0
Joint Space Ops Center	53.0	56.5	73.8
MilSatCom	106.3	129.8	55.2
SBIRS	486.7	322.4	319.5
Space control technology	20.6	22.9	6.1
Space Fence	0.0	0.0	214.1
Space situation awareness	260.0	338.0	33.3
Spacelift range system	7.8	12.3	13.5
Wideband Global SATCOM	10.4	12.5	31.4
<b>SOF</b>			
AC-130J	0.0	0.0	0.0
CV-22	19.7	46.7	38.7
HC/MC-130	10.6	2.6	7.5

### Major USAF Programs Procurement

(Current million dollars)

Program	2013	2014	2015
<b>Bomber</b>			
B-1B	137.0	107.8	140.3
B-2	118.9	53.8	68.7
B-52	1.9	97.8	185.4
Long-range strike	0.0	0.0	0.0
<b>Fighter/Attack</b>			
A-10	236.9	47.6	0.0
F-15C/D/E	192.5	349.0	388.4
F-16	12.8	12.6	23.3
F-22A	270.9	238.1	186.1
F-35A	2,906.3	3,355.9	4,061.1
<b>Helo</b>			
HH-60	80.5	27.7	60.1
<b>ICBM</b>			
Minuteman III	54.7	21.6	28.5
Airborne Recon Systems	0.0	0.0	0.0
Airborne Sigint Enterprise	0.0	0.0	0.0
Air & Space Ops Center	33.1	26.9	25.8
DCGS	130.0	115.6	206.7
E-3 AWACS	169.4	142.6	176.8
E-4	43.1	14.3	22.3
E-8 JSTARS	48.8	48.1	0.0
EC-130 Compass Call	64.0	29.5	57.8
Endurance UAV	0.0	0.0	0.0
MC-12W	0.0	0.0	0.0
MQ-1 Predator	27.8	7.9	4.8
MQ-9 Reaper	943.5	412.2	395.7
NATO AGS	0.0	0.0	0.0
RC-135	187.9	195.1	177.5
RQ-4 Global Hawk	136.1	45.7	75.8
U-2 Dragon Lady	83.8	49.6	0.0
<b>ISR/IM/CS</b>			
C-5	1,035.5	920.7	346.2
C-17	326.7	148.2	147.6
C-130	120.9	101.9	35.9
C-130J	206.2	648.3	630.3
KC-10	20.1	48.2	34.3
KC-46	0.0	0.0	1,582.7
KC-135	0.0	0.0	0.0
<b>Munition</b>			
AGM-158A JASSM	230.2	271.2	337.4
AIM-9X Sidewinder	72.2	100.6	133.0
AIM-120 AMRAAM	201.4	323.0	329.6
GBU-31/32/38 JDAM	144.6	250.5	101.4
GBU-39 SDB	7.0	40.0	77.5
Hellfire	81.7	64.9	33.9
AEHF	476.6	328.4	298.9
Counterspace systems	19.2	7.1	61.6
Cyberspace	125.6	81.5	122.2
DMSP	88.6	80.5	87.0
DSRP	35.7	150.4	77.9
EELV	1,434.0	1,367.4	1,381.1
GPS	540.3	506.1	344.5
Joint Space Ops Center	0.0	0.0	0.0
MilSatCom	45.0	101.5	41.4
SBIRS	392.3	524.6	450.9
Space control technology	0.0	0.0	0.0
Space Fence	0.0	0.0	0.0
Space situation awareness	0.0	0.0	0.0
Spacelift range system	98.1	90.8	69.7
Wideband Global SATCOM	36.8	34.0	39.0
<b>SOF</b>			
AC-130J	213.8	420.0	0.0
CV-22	311.9	305.6	91.8
HC/MC-130	777.3	663.6	653.0

### Historical Force Structure

### Current Force Structure

	Cold War Base 1990	1990 Base Force	1993 BUR Plan	1997 QDR Goal	2002 Defense Budget		2011	2012	2013	Est. 2014	Est. 2015
<b>Air Force</b>						<b>Air Force</b>					
Active FWEs	24	15	13	12+	12+	Active CCS*	41	41	41	40	36
ANG/AFRC FWEs	12	11	7	8	7+	ANG CCS	24	25	19	21	20
<b>Army</b>						AFRC CCS	4	4	3	3	3
Active divisions	18	12	10	10	10	<b>Army</b>					
Army National Guard	10	8	8	8	8	Active BCTs	45	45	45	38	32
<b>Navy</b>						ARNG BCTs	28	28	28	28	28
Active Aircraft Carriers	15	12	11	11	12	<b>Navy</b>					
Reserve Aircraft Carrier	1	1	1	1	0	Aircraft Carriers	11	11	10	10	10
Active Air Wings	13	11	10	10	10	Active Air Wings	10	10	10	10	10
Reserve Air Wings	2	2	1	1	1	Reserve Air Wing	1	1	1	1	1
<b>Marine Corps</b>						<b>Marine Corps</b>					
Active MEFs	3	3	3	3	3	Active MEFs	3	3	3	3	3
Marine Reserve Air Wing	1	1	1	1	1	Marine Reserve Air Wing	1	1	1	1	1

\*Note: Active CCS includes fighter/attack and strategic bomber squadrons





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## Fogleman Calls Out the Militia

*Gen. Ronald R. Fogleman probably intended to ruffle feathers with an address in Cleveland nearly two decades ago. The USAF Chief of Staff, speaking at a time of budget cuts, called for the armed forces to embrace a "militia model," the historical American norm. Rather than maintaining a large standing force, said Fogleman, the US should field smaller active services and put more reliance on reserves. Fogleman's idea did not meet universal applause. Even so, the idea stuck. His concept was endorsed this year by the National Commission on the Structure of the Air Force.*

**A** fundamental precept of our American military tradition is that the United States of America is a militia nation. It is a militia nation. ... During the Cold War period, where we maintained a large standing military force, ... many of us came to believe that that was the way things had always been and always would be. But the fact of the matter is it was an aberration in our history.

It was an aberration that was driven by a very dangerous threat to America's security. It was driven by a leadership role that we assumed after World War II. It was driven by a very different set of circumstances. ...

The militia tradition goes back nearly 360 years to when the Massachusetts colony established the first militia in North America. ... This tradition was bolstered in large part by a deep resentment of large standing military forces. They were seen as an unnecessary burden on these young colonies. ...

It was in the early 1970s, when we moved to an All-Volunteer Force after the Vietnam War, that the true importance of the Guard and Reserve was brought home to our national security planners once again. Because, when we went to an all-volunteer force, that meant we could no longer pay this force at minimum subsistence-type wages. We were no longer drafting people, asking them to serve for a few years and then letting them leave and go back to society. We were out there effectively competing with the rest of the American workforce to get people to come on board, to stay on board.

We could not afford to pay the numbers of people required to provide the security of this nation. We had to find a better way to utilize our Guard and Reserve forces. From this was born the idea of the Total Force ... that emerged eventually into the Total Force policy in 1974.

As a result, our Guard and Reserve forces have achieved some of the highest states of readiness in the peacetime history of our nation. Units were provided with modern, advanced weapon systems and some of the very best in realistic training. ...

Recently, under President Clinton, we conducted a Bottom-Up Review to [review] this strategy. The concept was validated. In fact, it resulted in further decreases of the Active force.

When we started this process, the United States Air Force had 40 fighter

### "America—Militia Nation"

Gen. Ronald R. Fogleman  
Air Force Chief of Staff  
Remarks to 117th General Conference  
National Guard Association of the United States  
Cleveland, Ohio  
Sept. 7, 1995

Find the full text on the  
Air Force Magazine's website  
[www.airforcemag.com](http://www.airforcemag.com)  
"Keeper File"

wing equivalents of force structure. The Navy had 16 carriers, and the Army had 18 Active divisions. When we complete it, the Air Force will have 20 fighter wings; the Navy 12 carriers; and the Army 10 divisions. Of those 20 fighter wings that the Air Force will have seven of them will be in the Guard and the Reserve. ...

This is no small drawdown. This is a demobilization, and it's taking us back toward our traditional reliance on Guard and Reserve forces. ...

I'll tell you straight out that we consider the Air National Guard and the Air Force Reserve as full partners on our team. We put our money and our first-line equipment where our mouth is. We have relied very heavily on you all to help us deal with the challenges of the post-Cold War world.

As we reduced our force structure some 33 percent, we found ourselves being tasked at four times the rate we had been tasked during the Cold War period. ... We took the logical step of going back to the National Guard and the Reserve to seek additional assistance and look for new and innovative ways that they could help us with this tempo. The response has been tremendous.

The Air National Guard has been an active partner in our contingency operations around the world. Your forces flew mobility missions to deliver aid and supplies and troops to crisis locations and

to refuel the aircraft that built the so-called air bridges. You provided A-10s, F-15s, F-16s and F-4G fighter units for Deny Flight, Southern Watch, and Provide Comfort. You people even volunteered to pull holiday tours so that our Active Duty members could spend Christmas with their families. ...

We're seeking to expand the role of the Guard in areas where it makes sense. The bottom line is that I'm proud to serve with outstanding members of the Army and Air National Guard in these very challenging times. I won't let anybody tell me the guardsmen are just weekend warriors because I know better.



*Capt. Ronald Fogleman, right, was a Misty FAC in the Vietnam War. Standing to his right is Maj. Tony McPeak, who directly preceded Fogleman as Chief of Staff.*





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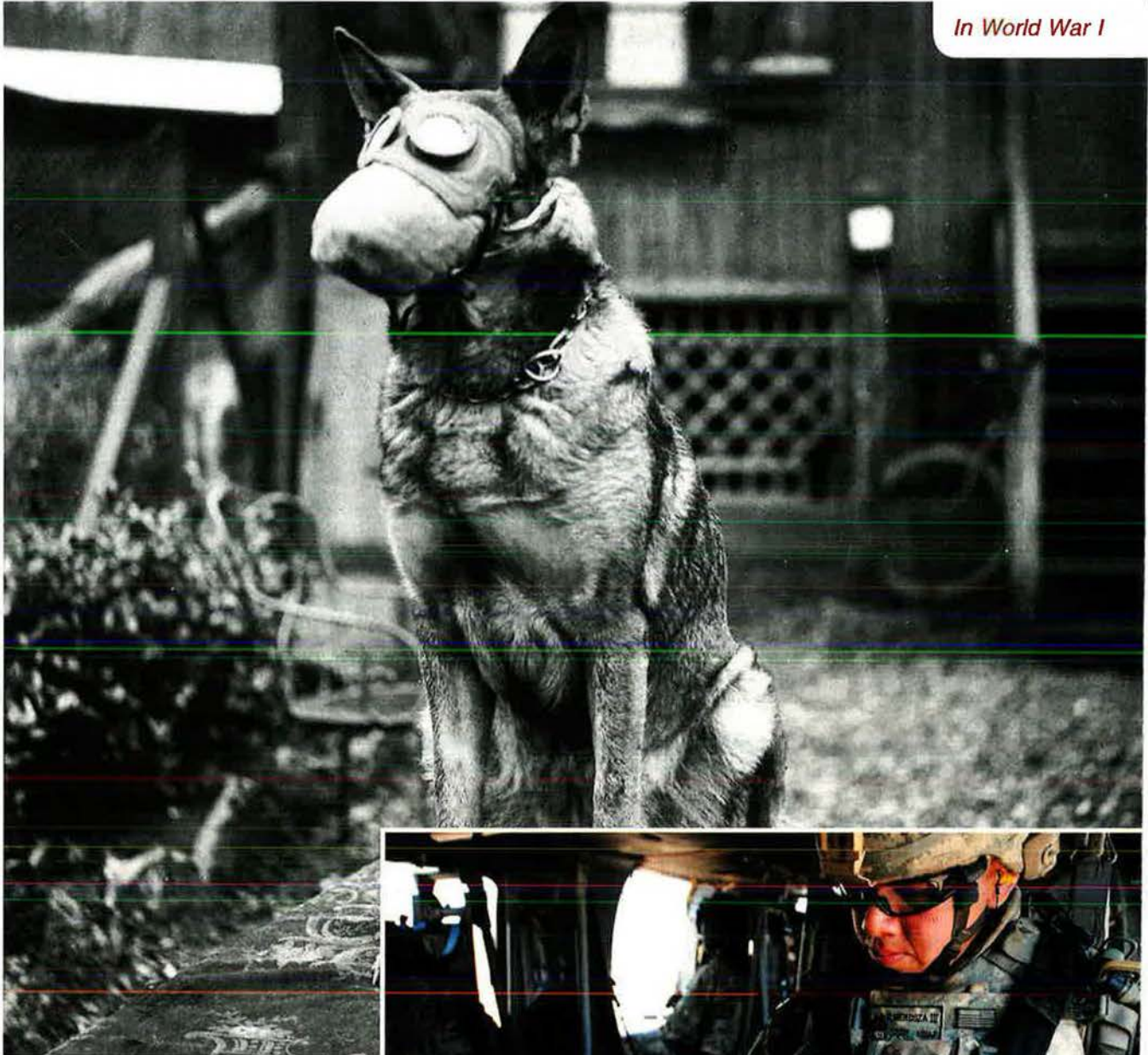
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## Stare of the Dog



*In World War I*

Dogs have been a fixture of human warfare for centuries. Only recently, however, have military canines been seen sporting eyewear. In this 1917 picture, a military German shepherd of the British Army wears a crude gas mask, the better to fend off poison gas attacks. At right, SSgt. Philip Mendoza III admires his military working dog, Rico. Rico, who was assigned to Joint Base Balad in Iraq in 2009, wears "doggles" (really) to guard against blowing sand.



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By Frances McKenney, Assistant Managing Editor

Student photos by Jose Ruiz, Art Institute of Washington



Northern Utah Chapter's retired Maj. Kit Workman (left) coached CyberPatriot VI's All-Service Division winners from Clearfield High School. Here, an unposed photo catches him chatting with John Maxfield and Nate Bertoldie.



Even with Collin Powell and CyberPatriot Commissioner Bernie Skoch (far left) looking over his shoulder, Bertoldie stays focused.

## How to Find a Good Photographer

Several Air Force Association members converged on National Harbor, Md., to coach their CyberPatriot VI teams in the National Finals Competition in March. This presented an opportunity to test a theory:

Unposed, well-lighted, in-focus photos give chapter news a way to stand out from the pack, so can we find a volunteer to take candid photographs—specifically a photographer who could avoid the cliché “grip ‘n grin” and static shots, where people freeze in place and smile for the camera?

Short answer: Yes.

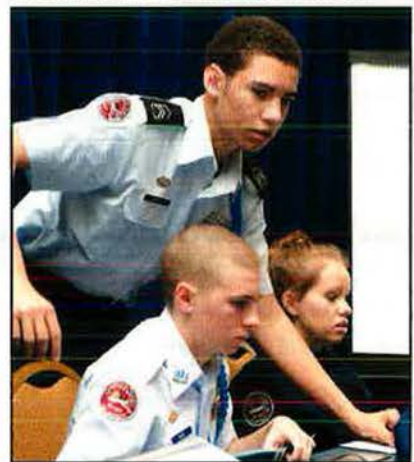
We looked only three blocks away from AFA headquarters in Arlington, Va., to the Art Institute of Washington. Its Career Services section and a faculty member in photographic imagery found two student volunteers—Jose Ruiz and Jabari Bellamy—willing to take photos in return for having their work published.

Ruiz covered the final afternoon of competition at CP-VI. His images, on this page, show an ability to capture unposed moments; to use a flash for indoor lighting; and to position himself to reduce background clutter.

A week later, Bellamy headed to George Mason University in Fairfax, Va., for an inaugural science fair for elementary and middle school students. GMU and Pinnacle Academy in Oakton, Va., organized the event.

William P. Rushing III, the Civil Air Patrol V.P. for the **Donald W. Steele Sr. Memorial Chapter** in Virginia, helped two CAP members judge special-category aerospace-related projects. Rushing awarded AFA memberships as part of

AJ Baker (standing) leads his CyberPatriot teammates Mitchell Bruce and Michaela Ditterline. Harry S. Truman Chapter's John Deese coached this team from Lee's Summit North High School, Mo.



Coach Sandi Boyd of the Alamo Chapter (Tex.), talks to her Alam Academies team before the CP-VI digital forensics challenge.





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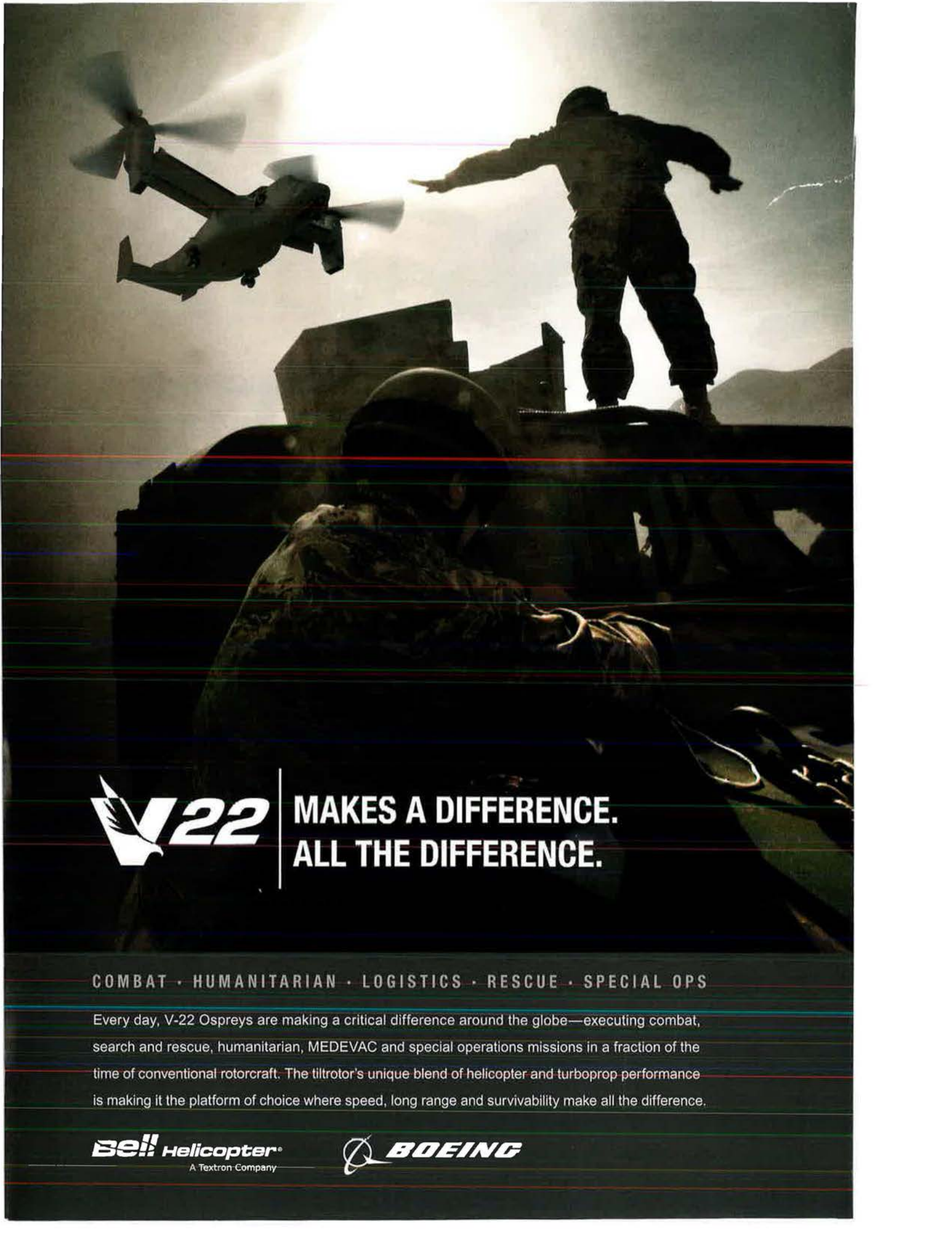
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