An Airman Will Be Chairman 2, 20 | Is the F-35A Too Big to Manage? 10

AIR & SPACE FORCES

airandspaceforces.com

ALMANAC 2023

Published by the Air & Space Forces Association

June/July 2023 $18

AIR & SPACE FORCES

June/July 2023, Vol. 106, No. 6 and 7 airandspaceforces.com

DEPARTMENTS

Air & Space Forces Magazine has used eagles as a symbol of airpower (and now spacepower) since 1997. Since 2020, following the birth of the Space Force, we have depicted two eagles, one for each service. This year's illustration is particularly timely, though, in an era of great experimentation with artificial intelligence. The image here and on the cover are AI-generated eagles, expertly combined, edited, and enhanced by Production Manager Eric Lee and Art Director Dash Parham.

ON THE COVER

Adobe Stock

Air & Space Forces Magazine (ISSN 0730-6784) June/July 2023 (Vol. 106, Nos. 6 and 7) is published monthly, except for two double issues in January/February and June/July, by the Air & Space Forces Association, 1501 Langston Blvd., Arlington, VA 22209-1198. Phone (703) 247-5800. Periodical postage paid at Arlington, Va., and additional mailing offices. **Membership Rate:** $50 per year; $35 e-Membership; $125 for three-year membership. **Subscription Rate:** $50 per year; $29 per year additional for postage to foreign addresses (except Canada and Mexico, which are $10 per year additional). Regular issues $8 each. USAF Almanac issue $18 each. **Change of address** requires four weeks' notice. Please include mailing label. **POSTMASTER:** Send changes of address to Air & Space Forces Association, 1501 Langston Blvd., Arlington, VA 22209-1198. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air & Space Forces Association.

By Tobias Naegele

An Airman Will Be Chairman

When President Joe Biden stepped into the Rose Garden May 25 to announce the selection of Gen. Charles Q. Brown Jr. to be the next Chairman of the Joint Chiefs of Staff, he opened a new chapter in U.S. military history.

For the first time in 18 years, an Airman will be the commander in chief's top military adviser, and not a moment too soon.

After two decades of forever ground wars that accomplished almost nothing, threats we've seen bubbling up on the horizon for a decade are now in clear focus to the masses. Like a neighborhood bully spoiling for a fight, China is flexing its muscles and strutting its stuff, trying increasingly to intimidate neighbors and rivals while professing innocence at every turn.

Brown Is perfectly suited to the challenges at hand. An experienced operator who has organized and led forces in the Indo-Pacific, Europe, and the Middle East, he's also a master tactician, having been an instructor and later the commandant of the Air Force Weapons School at Nellis Air Force Base, Nev., where the best operators go to supercharge their skills.

Brown was the brains behind the air campaign that turned the tide against ISIS in Syria. Working hand-in-glove with Air Force Secretary Frank Kendall, he has made real progress to bring a sense of urgency to modernizing and readying the Air Force for future conflict. His "Accelerate Change ... or Lose" treatise made plain the choice ahead, and his emphasis on commanders taking charge and finding ways to solve their challenges without waiting for someone to give them the answers helped reinvigorate the innovative spirit that has been an Air Force hallmark since its infancy as a rogue element within the Army.

"Wars begin when governments believe the price of aggression is cheap."
— President Ronald Reagan, January 1994

That's the spirit and perspective the President and Secretary of Defense need as they preside over a military enterprise that must rapidly evolve and adapt to systemic changes in every aspect of the enterprise. For the first time in a generation—indeed, nearly two—America faces a peer rival with the military chops to challenge the United States in every domain.

China is closing in on its stated goal to be able to take by force, should it choose to do so, the island state of Taiwan. At the Shangri-La Dialogue in Singapore in early June, China's Defense Minister Gen. Li Shangfu made it abundantly clear that he sees Taiwan not as a sovereign entity, but as a wayward child that must be brought to heel.

"It is the core of China's core interests," he said in his address. "Taiwan is an internal affair. How to resolve the Taiwan question is a matter for Chinese to decide."

The United States is not an ally or a competitor, in his view, but a provocateur, spoiling for trouble in China's backyard.

Days before the annual conference, one of China's warships cut off a U.S. Navy destroyer exercising in the South China sea, aggressively sailing in its path and forcing the U.S. ship to slow down. In another incident, a Chinese fighter jet banked sharply and intercepted a U.S. RC-135, flying so close as it crossed the slower plane's path generating turbulence with its jet wash.

Blame the U.S., Li said. "In China, we always say, 'Mind your own business,'" he explained. "Take good care of your own vessels, your fighter jets, take good care of your own territorial airspace and waters. If that is the case, I don't think there will be future problems."

Unsaid but implied: If you fly your colors in our neighborhood, watch out. This is the language of bullies and gangsters, not leading nations. But at least we know what we're up against.

Brown is thoughtful on the subject. On a June 7 visit to AFA's Mitchell Institute for Aerospace Studies, Brown invoked President Ronald Reagan, offering a quote from a 1984 speech: "History teaches that wars begin when governments believe the price of aggression is cheap." Reagan's point then—and Brown's today—is that aggressors read the room and place their bets.

That's what Vladimir Putin did in 2022, reasoning that the West would splinter, and that NATO would sacrifice Ukraine in exchange for Russian fuel and future peace. Putin bet wrong. Brown's job is to help make sure China is clear on our intent.

In an earlier speech, Reagan made a similar observation, noting that "War comes not when the forces of freedom are strong, but when they are weak. It is then that tyrants are tempted."

China must not be tempted.

Brown wants to make sure China draws the right conclusions about American resolve. He's spent the past three years focused on reinvigorating an Air Force broken by overuse and underfunding. He sees clearly how the Air Force "probably became too efficient" over time, too reliant on buying minimal quantities of aircraft and munitions, only to discover too late that it lacked the capacity required to be ready when needed.

As Air Force Chief, Brown was a force provider, and sometimes struggled to deliver. "When I engage with the combatant commanders, particularly [on] these contentious issues, where they want more Air Force, I tell them, 'Don't fight against the Air Force, fight for the Air Force.' If you want more Air Force, you've got to resource the Air Force."

As Chairman, he'll have an opportunity to exert influence across the joint enterprise, including how requirements should be met and resourced. Don't expect him to be blindly parochial in his outlook—as some of his predecessors have been—that's not his style nor should it be.

But count on him to be clear, direct, and blunt, when necessary, all of which should help some future Chief meet the inevitable COCOM demands "for more Air Force" when—not if—they come.

China's talk on Taiwan may be brutish, but the Chinese can be subtle too. The key is understanding our adversary, learning their patterns, approaches, style, and thought processes, how they react to different stimuli, when they blink.

Brown is a thinker. Asked if more bomber flights in the Indo-Pacific would demonstrate greater U.S. resolve, he was unmoved. Deterrence is not just about swinging elbows, or dangerously crossing the flight path of your adversary, daring him to make a mistake.

You must ask, Brown said: "Is that going to send the right message—do we really understand that? ... You can fly and burn a lot of JP-8 doing things, but is that sending the message you want to be received by our adversaries? And by our allies and partners? That takes deeper thought."

Does China understand where the U.S. is coming from? Is China deterring—or is it goading the U.S. into conflict? It's hard to say. Defense Secretary Lloyd Austin let Li know he was open to meeting in Singapore. Li declined. One senses he has his talking points, but nothing to negotiate. He knows what his boss wants, but not how to get there.

In Brown, Austin and President Biden have a sharp and thoughtful adviser, practiced at the high-speed, high-stakes, three-dimensional strategy game called dogfighting, proven at multiple levels in combat, and seasoned after three years as the Air Chief. Game on.

WESCAM MX SYSTEMS

COMBAT-PROVEN PRECISION WITH WESCAM MX™-SERIES SOLUTIONS

Control the battlefield and execute quick-strike capability with extreme precision and agility. Operate at ranges outside of the light-weapons threat envelope. L3Harris' portfolio of WESCAM MX targeting systems provides powerful designating capabilities and combat-proven solutions for day, low-light and night missions.

- Maintain full situational awareness while identifying targets of interest with separate wide angle and spotter cameras
- Achieve precise targeting with an independent, fully-stabilized designator
- Keep cross-hairs on target with accurate and stable geolocation and auto-mode steering
- Nose, pylon, canopy and mast sensor mounting options

Learn more at www.L3Harris.com/MX15D

L3HARRIS.COM

L3HARRIS®
FAST. FORWARD.

LETTERS

Vietnam Reading List

Col. Phillip Meilinger was absolutely correct ["Readings on Vietnam" April, p. 54] when he stated "... the Vietnam War continues to haunt the U.S. military, veterans, policymakers, and families." I know because I was there. Like most veterans, I simply got on with my life and tried to forget being blamed for that war by my fellow citizens. But the memories never went away.

I am an author and always wanted to write the great American novel of the Vietnam War. After years of false starts, I finally finished a novel titled "The Trash Haulers." The plot is based on an air evacuation of wounded Marines that I flew in 1966. It wasn't what I had envisioned, but it captured the war that I experienced.

The story ends with a l'envoi that describes what remains of the laterite runway at the heart of the story. "In a generation, it will be gone, swallowed by vegetation, climate, and time, and the land will again claim its sovereignty, humbling the proud with a mute lesson—this was no place to fight a war."

Maj. Richard Herman,
USAF (Ret.)
Rio Vista, Calif.

We became pawns in long drawn out high-level conflict negotiations between Washington and Hanoi.

I was assigned to the 17TRS, Udorn RTAFB (1967). The squadron had 12 KIAs, five POWs, and one shot down twice and recovered. His Southeast Asia tour ended with 89 missions over North Vietnam. Fifty-five pilots completed their 100 missions tour.

I had follow-on assignments to England, Germany, 12th Air Force, Austin, Texas, University of Pittsburgh and CINCPAC as a planning officer on the J5 [Strategy, Plans, and Policy staff], where I helped plan the evacuation of Saigon in 1973.

Col. Roger W. McLain,
USAF (Ret.)
Austin, Texas

Colonel Meilinger's reading list is on the mark. I urge that Peter Braestrup's "Big Story" be added to the list. For those wondering how America was turned, this book tells the story.

How the American press and television reported and interpreted the crisis of Tet 1968 in Vietnam and Washington, has never been told as well. The book is hard to find.

Maj. Gen. Bill Doyle,
USAF (Ret.)
Papilllion, Neb.

"Readings on Vietnam" by Col. Phillip S. Meilinger, USAF (Ret.), including "The Air War" section was "on target," with one significant omission regarding Laos. The rules of engagement for the covert USAF bombing campaign in Laos that targeted North Vietnamese forces traveling the Ho Chi Minh Trail required in real time the personal authorization of U.S. Ambassador to Laos, William H. Sullivan (1964-1969).

All 7th Air Force activity in Laos from airstrikes to aerial reconnaissance to rescuing downed Airmen had to be approved by (our 7th Air Force nickname) "Field Marshal" Sullivan.

In 1966-1967, I was assigned as an air intelligence officer to the Directorate of Targets, 7th Air Force headquarters (Saigon), and detailed as the daily Operation Rolling Thunder "out-country" operations and bomb damage assessment (BDA)

WRITE TO US

Do you have a comment about a current article in the magazine? Write to "Letters," *Air & Space Forces Magazine*, 1501 Langston Blvd, Arlington, VA 22209-1198 or email us at 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.

INDEX TO ADVERTISERS

Air & Space Forces Association

1501 Langston Blvd • Arlington, VA 22209-1198

afa.org
Telephone: **703.247.5800**
Toll-free: **800.727.3337**
Fax: **703.247.5853**

AFA's Mission

Our mission is to promote dominant U.S. Air and Space Forces as the foundation of a strong National Defense; to honor and support our Airmen, Guardians, and their Families; and to remember and respect our enduring Heritage.

To accomplish this, we:

- **Educate** the public on the critical need for unrivaled aerospace power and a technically superior workforce to ensure national security.
- **Advocate** for aerospace power, and promote aerospace and STEM education and professional development.
- **Support** readiness for the Total Air and Space Forces, including Active Duty, National Guard, Reserve, civilians, families and members of the Civil Air Patrol.

Contacts

CyberPatriot . . . . . **info@uscyberpatriot.org**
Field Services. . . . . **field@afa.org**
Government Relations. . . . . **grl@afa.org**
Insurance. . . . . **afa.service@mercer.com**
Membership. . . . . **.membership@afa.org**
News Media. . . . **.communications@afa.org**
StellarXplorers . . . . . **.STLX_info@afa.org**

Magazine
Advertising. . . . . **.kbrown@afa.org**
Editorial Offices. . . . . **.afmag@afa.org**
Letters to Editor Column. . . **.letters@afa.org**

Change of Address/Email

In an effort to stay connected with AFA and your local chapter, please update your mailing and email addresses. Change of address requires four weeks' notice.

To update your contact information:

- **Email:** membership@afa.org
- **Visit:** The Members Only area of our website, afa.org
- **Call:** Our Membership Department at 1-800-727-3337

Mail your magazine label, including your first and last name, to our Membership Department at 1501 Langston Blvd., Arlington, VA 22209-1198.

briefing officer to U.S. forces Commander Gen. William C. Westmoreland and the Military Assistance Command-Vietnam (MACV) general staff.

Capt. Rollie Sterrett,
USAFR (Ret.)
Simsbury, Conn.

Fatigued

Reading the April 2023 issue of Air & Space Forces Magazine, I realized that almost every picture of the Airmen, enlisted to officer, were dressed in what we used to call "fatigues!" I guess now they're called "BDUs" even when we're not battle dressed for imminent warfighting!

Whatever happened to dress Blues? I felt proud and part of the Air Force when I put them on (believe it or not, even the garrison hat!). Of course when maintaining the fleet on the flight line I was rolling around in engine oil and hydraulic fluid in fatigues, so putting the Blues on was a privilege.

Parting shot: Consider the picture on page 34 of the swearing-in of new recruits, wouldn't it be better if the officer performing the ceremony was dressed in Air Force Blue, inspiring them by the real look of the Force?

Peter Hansen
Torrance, Calif.

Editor's Note: The BDU was phased out in 2011 in favor of the Airman Battle Uniform, or ABU, which themselves were phased out in 2021. Today's combat uniforms are dubbed OCPs, for Operational Camouflage Pattern.

Help Wanted

The April 2023 Editorial ["Why Recruiting is in Crisis," p. 2] comes up will all sorts of excuses as to why the military is having a tough time recruiting individuals. "Americans are having fewer children," "Americans are more protective of our children," and "more 18- and 19-year-olds are going to college" are just three of the excuses used. How about putting all the excuses aside and really telling the truth! The military is having trouble recruiting partially because it has become "woke!"

The U.S. military needs to wake up and get their head out of the sand. Trying to appease everyone because you might hurt someone's "feelings" is NOT doing the military any good. The job of the military is to kill the other guy before they can kill you! End of story. The Chinese do not care if they "hurt your feelings" as they are marching into your city/town/country.

I joined in 1974 and we had members of the LQBT+ among our ranks. The difference is that they kept it to themselves. We have enough things to worry about in today's world. Our recruits are suffering more injuries in Basic Training than in the past because they are out of shape. The military has had to change their rules on tattoos, lowering their standards to who can and cannot join. When will it stop?

The United States of America was once a feared country. The U.S. military, there was nothing finer—not anymore.

TSgt. Bruce D. Knoblock,
USAF (Ret.)
Sumter, S.C.

Airman 1st Class Seth Haddix

Staff Sgt. Vernon Young Jr.

(At top) Graduating Airmen participating in the Oath of Enlistment during the Basic Military Training graduation ceremony in 2020 at Keesler Air Force Base, Miss., vs. Airmen repeating the Oath of Enlistment in 2011 at Lackland Air Force Base, Texas.

Although Tobias Naegele brought up a few plausible reasons for the decline in recruiting, I truly believe he left out one other important reason: In today's current society, being in uniform, whether it's becoming a police officer, a border patrol agent or in military uniform, seems to be frowned upon.

My DOD job allows me to work closely with military recruiters of all branches, and we discuss this very topic all of the time. When you have parents, school teachers, college professors, and even dozens of politicians freely voicing their negative opinion about the military and law enforcement, what more would you expect than low recruitment? In many places schools and colleges do not allow ASVAB (Armed Services Vocational Aptitude Battery) testing or military recruiters or even security guards on the school grounds because the school staff thinks seeing a person in uniform, may "upset" the students. Really?

I have been to several schools where the Pledge of Allegiance is no longer said because it may offend someone.

I'm sure Naegele did plenty of research before getting his editorial published, but maybe in the future, he should speak with some military recruiters that actually have contact with potential recruits and ask them why young people don't want to join the military.

Chief Warrant Officer 5 Casey Davis,
USA (Ret.)
Colorado Springs, Colo.

Tobias Naegele's editorial was good, but the situation is worse than he describes. My employer required me to be in a dozen high schools of mostly Black and Latino students. The jobs I had on offer weren't for all students, and I would suggest the U.S. military as an alternative. The response I got 90 percent of the time was, "that's a White man's military."

When I would point out the fact that there are more Blacks and Latinos in high responsibility positions by percentage in the U.S. military than in corporate America—I was greeted with silence. The response from female members was like asking them if they'd volunteer to eat rocks. In schools where the student body was predominately White, the suggestion of a military career was accompanied by laughter.

I agree that a major problem is that many Americans today do not personally know service members nor do they encounter them in church or social settings. This is a problem that the Air and Space Forces must solve on a personal level; it has to be the responsibility of each service member, including the officer class, to raise their visibility in those venues or to accept that said services will wither.

One other fact skipped by the editorial is the "let someone else do it" attitude adopted since the end of the universal draft. The era of having a known service member in every family ended, and Americans have wholly grasped allowing someone else's son or daughter to protect and serve this country. They have heard no call from their government, military, or social organizations to enlist their children, and it's obvious that even with college, social, and citizen's duty benefits, the concept does not appeal.

If the Air and Space Forces and our other military services don't soon change these things, we'd better pray for real innovations in robotics, because there won't be any "live" volunteers left.

Norman E. Gaines Jr.,
Hartsdale, N.Y.

Unclear Clearances

Regarding the May Editorial ["Youth and Consequences," p. 2], while I certainly understand the premise of "430 risky parties" even if 99.99 percent of those cleared could be trusted, perhaps part of the answer is not in the 99.99 figure, but in the "just under 4.3 million" number cited as holding a security clearance or granted a clearance but not accessing classified material.

Each clearance requires an investigation, and sometimes multiple investigations—and that is a manpower intensive effort. While several attempts have been made in the past to balance investigations and clearances, we still have too many clearances out there.

Maybe we should do a complete position-by-position review to ascertain which positions actually warrant a clearance and eliminate those that don't—thus freeing up that manpower to concentrate on truly needed investigations.

Lt. Col. David C. Mason,
USAF (Ret.)
Williamsburg, Va.

As a former Air Force officer who held a top secret clearance during my military service (1964-68), I'm appalled by this huge security failure. How does a National Guard Airman with just two stripes on his sleeve gain access to some of our nation's most sensitive information?

No one below the rank of staff sergeant in the Air Force, Army or Marines, or petty officer 2nd class in the Navy, should have access to highly classified data.

[Those more junior] are generally too young, inexperienced, and immature to act responsibly. It's time to raise the bar for security clearances. Our military leaders must shape up or ship out.

Security clearances for civilians must also be substantially limited. You noted that nearly 3 million people held U.S. security clearances as of October, 2019. How can we protect highly sensitive information when so many people have potential access to it? The number of security clearances for civilian federal government employees and private contractors working for the government should be reduced.

Clearances for those in both categories must be revoked immediately after they leave government service. Failure to do so increases the risk of compromising our nation's most vital data.

Richard Reif
Flushing, N.Y.

It is very troubling that a 21-year-old released secret documents. It should be remembered that some of the more serious security breaches occurred with people older and more senior.

John Walker was a Navy officer who, along with many in his family, gave secrets to Soviets. Daniel Ellsberg, a Marine officer, released the Pentagon Papers.

Joe Domhan
West Babylon, N.Y.

Modernization

In "13 Programs That Define the Future" [April, p. 40], sure enough, the upgrade of the nuclear ICBM force didn't make the cut. However, I see we need another bomber that can get to strategic targets in about 8 hours and a transformer look-alike Combat Rescue Aircraft.

Additionally, we will keep (modernized again) KC-135s and KC-10s and try to get the KC-46 fully combat operational while we punt and plan another follow-on tanker plus a stealth follow-on. I realize the mission of the Air Force is to promote every kind of hairbrained flying vehicle we can dream up down near the purple water fountain in the Pentagon and then soak the national treasury with their cost overruns for years and years.

However, what scares the hell out of our enemies is a proven capability that can deliver weapons on target in the shortest time at many times the speed of sound with the greatest accuracy and in the most cost-effective manner. No weapon system in the history of the Air Force has been more cost effective as a deterrent than the ICBM force. Therefore, we better get off our cans and field the new ICBM system because that is what the enemy fears.

Col. Quentin M. Thomas,
USAF (Ret.)
Woodstock, Ga.

JROTC

Regarding "Recalibrating JROTC," [May, p. 36], I would like to see more military in our nation's schools. If we have a peaceful draft our students are woefully unready. My ideas to improve military recruitment and the teacher shortage at the same time:

- Reactivate the High School Victory Corps of 1942.
- Follow the lead of our new NATO member Finland. They require all healthy 18-year-old males to dedicate one year of military service to their country. They have until age 30 to fulfill this requirement. We should do the same. Finland, a small country, can immediately call up 280,000 troops if needed in an emergency.
- We also need to pressure all state departments of education to eliminate most certification rules and simply hire good teachers, instructors, and tutors. This would also help recruits pass the ASVAB exam in mathematics and electronics.

Implement these ideas and I believe our nation will be better positioned to engage in warfare if needed.

Staff Sgt. Norman North,
USAF (Ret.)
Springdale, Ark.

The Fight Continues

I read with interest the well-crafted article ["Rescue & the High-End Fight," May, p. 28] on rescue's future. I have three observations supporting the weapons officers' commentary countering the ill-advised senior leader opinions and resultant POM prioritization and Combat Rescue Helicopter (CRH) program termination.

1. Cutting the force structure to 66 percent of the current helicopter forces will condemn the community to that program of record (POR) size now and in the future when some new technology is realized because that will become the "Whiskey POR." Where are those positions going? And how will they be recovered? This cut is a violation of the moral imperative to leave no one behind. Have we learned nothing from post-Korea, and post-Vietnam interwar CSAR eviscerations? Secretary of the Air Force Frank Kendall's claims that any DOD vertical lift asset can do PR is not just wrong it's refuted in history (downed F-16 Iraq, Feb. 27, 1991) and Joint Forces Command Joint CSAR capabilities assessment from 2009.

JFCOM's Assessment of Combat Search and Rescue Requirements in a Joint Context force structure analysis directed by RMD-802 advised 171 aircraft to meet moderate deployment dwell risk, 146 to meet high risk. [Norton] Norty Schwartz unilaterally chopped the CRH POR to just 112, an unsustainable structure according this JFCOM study. This recent program termination puts CSAR in unsustainable extreme risk according to the study, history, and demand signal realities.

2. The rationale for the cuts: "Divest to Invest" is suspect at best for CSAR because there are no commercial off-the-shelf ready or viable technologies for the mission. Further, just what problem set are these electric vertical takeoff and landing innovations supposed to solve? Certainly not INDOPACOM range, speed, and survivability concerns. How does an injured survivor get in the unmanned aircraft and how does this aircraft defend itself when it's manned with the survivor on board, becoming an enemy's strategic target?

3. The April 27 House Armed Services Committee Air Force budget hearing coverage of this topic was plagued by a misleading statements. One question, stated as premise that the CV-22 was the only USAF aircraft capable of accomplishing the INDOPACOM CSAR mission.

That premise is shamefully wrong. In fact, the CV-22 is physically incapable of accomplishing the CRH specification mission profile at only 195 nautical miles, let alone the INDOPACOM ranges in which the CV-22 proponents claim it to be uniquely capable. While the [Future Long-Range Assault Aircraft] tilt-rotor may be a future CSAR candidate, a properly equipped variant is likely 15 years from IOC leaving CSAR pathetically gapped until then.

My congratulations to the morally courageous weapons officers quoted in the article who are doing their duty as Weapons School graduates to set the record straight technically and tactically. They should have been consulted by USAF senior leaders before the poorly informed decisions we made. Let's do our part to make sure Congress reverses those bad decisions.

Lt. Col. Steven D. Colby,
USAF (Ret.)
Former 34th Weapons Sq. Commander
Owego, N.Y.

Pride

I enjoy every issue of the Air & Space Forces Magazine, and was very glad to see and read the letter by Col. Charlie Simpson ["Letters," May, p. 6] about his time with Gen. Curtis E. LeMay. Another great recognition of the best general officer of all time. I too served 22-plus years of my 30 years in the Strategic Air Command under General LeMay. My time started in 1954 and ended when he retired.

I had the privilege of meeting LeMay in the mid-1950s at Hunter Air Force Base in Georgia when he came in to the crew briefing after the first launch off alert configuration (ROMEO) of the KC-97G Tankers.

I was crew chief on Tanker 56-6648. He was a great people person, leader and took care of his people—especially his enlisted ranks.

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

I was privileged to command Combat Rescue in the early 1980s. It's deja vu all over again. At the time we were still flying aging Vietnam-era Hueys, H-3 "Jolly Greens" and H-53s.

I remember pounding the halls of the Pentagon trying to convince the "Fighter Pilot Mafia" on the Air Staff that the next generation of fighter pilots should be provided the same protection they had when fighting in Vietnam. That is, knowing that should they go down in hostile territory, an elite force of highly trained heroic Airmen would risk everything to bring them home.

It was an uphill battle. They saw every new helicopter as one less F-16. Eventually we won them over.

Next I testified before Congress, a much more receptive audience to modernizing the fleet.

On Dec. 7, 1982, I personally took delivery of the first USAF UH-60A Black Hawk and flew it out of Stratford, Conn.

Even in peacetime we recorded over 2,000 rescues each year ... everything from lost civilian hikers to plucking downed Naval aviators from the ocean.

The rescue motto ... "These things we do that others may live," and the concept of never leaving anyone behind, are values and concepts unique to America. The bean counters should keep that in mind when contemplating the future of rescue.

Maj. Gen. William J. Mall Jr.,
USAF (Ret.)
Fullerton, Calif.

Gratitude

I would like to thank Nick Adde and Air & Space Forces Magazine for a fair article about the very long delay in restoring the grade of my father.

The White House tapes which exonerated my father were first disclosed in 2007 in Air Force Magazine by Lt. Gen. Aloysius Casey and his lawyer/son Pat Casey—obtained while doing research for a book on Gen. Jerry O'Malley.

We are forever grateful to Gen. Ed Rodriguez, Col. Gordon Wilder, Mr. Casey, Myers, Brier & Kelly, LLP and Professor Mark Clodfelter for the thousands of hours they have all worked to correct the record.

John D. Lavelle Jr.
Basye, Va.

Correction:

The article **"Clearing the Air"** (May 2023, p. 41) incorrectly described President Richard Nixon's 1972 visit to Moscow as the **first** by an American President since President Franklin D. Roosevelt.

As alert readers recognized, Roosevelt never visited Moscow. Nixon's visit was the first by an American President to the Soviet Union since Roosevelt's trip to the 1945 Yalta Conference, 800 miles south of Moscow on the Black Sea.

Reunion Notice:

Berlin Airlift Veterans Association (BAVA) Reunion, to include the 317th Veterans Association and the Burtonwood Association **Sept. 27-30, 2023,** in Little Rock, Ark., at the Hilton Garden Inn, Little Rock Downtown. For additional information and details, **Contact: Eddie Ide, Reunion Chairman** (eddieide@adeda.net) (828-304-5369 or 828-238-6297).

VERBATIM

Commander's Intent

"General Brown is a proud, butt-kicking American Airman."

—President Joe Biden announcing his nomination of Air Force Chief of Staff Gen. Charles Q. Brown Jr. to be Chairman of the Joint Chiefs of Staff at the White House, May 25.

John Goddin/USAF

CUT TO THE CHASE

"We are witnessing a cultural shift. Engineers want to work on problems for the DOD. We're going to have an explosion of defense technology. Capital is following the engineers and following DOD opening of the aperture who want innovation."

—Alex Moore of 8VC, a venture capital firm in his panelist's remarks from this year's USSOCOM and Industry's SOF Week Conference in Tampa, Fla., in May.

Repeat After Me

"How many Guardians can recite the current mission statement of the Space Force? My guess is very few."

—Gen. B. Chance Saltzman in a C-Note to Guardians, asking for input in crafting a new mission statement for the Space Force, May 15.

A Resurgent Cold War ...

"The Cold War mentality is now resurging and greatly increases security risks of block confrontation in the Asia Pacific. Some big power continues to promote its so-called Indo-Pacific strategy. China holds that no strategy should ... aim to build exclusive military alliances against imagined threats, as this could easily lead to a self-fulfilling prophecy. The true design of pushing for NATO-like military alliances in the Asia Pacific is to hold countries in the region hostage and play up conflict and confrontation. Such attempts will only plunge the region into a whirlpool of division disputes, and conflicts."

—Chinese Defense Minister Li Shangfu at the Shangri-La Dialogue [June 3].

Chad McNeeley/DOD

... Is Not What We Seek

"We won't be deterred by dangerous operational behavior at sea or in international airspace. ... We will not flinch in the face of bullying or coercion. ... The whole world has a stake in maintaining peace and stability in the Taiwan Strait—the whole world. The security of commercial shipping lanes and global supply chains depends on it. And so does freedom of navigation worldwide. ... The United States does not seek a new Cold War and competition must not spill over into conflict. And the region should never be split into hostile blocs."

—U.S. Defense Secretary Lloyd Austin at the Shangri-La Dialogue [June 2].

Home (Far) Away From Home

"Building humanity's first home on another planet will be one of the most ambitious construction projects in human history and will push technology, engineering, science, and architecture to new heights."

—Icon Technology CEO Jason Ballard, whose company has a $57 million contract with NASA to research lunar construction on the moon, starting with testing of a 3D-printed building [Wired, May 23].

National Archives

Originalism

"I don't see anywhere in the Constitution where it says one senator gets a bug up his a_ _ and he can shut down everything for however long."

—Rep. Adam Smith (D-Calif.), ranking member of the House Armed Services Committee, on Sen. Tommy Tuberville's hold on senior military promotions, at an event at the Council on Foreign Relations, [May 16].

Look Deeper

"Our belief is that the Air Force cannot hire enough mental health providers, counselors, and chaplains to lead us out of this crisis. Ultimately, mental illness and suicides are symptoms. They are manifestations of something much deeper and complex. Have we asked ourselves what might be causing this? What day-to-day conditions might we be able to influence? Have we been patching up symptoms when we should be strengthening our Airmen's bodies, minds, and spirits for the adversity they will face in life and on the battlefield?"

—Maj. Gen. John Klein and Chief Master Sgt. Courtney Freeman, senior leaders of the U.S. Air Force Expeditionary Center, in an editorial [Defense One, May 31].

Care for those who *served*

As a member of the Air & Space Forces Association, you and qualifying family members may be eligible for exclusive senior living discounts that can help you and your family get the care you deserve.

SENIOR LIVING:

7.5% OFF

monthly fee/basic service rate*

IN-HOME SERVICES:

10% OFF

service rate**

SHORT-TERM STAY:

DISCOUNTED RATES VARY BY COMMUNITY***

For more information or to schedule your visit, call (866) 749-7445 or visit brookdale.com/afa today.

Applicable to all discounts: These discounts do not apply to any room, board or services which are paid for all or in part by any state or federally funded program. Discounts are available to members and their family members, including spouse, adult children, siblings, parents, grandparents, and corresponding in-law or step adult children, siblings, parents, and grandparents through current spouse. Subject to availability. Further restrictions may apply.

*Discount is only applicable to new residents of a Brookdale independent living, assisted living, or memory care community admitting under an executed residency agreement. Discount applies to monthly fee/basic service rate, excluding care costs and other fees and is calculated based on the initial monthly fee/basic service rate.

**Discount is only applicable to new clients of personal assistance services by a Brookdale agency under an executed service agreement.

***Discount is only applicable to new residents of a Brookdale assisted living or memory care community admitting under an executed respite agreement. Discount applies to the daily rate.

912452 HVS

brookdale.com

BROOKDALE SENIOR LIVING

By John A. Tirpak

Is the F-35 Program Too Big to Manage?

Senior Airman Yosselin Campos

The F-35 program has grown so large that even significant cost overruns and errors can get lost its massive scale. The General Accountability Office wants Congress to break out the planned upgrade of its F135 engines to ensure greater accountability and oversight.

The F-35 enterprise is the biggest military program in history, managed by a sprawling Joint Program Office (JPO) and a life cycle program cost of some $1.7 trillion over 50 years.

The Government Accountability Office (GAO) thinks the time has come to break this behemoth into more manageable chunks. In a new report, GAO urges Congress and the Pentagon to separate the fighter aircraft from its engine upgrade as a first step, potentially making it easier to track and measure performance of these two distinct elements in terms of cost and schedule.

GAO's May report, "F-35 Joint Strike Fighter: More Actions Needed to Explain Cost Growth and Support Engine Modernization Decision," said the F-35 is so vast that even big problems seem relatively small against the overall cost and scale. As a result, many concerns don't get the high-level attention they deserve.

F-35 costs have increased $13.4 billion since 2019, a sum equal to the cost of more than 160 jets; but against that $1.7 trillion lifecycle cost, it's a drop in the bucket: less than three-quarters of 1 percent. Spread across the program's development, test, production, logistics, sustainment and upgrade efforts, it's hard to get a handle on where cost increases are and how to manage them, GAO said.

"Without the program formally tracking the estimated cost of each capability to the actual cost of developing each and sharing that information," GAO said, it's hard to hold prime contractor Lockheed Martin accountable.

GAO has recommended breaking up the F-35 program before. It previously proposed splitting off the F-35's Block 4 upgrade into a distinct program to better manage cost and schedule and raise red flags where warranted. The Pentagon declined, however, so now GAO is asking Congress to step in and insist.

"The program's cost-reporting mechanisms do not fully explain the reasons for cost growth," the GAO reported. "For example, DOD's reports to Congress on Block 4 cost growth do not distinguish higher-than-expected costs for previously planned Block 4 capabilities from growth due to adding new capabilities. Consequently, Congress does not have a complete picture of escalating F-35 modernization costs."

If Block 4 and the F135 engine upgrade were separate from the overall F-35 program, GAO said, each would be a Major Defense Acquisition Program in its own right. Each would also be subject to the Nunn-McCurdy acquisition law, which requires the Pentagon to notify Congress when cost increases rise by 15 percent—"significant"—or 25 percent—"critical"—or when total costs grow 50 percent beyond the originally predicted program cost.

Unless the Secretary of Defense certifies the vital importance of such overages, programs experiencing that level of cost growth

are subject to automatic termination.

The critical nature of the F-35 ensures no one is likely to press for cancellation. But because Block 4 and the engine upgrade are hidden within the overall program, GAO said it's extremely hard to understand how well these two efforts are progressing.

In a second report, also released in May, GAO takes on F-35's sprawling, global footprint—now with 11 international users and six more nations waiting to take delivery. Focusing on the fighter's spare parts enterprise, GAO said F-35's worldwide network of depots, operating bases, and factories has lost track of about 1 million spare parts, worth some $85 million. Lockheed Martin manages the parts inventory, so the Pentagon doesn't have its own parts tracking system, GAO noted, indicating that "the full quantity and value of those spare parts may be significantly higher."

In its defense, the F-35 Joint Program Office said 99 percent of parts are accounted for, and that only 1 percent are not, well better than its goal, which is 5 percent. The JPO said it's working to improve.

BREAKING UP IS HARD TO DO

Previous F-35 Program Executive Officers have rejected the idea of spinning off the engine and Block 4 upgrades, saying to do so would only make it harder to coordinate and comprehensively manage the many moving parts of developing, producing, and sustaining the fighter—especially because these upgrades are so tightly integrated with all other aspects of the jet.

Members of Congress have also urged the Pentagon to break up the Joint Program Office and let the various services manage their own logistics trains, given the variants—the Air Force's F-35A; the Marine Corps' short-takeoff and vertical-landing F-35B; and the Navy's carrier-capable F-35C.

The services already have their own F-35 offices to integrate them with the rest of their fighter fleets.

Undersecretary of Defense for Acquisition and Sustainment William LaPlante rejected that idea at a Potomac Officers Club conference last fall, however. Disbanding the JPO and turning over development of new F-35 capabilities to the individual services would be "pretty stupid," he said.

Even though the F-35 was launched in 2001—and had already completed a five-year requirements, experimentation, and prototyping phase—the program is still, in fact, new, and "still in development," LaPlante noted. The Block 4 upgrade is necessary to keep the F-35 ahead of current and future threats.

"You don't break up a program office that's doing development," he said. "We need the JPO to finish development."

LaPlante said development will probably take another five years, and only then should DOD consider breaking up the JPO.

The international character of the program has to be a prime consideration, LaPlante stated. The foreign partners are "part of the governance" of the F-35 and are not simply customers. They "view the JPO as an honest broker … trying to balance the equities between the partners, and maybe even our services in this country." The partners trust the JPO and would strongly object to its being undercut, he said.

LaPlante further asserted that the F-35, despite its ambitious goals and setbacks, has been "one of the most successful programs … in the history of DOD." But, he agreed that services should eventually "own the sustainment . … That's where I see that moving."

AN AMBITIOUS UPGRADE

Block 4 is a huge upgrade, comprising a new, more sensitive AN/APG-85 radar, new antennas, a new electronic warfare system, improved electro-optical targeting, upgraded communications and navigation, cockpit enhancements, new weapons, and unnamed, classified capabilities.

Expected to cost $10.6 billion in 2018 and be completed by 2025, Block 4 costs have risen and the schedule has stretched. By 2020, it was to have cost $14.4 billion and be completed by 2028; a year later, $15.1 billion and completion by 2029. The latest projection, in September 2022, was $16.5 billion by 2030.

GAO said it cannot clearly decipher how much of those cost increases are due to inflation, added capabilities, or even mismanagement.

The Air Force has held back on buying more F-35s in recent years in order to ensure more aircraft will include Block 4 capabilities installed at the factory.

The package is built on a computer upgrade that boosts processing power 25 fold. Called Tech Refresh 3, and currently in flight testing, it will enable the F-35 to capture, correlate, and share sensor data and engage in spectrum warfare.

The new engine is no less crucial. Among its requirements is generating more power for cooling the advanced processors. The Air Force would also like more thrust and dogfight performance from the engine.

Rather than an all-new powerplant from General Electric or Pratt & Whitney, developed under the Adaptive Engine Transition Program (AETP), the service instead settled on the F135 Engine Core Upgrade (ECU) put forward by Pratt & Whitney. Air Force Secretary Frank Kendall wanted the new engine, but ultimately opted for the less costly ECU, which should meet Block 4's needs.

Along with the engine, will be a Power and Thermal Management System (PTMS) upgrade. The GAO said the Pentagon must "move fast and deliver additional cooling capacity to enable capabilities planned by 2029 and beyond." But GAO criticized the JPO for not building the business case to support those decisions.

"Without this type of information on technical risk, technology maturity, and costs, the military services may risk warfighters receiving less capability than anticipated while taking more time and resources than the military services can afford," GAO said. It suggested that work on the AETP engines continue in order to ensure future options. The Air Force is doing that through its Next-Generation Advanced Propulsion (NGAP) program, which is focused on its sixth-generation fighter.

The Pentagon and the services are "best served by allowing those maturation efforts to continue to drive down risk," GAO said. The JPO should better define its requirements to avoid "repeating the mismatch in engine and thermal management capability versus future modernization needs; similar to what happened with Block 4." DOD should set a new baseline for engine performance, GAO stating, without one, "it will be difficult for Congress to hold DOD accountable."

Pratt & Whitney's director of F135 business, Jennifer Latka, said her company also wants the government to settle on a way forward for thermal management. The existing F135 engine can provide the needed power and cooling for Block 4, she said, but without the upgrades, will wear out more quickly, taxing the F-35 supply chain to keep enough engines in the pipeline.

The GAO noted that as of early this year, the F-35 still has 821 open deficiencies, of which five are considered critical. These Category 1 deficiencies could "jeopardize safety, security or another requirement." The remainder are Category 2 shortcomings that could "impede or constrain" mission success.

Not all the Category 2 deficiencies will be resolved, according to the report. The JPO, "in consultation with warfighters and contractors," has decided "they do not need resolution."

MTS-3060A SmartCan™ - Empowering ACE and Multi-Capable Airmen

The Agile Combat Employment (ACE) operational concept, a proactive and reactive operational scheme of maneuver executed within threat timelines to increase survivability while generating combat power, provides a starting point for Airmen to codify best practices. However, this can be quite challenging for the aircraft armament maintainer when confronted with ineffective or outdated tools and test equipment. Maintainers understand the challenges of using outdated and/or less-capable test sets to support both legacy and Smart weapon systems on 4th and 5th generation military aircraft, including long test times, inconclusive results, utilization of multiple test sets, increased training demands, and a large logistics footprint.

Supporting the USAF's ACE CONOPS with easy-to-deploy, easy-to-train, easy-to-use, and easy-to-maintain support equipment is essential to fulfilling the Multi-Capable Airmen vision. The MTS-3060A SmartCan is truly the ACE and Multi-Capable Airmen enabler.

Efforts to develop and field a next generation armament test set capable of addressing these short-comings have resulted in an exceptionally effective solution: the MTS-3060A SmartCan. The SmartCan is the most advanced handheld armament flightline test set available, capable of testing all Alternate Mission Equipment (AME) and Aircraft Armament Equipment (AAE) including pylons, launchers, bomb racks, POD interfaces and gun, and able to support 4th, 5th, and 6th Generation aircraft – today.

Unlike legacy handheld testers that are only capable of performing stray voltage and continuity tests, the Smart Can's test capabilities enable full functional MIL-STD-1760 test to ensure that armament systems are ready to support Smart weapons before they are loaded. Simultaneous testing of multiple squib signals, combined with a unique cross-fire algorithm, delivers a robust test process that is superior to all O-Level armament test sets in service today. Coupled with munitions emulation communication channels supporting all existing weapons protocols, the SmartCan provides a full system test of all legacy and Smart weapons' armament.

Developed in conjunction with armament maintainers and munition manufacturers, the ergonomic design, rapid test times, and ease of use all contribute to the proven success of the globally deployed MTS-3060A SmartCan in all flightline environments. Incorporating over 30 measurement channels, electronic loads, communications interfaces (MIL-STD-1553, MMSI, Ethernet, CAN Bus, RS-485), dedicated/continuous multiple squib circuit monitoring, and with audio and video signal generators, the SmartCan delivers functionality previously found only in larger, multi-box test sets.

The rugged, handheld construction of the SmartCan, when combined with the ability to operate in adverse weather conditions, enables field operation anywhere in the world, making it the ultimate tool for flightline armament test. The unique power management system utilizes just six standard or rechargeable AA batteries that allows operation of the SmartCan for over 40 hours, without the need to replace or recharge the batteries. An innovative calibration technique, utilizing NIST traceable high-precision references, has been incorporated into the design, eliminating the need to remove the SmartCan from the flightline for calibration, reducing down-time and support required from metrology, and simplifying logistics.

Test results and measurement variances for each weapon are displayed real-time for review, analysis, and fault isolation. Test log files can easily be moved or copied via the removable SD card for printing and analysis. This improved availability of data for analysis and predictive maintenance activities can ultimately decrease troubleshooting and repair times, enhancing mission readiness.

Live, on-aircraft demonstrations have yielded time savings as high as 89% per weapons station, over eight O-Level testers consolidated, true video and audio injection, six bomb racks tested simultaneously, and operationally representative weapons emulation.

Advanced cybersecurity features and protections further differentiate the SmartCan, making this the most cybersecure O-Level armament test set available. Data encryption, a custom-developed operating system, NIST certified software enabling Test Program Set (TPS) development, and a removable hard drive all contribute to the security of the SmartCan.

The ability to streamline TPS development and release cycles is another key advantage of the SmartCan. MTS offers a TPS development suite, ATEasy® and SmartCanEasy™, to allow users to develop, create, and integrate their own test programs as new weapons enter their inventory. With this capability, armament test professionals can create and maintain test programs without the need for contractor support, greatly expanding the utility of the test set. The rapid, organic TPS development capability will allow the air forces to keep their support equipment software synchronized with the aircraft under the rapid software development model.

The SmartCan provides outstanding armament test capabilities for all armed aircraft and their armament systems, supporting warfighters deployed under the USAF's ACE CONOPS, and enabling the creation of true Multi-Capable Airmen. One test set, all platforms, all armament systems.

MARVIN TEST SOLUTIONS

We Make ~~Test~~ ACE Easy™

Revolutionizing armament test today and tomorrow

Which would you rather carry to the flightline?

MTS-3060A SmartCan™

Integrated by Design

The ACE and Multi-Capable Airmen Enabler

- Rugged, handheld, powerful, rapid test
- Reduced training and logistics footprint
- Smart and legacy weapons systems support
- Eliminates multiple O-Level armament test sets

The Marvin Group

MARVINTEST.COM

Air Force and Army troops took over a stretch of Wyoming highway for Exercise Agile Chariot in April, demonstrating how Agile Combat Employment can look in the wild. An MC-130J Commando II refueled an A-10 Thunderbolt II, practicing the set up for a Forward Arming and Refueling Point (FARP) and Integrated Combat Turnarounds (ICT). "An adversary that may be able to deny use of a military base or an airfield is going to have a nearly impossible time trying to defend every single linear mile of road," said Air Force Lt. Col. Dave Meyer, deputy mission commander for the exercise. "It's just too much territory for them to cover and that gives us access in places and areas that they can't possibly defend."

Tech. Sgt. Carly Kavish

A U.S. Air Force F-16 Fighting Falcon from the 480th Fighter Squadron at Spangdahlem Air Base, Germany, led two German Air Force PA-200 Tornados over Büchel Air Base, Germany in May. While the flight demonstrated unity among allies, it also highlighted the fourth-generation fighters Ukraine has been asking for to defend its territory against Russian forces. In May, President Biden agreed the U.S. would support providing F-16s, training, and weapons to Ukraine, after months of resistance to the idea.

Staff Sgt. Allison Payne

An F-22 Raptor from the 43rd Fighter Squadron banks away after firing a flare over the Gulf of Mexico. The squadron is the Air Force's F-22 training unit, flying the oldest Block 20 F-22s in the inventory. The Air Force wants to retire 33 Block 20 Raptors, which lack the most advanced communications and other upgrades, because they're not combat-capable. Critics counter that losing those jets and moving Block 30 Raptors into the training role will erode overall combat capacity. Air Force planners insist, however, that keeping the jets is too expensive for the value they provide.

Tech. Sgt. Betty Chevalier

Standing beside Defense Secretary Lloyd Austin and Vice President Kamala Harris, President Joe Biden introduced Gen. Charles Brown Jr. as his choice to become Chairman of the Joint Chiefs of Staff, the first Airman in 18 years to be the President's principal military adviser.

CSAF Brown Nominated to Be Next Chairman

By Chris Gordon

For the first time since 2005, an Airman will chair the Joint Chiefs of Staff. President Joe Biden introduced Gen. Charles Q. Brown to the nation as "a proud, butt-kicking American Airman," a reference to a recruiting commercial he shot early in his tenure.

Flanked by Vice President Kamala Harris and Secretary of Defense Lloyd J. Austin III on his right and Brown on his left, Biden noted Brown's military lineage, the son and grandson of Soldiers. "General Brown is a warrior descended from a proud line of warriors," Biden said in the Rose Garden ceremony. "He knows what it means to be in the thick of battle and how to keep your cool when things get hard."

To illustrate, he noted how Brown survived an engine fire in an F-16 he was flying over the Florida Everglades in 1991. Forced to eject, he landed far from civilization, and was plucked out of the swamp. "I tell you what," Biden said. "He was back in the cockpit the next week with a new call sign, 'Swamp Thang.'"

With 3,000 hours of flying experience, including 130 combat hours, Brown's career has been almost entirely operational. He commanded air operations over Syria in the Middle East and headed Pacific Air Forces before becoming Chief. He also commanded the Air Force Weapons School.

"He plays to win and that's obvious," Biden said. "That mindset is going to be an enormous asset to me as commander in chief and to the United States of America as we navigate challenges in the coming years."

If confirmed—a formality in most cases—Brown will succeed Army Gen. Mark A. Milley as the President's top military adviser. He would be just the fifth Airman to be Chairman, and the first since Gen. Richard Myers, who held the post from 2001to 2005.

But timing and policy arguments could have an effect. Brown's nomination is among more than 200 held up in a policy fight unrelated to the promotions themselves, but rather over Pentagon policy on funding travel for members in need of out-of-state abortion or reproductive health services. Sen. Tommy Tuberville (R-Ala.) placed a hold on the promotions this spring and has declined to remove it, despite mounting pressure.

Brown's nomination could be handled separately, however, as was Milley's; his 2019 nomination was approved 89-1.

Biden cited Brown's signature "Accelerate Change ... or Lose" directive. "Accelerate Change or Lose," Biden repeated for emphasis. "General, you're right on. ... Our world is at an inflection point where the decisions we make today are going to determine the course of our world for decades to come."

Milley, addressing reporters at the Pentagon, said Brown had "all the knowledge, skills, and attributes" a Chairman needs.

"C.Q. is absolutely superb."

"C.Q. is a fearless leader and an unyielding patriot," Biden said. "I urge the Senate to once again confirm General Brown with the same overwhelming bipartisan support for his new role as Chairman of the Joint Chiefs of Staff."

The President said he could rely on Brown to be "a thoughtful, deliberate leader who is unafraid to speak his mind, as someone who will deliver an honest message that needs to be heard, and who will always do the right thing when it's hard. … That's the No. 1 quality a President needs in a Chairman."

The Most Likely Next Air Force Chief—and All the Contenders

By Greg Hadley

With President Biden selecting Gen. Charles Q. Brown Jr. as his choice to be the next Chairman of the Joint Chiefs of Staff, he must now decide who will follow Brown to become the 23rd Air Force Chief of Staff?

USAF

Vice Chief of Staff Gen. David W. Allvin

Vice Chief of Staff Gen. David W. Allvin, a career mobility and test pilot with an extensive operational and staff background, is the odds-on favorite. Quiet and cerebral, Allvin maintained a low profile for most of his tenure as the Vice, but took on an increasingly public role early this year, doing interviews and taking on additional public-facing duties.

Allvin is the 40th Vice Chief of Staff and would be the 10th former Vice to become Chief of Staff; he'd also be the third this century, following Gen. David L. Goldfein, Chief No. 21, and Gen. T. Michael Moseley, No. 18. His selection would also follow an emerging pattern: Marine Corps Assistant Commandant Eric Smith, the Corps' No. 2 officer, is soon to succeed Gen. David H. Berger as Commandant.

As a leader on the Air Staff, Allvin has been a visionary helping to craft the joint force operating concepts advanced by three successive Chiefs: Gen. Mark Welsh, No. 20, along with Goldfein and Brown. He helped write "America's Air Force: A Call to the Future" in 2014 and the "Air Force Future Operating Concept" in 2015, both critical precursors to what would become Goldfein's vision for multidomain operations and, ultimately, what is now known throughout the services as Joint All-Domain Command and Control.

A test pilot with experience in more than two dozen aircraft, Allvin gained most of his command experience in air refueling and mobility units. But he has extensive Pentagon and joint experience, including stints in the Strategy, Plans, and Policy directorate of the Joint Staff. More recently, he has been a leading voice tackling the service's challenges with recruiting and retention.

USAF

Gen. James B. Hecker

Others to watch:

Gen. James B. Hecker, Commander of U.S. Air Forces in Europe-Air Forces Africa. Hecker has overseen USAFE at a pivotal time in Europe, taking over not long after Russia's invasion of Ukraine. His command has been on constant watch, with Airmen and aircraft operating in the skies and along the borders to reassure allies and secure NATO's eastern flank. Hecker headed Air University prior to taking command at USAFE-AFAFRICA. A fighter pilot who flew F-15s and F-22s, he has commanded at the group, wing, and Numbered Air Force levels.

Three of the past seven Chiefs of Staff had commanded USAFE: Gen. Mike Ryan, Gen. John Jumper, and Gen. Mark Welsh.

USAF

Gen. Thomas A. Bussiere

Gen. Thomas A. Bussiere, Commander of Air Force Global Strike Command. As the head of AFGSC, Bussiere oversees the Air Force's two legs of the nuclear triad, both of which are in the midst of massive modernization efforts that started years ago and will continue into the next decade. Under his command, AFGSC rolled out the new B-21 Raider in December 2022, which will be the "backbone" of the bomber fleet for years to come.

Bussiere has flown the F-15, B-1, B-2, and F-22, and led the 8th and 11th Air Forces. He was also vice commander of U.S. Strategic Command. He would be the first Chief to ascend from Global Strike Command, established in 2009, and the first bomber pilot to become Chief since Gen. David C. Jones in 1974.

USAF

Gen. Jacqueline D. Van Ovost

Gen. Jacqueline D. Van Ovost, Commander of U.S. Transportation Command. A former test pilot who has flown a dozen aircraft types, Van Ovost would be the first woman to be Air Force Chief. Prior to leading TRANSCOM, she headed Air Mobility Command and before that was the Air Force's Director of Staff at the Pentagon. She headed AMC during the record-breaking noncombatant evacuation operation from Afghanistan in 2021 and has overseen the massive logistical enterprise transporting materiel to Ukraine while at TRANSCOM.

Van Ovost has also led a reconsideration of TRANSCOM's posture in the Pacific and helped to implement the Global Household Goods Contract for transporting troops' possessions during moves. Two prior TRANSCOM commanders have gone on to become Chief of Staff—Gen. Ronald Fogleman in 1994, and Gen. Norton A. Schwartz in 2008.

USAF

Gen. Anthony J. Cotton

Gen. Anthony J. Cotton, Commander of U.S. Strategic Command. Having only arrived at STRATCOM in December 2022, Cotton is a missileer whose prior command at Air Force Global Strike Command lasted less than a year before he was nominated to lead STRATCOM. If selected, he would be the first missileer to be Chief of Staff. Cotton was previously vice chief at AFGSC. He has commanded an Air Force Space Wing and was president of Air University.

LEAVE A LEGACY OF HONOR

You can create a powerful legacy for future Airmen, Guardians, and their families through a planned gift to AFA. A bequest in your will, designating AFA as a beneficiary in your retirement accounts, or making one of many other types of gifts can ensure your commitment to AFA continues into the future.

HOW TO MAKE A PLANNED GIFT

Let us help you create a planned gift that honors your personal legacy of service.
Any of the following types of gifts, once confirmed in writing, qualifies you for membership in AFA's Thunderbird Society: *

- A bequest provision in your will or revocable trust;
- A gift or assignment of qualified retirement plan assets, such as an IRA, 401(k) or 403(b);
- A life-income gift naming AFA as a remainder beneficiary, such as a charitable remainder trust;
- A gift or beneficiary designation on a life insurance policy;
- A charitable lead trust that provides income to AFA for a donor's lifetime or a term of years

YOUR SERVICE, YOUR COMMUNITY, YOUR LEGACY

With your gift, AFA can continue to fulfill our commitment to support Airmen, Guardians, and their families—in perpetuity. And your philanthropic investment will help AFA promote dominant U.S. Air and Space Forces as the foundation of a strong national defense for years to come.

To learn more or discuss your planned gift, contact the Development Team at development@afa.org.

**AFA is not a legal or tax advisor and cannot provide tax advice. Please consult with a professional advisor for your specific circumstances*

AFA AIR & SPACE FORCES ASSOCIATION

Getting Promoted to Lieutenant Colonel Gets Harder for Operators

By Greg Hadley

The selection rate for majors in zone promoted to lieutenant colonel dropped slightly this year, while "above the zone" promotions continue to rise.

The Air Force unveiled an overhaul to its selection system in 2019, and instituted those changes in 2020, creating six competitive categories rather than have officers compete for promotion in a single group. The new system was supposed to make it easier for nonrated officers in logistics or intelligence, for example, to compete for advancement against rated officers, such as pilots and navigators.

The selection rate for Line of the Air Force majors promoted "in the zone," which ranged from 76 percent to 77 percent since the change, dropped this year to 75.1 percent. Above-zone promotions, those for officers getting their second look by the promotion board, rose to 13 percent, the highest level since the change.

Early, or "below-the-zone" promotions, were eliminated in 2020.

Driving the shift is the air operations and special warfare category. Majors in this category, the largest in the Air Force, accounting for nearly half of those considered, were selected at a 74.4 percent rate, down nearly five percentage points from 2021.

"Above the zone" selections for operators were just 8.2 percent, the lowest in any category.

Selections also fell for information warfare officers, the second largest category. In-zone selections fell to 74 percent, down from 78.2 percent in 2021. However, the above-zone selection rate for information warfare officers tripled from 2021, rising from 6.4 percent then to 19.3 percent this year.

Combat support—the third largest category—which has seen fluctuating in-zone selections in recent years, saw an increase in "above the zone" selection.

When the Air Force announced its categories, the intent was to ensure officers competed to advance against peers with similar skills, career progression, and experience. Officials have since argued the system has also improved diversity, because women and racial minorities make up a greater portion of the nonrated officer community.

Senior Airman Anthony Agosti

The selection rate for Air Operations and Special Warfare Officers in the promotion zone was 74.4 percent, down 5 percentage points in just two years.

On the whole, more than 1,500 majors were in zone for consideration by the board, the largest cohort in at least four years. The group was likely larger because retention ticked up, related to the uncertainty of the COVID-19 pandemic, potentially creating a slightly larger cohort.

This year's promotion cycle also marks the first time promotions boards have been able to see if potential lieutenant colonels have advanced academic degrees since 2014. The Air Force started "masking" those degrees because Airmen had come to see such degrees as a prerequisite for promotion—even if they had little to do with their career field.

In reversing that policy, Air Force Secretary Frank Kendall emphasized that advanced degrees are "neither a requirement for promotion to major or lieutenant colonel nor a guarantor of promotion."

"The DAF will continue to value both operationally and educationally derived experience and expertise and will always value high levels of performance," he added.

Different Rates for Different Groups

Some 1,576 majors were in the promotion zone, and another 1,042 got a second look from the 2023 Lieutenant Colonel Promotion Board. The overall in-zone selection rate was 75.1 percent and the above-zone rate was a scant 13.2 percent. But rates varied substantially among the six competitive categories.

CATEGORY	"IN THE ZONE" CONSIDERED	"IN THE ZONE" SELECTED	"IN THE ZONE" RATE	"ABOVE THE ZONE" CONSIDERED	"ABOVE THE ZONE" SELECTED	"ABOVE THE ZONE" RATE
Air Operations & Special Warfare	750	558	74.4	511	42	8.2
Nuclear & Missile Operations	35	25	71.4	35	5	14.3
Information Warfare	311	230	74.0	181	35	19.3
Force Modernization	158	122	77.2	137	13	9.5
Combat Support	265	201	75.8	162	38	23.5
Cross-Functional Operations	57	47	82.5	16	5	31.3
Total	**1,576**	**1,183**	**75.1**	**1,042**	**138**	**13.2**

Source: Air Force Personnel Center

Biden To USAFA Grads: A Rare 'Chance to Change Trajectory' of US

By Chris Gordon

Speaking at the U.S. Air Force Academy's graduation ceremony June 1, President Joe Biden urged the Class of 2023's 921 graduates "to keep us at the forefront of air and space dominance."

This is a key point in history: "Your Airmen and Guardians are going to look to you for guidance and inspiration, because the world is going to get more confusing," Biden said. "They'll put their trust in you. You in turn must strive to always be worthy of their confidence. Listen to them. Listen to them."

Russia's invasion of Ukraine, competition with China, the impacts of climate change, and unknown challenges stemming from the rise of artificial intelligence will all change the world.

Rayna Grace/USAF

"We're going to count on you to keep us at the forefront of air and space dominance," President Joe Biden told the 921 graduates in the Air Force Academy Class of 2023. Their mission, he said: "Enabling the entire joint force."

"We're working across multiple domains developing new capabilities, like our new next-gen B-21 Raider," Biden noted. "You're going to be flying that sucker. We're going to count on you to keep us at the forefront of air and space dominance, enabling the entire joint force."

Speaking before Biden, Air Force Secretary Frank Kendall emphasized the importance of new technology and changing global dynamics to the new officers.

"You're accepting a leadership role in a military in the midst of a strategic competition that is as great a challenge as we have faced in decades, certainly in my career," said Kendall, who graduated from West Point 52 years ago. "You will be challenged to meet the requirements of our current missions while preparing for an uncertain future. You will be challenged to get everything you can out of today's force to help build tomorrow's force."

Biden's and Kendall's remarks echo the National Security Strategy released last year, which referred to the 2020s as a "decisive decade."

"The decisions we make today are going to determine what the world looks like decades from now," Biden said. "No graduating class gets to choose the world into which they graduate. Every class enters the history of a nation up to the point that has been read by others. A few classes once every several generations, enters at a point in our history where they actually have a chance to change the trajectory of the country."

READINESS

'Safety Pause' Over, B-2 Returns to Flight

By Chris Gordon

The B-2 Spirit returned to the skies May 22 after a six-month break in flying operations due to safety concerns. Air Force Global Strike Command boss Gen. Thomas A. Bussiere approved the move following the completion of an investigation.

"The B-2 fleet safety pause is officially lifted," Maj. Gen. Andrew J. Gebara, commander of the 8th Air Force, which controls the nation's strategic bomber fleet, told Air & Space Forces Magazine. "Gen. Bussiere, at my recommendation, made a final determination on the necessary actions taken and approved a return to flight."

Gebara and other Air Force officials declined to say what the safety issue was or what was done that allowed the service to resume flight operations. "I think that it was really important that we find out what happened and make sure that was all mitigated before you start flying again," Gebarra said. "That's what we did."

Senior Airman Noah Coger

The Air Force's fleet of B-2 Bombers was effectively grounded since late 2022 over concerns about the safety and reliability of its landing gear.

Gebara said there would not be onerous restrictions on missions.

"I want them to come back in a disciplined, deliberate manner," Gebara said. "But we will do full operational missions. So you're not going to see one loop around and land kind of sorties. It'll be a normal sortie. I actually am not concerned at all about the mission aspects of the force."

Air Force officials said the aircraft remained ready during the stoppage to execute missions if needed, serving a critical role as the nation's only stealth nuclear-capable bomber in service.

"The B-2 fleet could still fly missions if so required," Gebara said. "Our ability to provide nuclear deterrence never stopped."

B-2 pilots stayed current throughout the safety pause in the advanced simulators at Whiteman, Air Force Base, Mo., and also increased repetitions in T-38 trainers to practice takeoffs and landings.

Only 21 B-2s were produced, costing over $1 billion per plane, according to the Air Force. One was destroyed in a crash in 2008. Nineteen of the current airframes are at Whiteman—one of which is a test aircraft normally based at Edwards Air Force Base, Calif. One combat B-2 has been parked at Joint Base Pearl Harbor-Hickam, Hawaii, which shares runways with Daniel K. Inouye International Airport in Honolulu after the safety pause went into effect while the aircraft was at the base.

It is unclear what will happen to the B-2 damaged in December. The entire B-2 fleet will eventually be replaced by the B-21 Raider, which like the Spirit, is a stealthy flying wing produced by Northrop Grumman. The first B-21 is scheduled to fly later this year.

House Lawmakers Want to Lock In Guard Fighter Squadrons, But USAF Leaders Are Wary

By Greg Hadley

A new bill in Congress aims to increase the Air Force fighter inventory by setting a minimum number of Air National Guard fighter squadrons and aircraft. But the Air Force worries the measure is too prescriptive and would favor the Guard over Active-duty units.

Rep. Don Bacon (R-Neb.), a retired Air Force brigadier general, is spearheading the proposed "Fighter Force Preservation and Recapitalization Act," which would require:

- A minimum of 25 fighter squadrons in the Air National Guard, each with at least 18 aircraft;
- Development of a plan to modernize and recapitalize the entire ANG fleet on a one-for-one basis by the end of fiscal 2034;
- Establishment of a plan to field Next Generation Air Dominance fighters in the ANG.

Bacon and a bipartisan group of cosponsors including Reps. John James (R-Mich.), Elissa Slotkin (D-Mich.), and C.A. Dutch Ruppersberger (D-Md.) introduced the bill in May. The issue is parochial for some—Guard A-10 squadrons at Warfield Air National Guard Base, Md., and Selfridge Air National Guard Base, Mich., are slated to stand down in 2025 and 2027. But for Bacon, a former ISR pilot whose home district includes no fighter squadrons, the issue is all about readiness.

"I'm a 30-year Air Force guy, but I'm not a fighter guy, we don't have fighters in Nebraska," Bacon told Air & Space Forces Magazine in an interview. "So this is nothing parochial. It's strictly love of the Air Force and love of our nation's military."

The Air Force is retiring both ANG A-10 and F-15C/D squadrons, moves the Air Force has said are necessary to fund intensive modernization across the force. Lawmakers have opposed those plans in the past but more recently have given in to Air Force arguments that divesting aging aircraft not suited to advanced threats is essential to modernizing the overall force. Air Force Secretary Frank Kendall indicated recently he is optimistic that plans included in the fiscal 2024 Air Force budget submission will be approved, clearing the way

for further divestments.

But the planned net loss of some 400 fighters over the next five years is too risky, Bacon said.

"As we're bringing fighters in, I understand you've got to take fighters out," he said. "But they're doing over 2-to-1. For every new one we're bringing in, they're taking out two. So I just think the capacity is going to get too small to deal with China, plus Europe, and presence in other areas. I don't mind disinvesting. I don't mind disinvesting out of the A-10. But to do it at a 2-to-1 rate doesn't make sense to me."

A senior Air Force official said he understands Bacon's concerns, but countered that the proposed legislation only makes the service's job harder.

"What they're trying to do is start a conversation about [recapitalization] of the fighter fleet in the Air Force," the official said. "They think it's getting too small, and I don't know that we would disagree. The challenge is the physics of fighter procurement right now."

The Air Force is competing with the Navy, Marine Corps, and a host of allies to acquire new F-35s, and the list of customers is growing. Between 2024 to 2028, the official said, the Air Force can't buy more than 48 F-35s per year because there isn't capacity to build any more airplanes. Current plans call for buying 24 F-15EXs for the next three years, then ending production at 104. Another 40 could be had over the following two years but aren't currently in the service's five-year plan.

The Air Force official cited two other problems with Bacon's bill: First, its focus on a minimum fighter fleet for the Guard, but not the Active-duty force, could mean giving new aircraft to the Guard at the expense of front-line forces; and second, that requirement stretches out a decade, while Congress only funds the Air Force year to year.

"The issue is Congress can give us a mandate, but they can only fund it in the budget year, and only if they choose to. They can't fund it across the [Future Years Defense Plan], and so these mandates wind up [as unfunded]," the official noted.

Bacon said he would work with other members of the House Armed Services Committee and the Appropriations defense subcommittee to ensure the Air Force gets the funds it needs. He intends to propose his bill as an amendment to the 2024 National Defense Authorization bill.

"We have a really good relationship with the defense appropriators," Bacon said. "The chairman of that subcommittee has a great rapport with [HASC chair] Mike Rogers and all of us. And whatever we end up deciding, I'm sure we'll do it in tandem. So I mean, if I don't get my way, if it's a compromise, I'm sure it will be worked between Appropriations and HASC, and I have confidence that in the end we'll get this aligned."

Without enough industrial capacity to build more aircraft faster, the Air Force official said, Bacon's plan is "like three years too late: You can't solve this with procurement now, because the procurement capacity doesn't exist."

The Air Force chose to hold down F-35 purchases in recent years as it waited for improved capabilities with the jet's Tech Refresh 3 digital overhaul and anticipated improvements that tech makes possible in Block 4 upgrades. Congress added to those plans then, and Bacon said it could do so again now.

Bacon said he had spoken with F-35 contractor Lockheed Martin and F-15EX builder Boeing and asserted confidence they can produce more airplanes.

The Air Force official was less sanguine, suggesting that no solution will produce more aircraft in the next five years. That means a requirement to hold the line on Guard fighter squadrons would result in painful decisions.

"If you follow the path of this legislation, what you will do is put aircraft that are already supposed to go to [U.S. Indo-Pacific Command] or to other units in the States and force them into the Guard," the official said.

Bacon countered that the Guard is responsible for much of the Air Force's homeland defense mission and that his bill highlights the broader issue Congress must address: Air Force readiness.

"The challenge here is for the Air Force," Bacon said. "The President's budget is too low for the Air Force. For them to produce the F-35, B-21, the ICBMs [concurrently], they feel like they've got to disinvest out of these older fighter platforms. And I would suggest we need to go back in and look at the Air Force budget. Because at a certain level, we're putting our country at risk. They shouldn't have to disinvest 400 aircraft at a time where we think China is becoming a bigger and bigger threat."

Meet DARPA's X-65: A Jet Without External Control Surfaces

By Greg Hadley

A groundbreaking aircraft being designed for the Defense Advanced Research Projects Agency now has an experimental designation—the X-65.

DARPA announced the "X" designation on its social media accounts May 15, a little less than five months after announcing its selection of Boeing subsidiary Aurora Flight Sciences to produce a detailed design for DARPA's Control of Revolutionary Aircraft with Novel Effectors (CRANE) program.

The X-65, shown by DARPA in an artist's rendering, seeks to enable active flow control using bursts of air rather than moving flight surfaces on the exterior of the wings and tail to control its flight.

By "removing jointed surfaces," such a design could improve flight and reduce cost and wear and tear, and also theoretically enhance the aircraft's stealth characteristics.

DARPA illustration

The DARPA CRANE X-65 experimental aircraft is testing active flow control using bursts of air rather than moving flight surfaces on the exterior of the wings and tail to control its flight.

The X-65 will include "modular wing configurations that enable future integration of advanced technologies for flight testing," DARPA noted in a January release.

CRANE has been in the works for several years now, and the contract with Aurora Flight Sciences marked the beginning of the program's Phase 2, which will include the development of flight software and controls and a critical design review of an X-plane demonstrator.

The contract includes an option for a Phase 3, which would involve flying the 7,000-pound X-65.

The new X-65 is the first "X" aircraft since the Air Force redesignated the NF-16D Variable In-flight Simulator Aircraft as the X-62A in August 2021. That puts it in an exclusive club that has helped shape cutting-edge aeronautical research for decades, including the Bell X-1, the first airplane to break the sound barrier, and the hypersonic X-15. Other more recent examples include the X-37 space plane, the hypersonic X-51 Waverider, and the X-61 Gremlins.

DARPA is working on several other "X-plane" programs, including the "Liberty Lifter," a long-range cargo seaplane, and the Speed and Runway Independent Technologies (SPRINT) program, for U.S. Special Operations Command.

Lockheed Martin illustration

The Space Force could be the answer to filling real-time ISR needs to military commanders and operators. Lockheed Martin's LM 400 Satellite bus offers a modular architecture that could answer some of those needs.

Space Force Eyes Fielding Its Own ISR Satellites

By Greg Hadley

With the Air Force giving up on aging intelligence, surveillance, and reconnaissance planes, the Space Force finds itself seeking a way to take on that mission—and defining the capabilities it needs to do so, the head of Space Operations Command said May 24.

Space-based ISR is ultimately seen as replacing airborne ISR for hitting mobile targets on the ground. ISR from space has traditionally been an intelligence function, but frequently unavailable in a timely way to military operators. That's going to have to change, Lt. Gen. Stephen N. Whiting suggested during a Mitchell Institute for Aerospace Studies webinar.

The National Reconnaissance Office owns most of the government surveillance satellite technology and a rapidly expanding commercial industry is growing around space-based sensing, technologies that have aided Ukraine in its fight against Russia.

Where does that leave the Space Force?

"If we look at the other services, which have been around a lot longer than the Space Force, all of them have tactical Title 10 ISR capability that they retain or they present to a combatant command to execute missions on behalf of tactical warfighters," Whiting said. "So as we think about that for the Space Force, it's no different in the Space Force than the other domains, but we need to start by looking at what exists today."

Whiting said the U.S. has the "world's best" ISR capabilities today, between the NRO and industry, but having what's best today isn't the same as having what's needed tomorrow.

REPLACING AIRCRAFT?

The issue is especially critical now as aging ISR aircraft are being retired. Deputy Chief of Staff for ISR and Cyber Effects Operations Lt. Gen. Leah G. Lauderback said those changes

are necessary and unavoidable.

"The truth is, [the divestitures] were backed up by a number of studies over the last number of years, that this is the right thing to do in order to get ready for a peer competitor," Lauderback said. Current ISR aircraft cannot survive in a conflict with China or Russia, but because divestments are occurring without immediate replacements—at least publicly acknowledged ones—there may be "small gaps" in ISR during the transition, Lauderback confirmed.

"This is a team sport, and that team includes the Intelligence Community," Lauderback said. "We continue to have conversations with the Intelligence Community, primarily with the [National Reconnaissance Office], but also the combat support agencies, who are the functional managers for those capabilities."

Space-based ISR will be pivotal in the years ahead, as new satellite technologies mature. "We're going to have incredible amounts of sensors that are coming that are space-based and thus have a certain amount of resiliency, more resiliency or more survivability, certainly, than some of the airborne capabilities that [the Air Force is retiring]," said Lauderback.

Satellites are also more persistent, able to stay on constant watch, something airborne platforms cannot do. When Lauderback was director of intelligence for Operation Inherent Resolve in the Middle East, the command lacked the ability to keep constant watch. "We didn't have persistence to be able to chase ISIS around" with Joint STARS aircraft, she said. "The things that we had persistence with were [uncrewed] MQ-9s, Global Hawks would help us for sure. But in a permissive environment like that you can have that persistence. That persistence is very, very satisfying as a targeteer—somebody that wants to be able to track, in this case, ISIS maneuvering from one place to the next. We need to do that for peer competitors as well, for when or if we go into conflict, … before conflict even."

Of course, making all those connections and ensuring the Air Force and other branches have access to all the intelligence they need presents other challenges. Lauderback called for more table-top exercises for the Pentagon to help determine and inform what space-based ISR will look like in the coming years.

But at the moment, she said she is encouraged by the Air Force's conversations with the Space Force and Intelligence Community.

"I would actually tell you that any space-based ISR—whether it's owned by an intelligence agency today or if it is a DOD entity—you can use those things in tactical environments," Lauderback said. "It's just a matter of the scale that you can do, how long it is that you can use those in a tactical sense. So we certainly have experience using those in a tactical sense today and nothing that stops us from doing that in the future."

Lauderback has unique insight into how the Air Force and space-based ISR can work together, given her stints as the Space Force's first deputy chief of space operations for intelligence and as U.S. Space Command's director of intelligence give her particular insight into what space can do for the Air Force. And she's hard at work trying to access whatever the IC can offer the military branches.

Whiting said the question of ownership isn't what's most important. "I just don't think we should be concerned if we do land in a place that says 'Hey, the Space Force will have retained capability for our own purposes to support tactical warfighting like the other services do,'" she said. "But no decisions have been made, and those discussions are ongoing."

Retired Gen. Kevin P. Chilton, USAF, Explorer Chair at the Mitchell Institute's Spacepower Advantage Center of Excellence (MI-SPACE), said it makes sense for the Space Force to have its own "in-house" ISR capabilities to provide for the needs of combatant commanders around the world.

"There's a reason it's called national reconnaissance—it's not combatant commander reconnaissance," said Chilton, who served as the head of Air Force Space Command and U.S. Strategic Command. "And my sense is the services' job is to support the combatant commanders. That needs to be their No. 1 priority. When it's a national asset, appropriately so, there are national requirements that could perhaps trump the requirements of a combatant commander, even when he or she is engaged."

Whiting likewise noted the need to understand the requirements on the tactical edge—where warfighters are operating—suggesting there may be a gap the Space Force needs to fill.

"I think we've got to look at what capabilities are out there today and where the taskings are coming from, and then what's ultimately getting to the tactical warfighter," said Whiting. "And if between what's in the National Reconnaissance enterprise and what's in commercial, we need to develop something new, then we'll figure that out where that command and control and tasking lies."

Bentivegna Named Next CMSSF

By Greg Hadley

The Space Force's next top enlisted Guardian will be a space operator: Chief Master Sgt. John F. Bentivegna will succeed CMSSF Roger A. Towberman later this year.

Chief of Space Operations Gen. B. Chance Saltzman selected Bentivegna on May 5, the service announced.

USAF

Chief Master Sgt. John Bentivegna

Bentivegna is a 29-year veteran now advising the Deputy CSO for Operations Lt. Gen. DeAnna Burt and is also the Enlisted Space Systems Operations Career Field Manager. He was Command Chief at Space Operations Command in his prior role.

Experienced in both maintenance and space operations, Bentivegna joined the Air Force in 1994 and transferred into the Space Force in September 2020. As the second-ever CMSSF, he will be responsible for advising Saltzman on the welfare and readiness of the Space Force's Guardians.

He'll face a tall order in succeeding Towberman, whose energetic, affable, and compassionate style connected well with Guardians—and the public. He was willing to try almost anything, including a late-night TV appearance from Greenland, singing with the Air Force's Max Impact rock band, and speaking directly to Guardians on the Space Force's unofficial Reddit page.

In a statement, Towberman praised Bentivegna's selection. "He's been right here with us every step of the way," Towberman said. "He knows where we've been and believes in where we're going. I couldn't be happier for our Guardians or more proud of how it's all coming together. He's exactly who we need right now."

Bentivegna was one of five finalists for the position, all of whom underwent a four-day evaluation that "vetted their

skills and leadership capabilities" and included a personal interview with Saltzman, according to a Space Force release.

"I needed someone that would bring a perspective on our future that was articulated differently from mine," Saltzman said in the release. "Someone who could (and would) challenge my assumptions and ensure that important issues were evaluated from multiple angles and would catch things I missed. All the candidates had tremendous experience, skills, and expertise and it made it a close run."

"It's overwhelming and incredibly humbling to be offered the opportunity to become the next Chief Master Sergeant of the Space Force," Bentivegna said in a statement. "I am really excited to have that opportunity to work next to General Saltzman to help fulfill his vision for where the service needs to go."

A Space Force spokeswoman told Air & Space Forces Magazine there is no established date yet for Bentivegna to formally take the reins from Towberman, who will retire later this year.

When Bentivegna does take over, though, he'll take on a range of duties and fill big shoes. Towberman, who was just the second Guardian in the force, helped the Space Force take new approaches to traditional military personnel structures and processes, noting how its small size made it ideal for experimentation.

Among those new approaches is a radically different physical fitness program defined by "holistic health" and fitness trackers for continuous monitoring, instead of annual tests. The service is also hoping to move away from tests and toward promotion boards for every rank above E-4. The plan is also to establish an entirely new "Space Component" that combines part-time and full-time Guardians instead of the traditional Active-duty/Reserve model.

MILITARY FAMILIES

5 Keys to Life as a Military Spouse

Mike Tsukamoto/staff

Lyndsey Akers, Air & Space Forces Association United Forces & Families (F2) event moderator, left, moderates a fireside chat with Chief of Staff of the Air Force Spouse Sharene Brown (center) and Chief of Space Operations Spouse Jennifer Saltzman, who shared their mil-spouse experiences at the Air & Space Forces Association United Forces & Families (F2) event, May 30, 2023, in Arlington, Va.

By Chris Gordon

Military families face many personal issues associated with their service, and the spouses of the top officers in the Department of the Air Force are not immune to them, they said May 30 during an Air & Space Forces Association United Forces & Families (F2) event, appearing alongside family advocates.

"I guess it worked out for the best 30 years later," Jennifer Saltzman, wife of Chief of Space Operations Gen. B. Chance Saltzman said. "I did not grow up in the military. I didn't know what that life was about, and just thought ... he's really a cute, nice guy. Let's just do that. That'll be easy. We won't do it very long, right?"

Since then, Jennifer Saltzman—who appeared on a panel alongside Sharene Brown, the wife of Air Force Chief of Staff Gen. Charles Q. Brown Jr.—learned that being a military spouse was challenging, though rewarding. Here are five things Jennifer Saltzman and Sharene Brown have learned over the years—some big takeaways and others simple daily rituals.

1. THE 20-SECOND HUG

"Time, definitely we never have enough of it," Saltzman said. But her husband came home from a conference with an interesting suggestion offered by a speaker, which Jennifer Saltzman says the couple has now taken up.

"Take a deep breath and hug your spouse for 20 seconds," Saltzman said. "It allows you to take those couple of deep breaths and then you kind of just re-center."

Saltzman said that with all that military families are juggling, it is important to connect.

"Now it's just almost a call in the house," Saltzman said. "That's a fun connection. But you'd be surprised if you really do count 20 seconds, it's longer than you think."

Saltzman said families should find whatever works for them, whether it's quirky or not.

"But always make sure you create the time because it goes by really quickly," she said. "You don't want moments to be few and far between. You want to make sure that you always capture your connection first."

2. FIGHT FOR YOURSELF AND YOUR FAMILY

Sharene Brown's signature initiative since her husband became Chief of Staff is "Five and Thrive," focusing on five key concerns for military families. And two of those areas, child care and education, are particularly important to the Browns, given their experience after one of their sons was diagnosed with autism.

"When you see something that's happening with your family, you need to take as much of a proactive stance as you possibly can," Brown said. "I tried to soak up as much information about what schools should require or do require for students as much as I could, because I knew the next location wouldn't necessarily have all that information."

But whatever the situation is, Brown said families are their own best advocates.

"To all of our family members, I say to you, you know your family is really important because all the things that are going on in a military life, you're thrown a number of different curveballs along the way," Brown said. "It's not so much what you're thrown, but how you handle that and how you're able to seek out those people around you and those resources that are out there for you. Because let me tell you, our military has a lot of resources, birth to grave, and we're just overflowing with any sort of information that we'd like to be able to share with you."

The Browns know firsthand that is not always easy, she said.

"Reaching out is probably the hardest thing to do initially," Brown said. "If you recognize that there's something that's just not quite right, then investigate, explore, try to figure out what's going on, and be proactive. Because ultimately, if you don't engage early enough, you will be dealing with a number of challenges, either early on or later on in life. And the longer you wait, the harder the challenges become."

3. MAKE CONNECTIONS OUTSIDE THE MILITARY

Roughly two-thirds of military families live off base. Families should reach out to their civilian neighbors, military family advocates said.

"You can't only rely on the military spouses around you," said Kirstin Navaroli, the co-founder of Wives of the Armed Forces, who appeared alongside fellow spouse advocates Nicole Murray and Aaron Evenson. "We can't only rely on our partner. You have to get creative."

Navaroli recounted a time when she needed urgent help taking care of one of her kids. While she may not live in her current neighborhood for the rest of her life, civilian families are still willing to help out—if they know they can, she said.

"Building relationships and building trust," is key, Navaroli said, "so that when you need that text to go out and you know

it's going to be answered."

Military members make frequent moves, but that doesn't mean families shouldn't try to connect with as many people as possible. Brown recounted her trepidation upon heading for her husband's assignment to Shaw Air Force Base in Sumter, S.C.

But, she learned, "people are people everywhere."

4. EXPLORE

Being a military family has many challenges, but America relies on an all-volunteer force. As the military struggles with recruiting and retention, Brown said it is most important for families to get everything they can out of their military experience.

"Get out and explore," Brown said. "You never know how long you're going to be in a location. I always tried to get out and see as much of wherever I was living and to meet as many people as possible."

As General Brown was sent to places like South Korea and Italy, the family got to experience the cultural rewards of those different environments.

But Saltzman said military families should try to make the best of any location they're posted in.

"I take advantage of every opportunity in every place," Saltzman said. "Even if it's not your first choice, and it was your second or your third, there's going to be something fabulous there for you and your family. You just have to go out and find it."

"Don't be disappointed or scared if there's a location that you're going to that you weren't quite sure about," she added.

5. BE FLEXIBLE

"There's only 24 hours in the day, even though some of you use those a lot more efficiently," Saltzman said. "Be flexible."

Despite her husband's high rank and their new Space House quarters, General Saltzman's first posting with Jennifer was to Montana when he was a young missileer, and they have moved roughly 14 different times.

She recounted one story that illustrates the hectic life of military families when she was asked for an emergency contact.

"'I don't have one, I just got here yesterday,'" Saltzman recounted. "'I think one time I made a person up, 'What's the area code here?' That's fine, I'll just write a name. But there are other people experiencing those same things. Hopefully, you can just find that network of people because military families and military kids are the greatest ones out there. So I've always been honored to be able to be in that group. But you have to be flexible."

New ICBM Cancer Study Will Examine 'Everyone Possible'

By Chris Gordon

The Air Force is pressing to find out why some Airmen and former Airmen who worked with the nation's intercontinental (ICBM) ballistic missile fleet are being diagnosed with blood cancer—years after the service dismissed such concerns in the early 2000s.

A new Missile Community Cancer Study launched earlier this year aims to "make sure we get to the truth, whatever that truth is," said Col. Robert D. Peltzer, a senior medical officer with Air Force Global Strike Command.

Air Force reviews of cancer rates among missileers in 2001 and 2005 could not identify an increased rate linked to missile service, but new medical knowledge has emerged since, Peltzer said. Doctors have "a better understanding" of factors that can cause cancer today.

"Look at [the herbicide] Roundup being one of those," Peltzer said. "Non-Hodgkin's lymphoma is the No. 1 cancer on the list when you look at it. We didn't know [Roundup] caused those types of cancers back in 2001."

Armed with greater knowledge and detection capability, the Air Force will also have better access to highly classified ICBM facilities and the health data for a broader range of personnel, including both those working in underground bunkers for 24 to 48 hours at a time.

Peltzer said maintainers, security forces, and food service workers—among others—will also be in the new study, not just those who worked in launch facilities. Members of the study team, which is led by the U.S. Air Force School of Aerospace Medicine, visited bases to better understand the facilities and potential exposure issues.

"We want to make sure we didn't miss out or exclude groups that actually are just as much—or potentially as much—at risk, or more at risk, than those members," Peltzer said. The research team is made up of experts experienced in conducting cancer studies, including one that showed increased risks of cancer among pilots in recent years. That study led to a broader Pentagon review that validated the Air Force study's conclusions.

Staff Sgt. Michael Richmond

Airmen from the U.S. Air Force School of Aerospace Medicine visited a Missile Alert Facility at Minot Air Force Base, N.D., in 2023 to gather information for their cancer study.

"This is the same team and through that they learned which data sources and what they could get and how long it took them to get it," Peltzer said.

But to conduct a study, Air Force medical officials said, they first have to know what an ICBM base is and what ICBM forces do—from an "operational, occupational, and environmental" perspective.

Col. Tory W. Woodard, commander of the USAF School of Aerospace Medicine, told Air & Space Forces Magazine

that seeing the bases was a new experience for the research team. "Many of the medical experts had not previously been to a missile base or been in the operational locations where the missileers work," Woodard said. "This visit was extremely important in order to inform the future cancer studies."

Woodard was on the team that visited three ICBM bases—F.E. Warren Air Force Base, Wyo.; Minot Air Force Base, N.D.; and Malmstrom Air Force Base, Mont. The trip took place from Feb. 27 to March 7 and included his staff, members of the AFGSC Command Surgeon's office, and experts from the Defense Health Agency.

"The team did not see any acute risks that needed immediate attention," Peltzer said.

But Peltzer said there was no intention to dismiss cancer risks as they reviewed the facilities and flagged other possible medical concerns, such as running vehicles too close to air vents, burning documents indoors, or signage that indicated the presence of polychlorinated biphenyls (PCBs), which have long been banned and should have been removed. Whether the signs were left behind after the PCBs were removed years ago is not clear. To locate traces of PCBs and a long list of other possibly toxic substances will require extensive sample testing, according to AFGSC.

ICBM facilities are often surrounded by private land where agricultural products may have been used without regard to the potential effect on missileers working nearby. The next-generation Sentinel ICBMs that will eventually replace today's 50-year-old Minuteman III ICBMs will likely also be safer, given modern understanding. But an AFGSC official noted that even new missiles will have their own hazards.

Air Force officials said these first visits were not intended to draw definitive conclusions.

"It's not the epidemiology study, so it wasn't looking at cancer-related items," Peltzer said. "That will be done later through the actual study itself."

Interest and focused attention on the issue comes only after long-held concerns among some members of the missileer community pushed to the fore earlier this year, following a presentation detailing cases of non-Hodgkin lymphoma at Malmstrom by a Guardian who formerly served there. His PowerPoint slides later surfaced on Facebook, prompting AFGSC Commander Gen. Thomas A. Bussiere to call for and launch the study in February.

Bussiere, Woodard, and AFGSC Command Surgeon Col. Lee D. Williams briefed members of the ICBM community at a recent virtual town hall, Air Force officials said. Bussiere directed his staff to explore the idea of assigning medical professionals directly to ICBM units, modeled on how flight surgeons support flying crews. Because of the remote and classified nature of ICBM work, that could yield more real-time access to sensitive areas.

While the study is inspecting the three current active bases, which have ICBMs spread out over five states, the service is going through military, federal, and state cancer registries. The study will then have to match that data with service personnel files. That is not a straightforward process as the Air Force has changed job titles over time. The study is expected to take 12 to 14 months from start to finish, according to Woodard. The time is largely due to the amount of data that needs to be collected and analyzed, Peltzer explained.

"They will look at everyone possible," Peltzer said.

A number of closed bases will also be examined as the service reaches back four decades in its data-gathering process. Only the on-site work is limited to those three active bases.

Peltzer said researchers will use Air Force Specialty Codes, bases, and timelines. "We know them all and all locations that were active since 1983," he said. "Those members will be captured into this data study because that seems to be a great concern, especially of those who are retirees or former retirees if they've already passed away."

Former and current service members have expressed skepticism over previous Air Force health studies, criticizing them for leaving the Air Force to study itself. The new study leverages epidemiologists from Veterans Affairs and the National Cancer Institute to monitor the study and provide feedback.

"There's going to be outside entities," Peltzer said. They "will give us a fair and objective look at what we're doing to make sure we're aboveboard."

RUSSIA-UKRAINE

Airmen Translate Russian Account of Ukraine War

By David Roza

"Half of my guys changed clothes and wore Ukrainian uniforms because they were of higher quality and more comfortable. … Our great country was unable to clothe, equip, and feed its own army."

Those are among the opening lines of a harrowing 77-page account from Russian paratrooper Pavel Filatyev, describing his part in the 2022 invasion of Ukraine—and now available to read in English thanks to five Russian-speaking Airmen who translated the text on behalf of the Air Force Culture and Language Center (AFCLC).

The full blog—titled "Zov," a term that means "Calling" in English—made headlines in August after appearing on the Russian social media website Vkontakte. Though Russian soldiers had previously posted photos and videos of the war to social media, Filatyev's blog was one of the first longform accounts to appear in public.

"I cannot remain silent," wrote Filatyev, who later fled Russia for political asylum in France.

Airmen and the rest of America can now read the whole

document on the U.S. Air Force's Air University website. And while it may be impossible to verify all of the details in Filatyev's account, his writing offers a rare glimpse of what went wrong in the Russian invasion.

Specifically for U.S. service members and leaders, Zov provides insight into how Ukrainian forces have been able to defy the odds and blunt the effects of a larger, technologically superior Russian military, one of the USAF translators told Air & Space Forces Magazine.

"Before the invasion started, everybody was reporting that Ukraine would fall within weeks, and that clearly hasn't happened," Capt. Roman Obolonskiy said. "Now we have to go back and figure out what within our military Intelligence Community and analysis failed to predict this outcome."

While military planners could estimate the number of Russian resources like tanks, troops, and planes, accounts like "Zov" shed light on intangible factors such as morale, motivation, and training.

"Is what's on paper real? The writer would tell us, 'Hey we were not issued the things we thought we would be issued,'" Obolonskiy said. "'We did not have sleeping bags or winter clothing and we had rusty weapons that were out of sight.' Having 200 rifles is great, but not if none of your 200 rifles can shoot straight."

CHALLENGES OF TRANSLATION

Like his four co-translators, Obolonskiy is a member of the Language-Enabled Airman Program, an initiative within AFCLC where Airmen and Space Force Guardians who have significant experience in a foreign language can apply to serve as cultural and linguistic experts for their fellow service members.

The team of Airmen, which included Maj. Herman Reinhold, Capt. Mikhail Berlin, Capt. Abror Samatov, and Master Sgt. Nadia Wolfe, read "Zov" the entire way through, split it into sections, assigned one Airman to each section, then worked together to ensure consistency throughout the translation. It was a difficult task: Filatyev wrote in a stream-of-consciousness style filled with military jargon, typos, and colloquial expressions that do not translate perfectly into English.

"It was the use of language I found particularly interesting," Reinhold said. "It is kind of a puzzle: how do I translate the F-word in Russian into English in a way that is understandable to the reader. I may or may not use the exact F-word equivalent. Maybe I'll use different curse words to convey the meaning."

Indeed, David Remnick, the editor of The New Yorker and a fluent Russian speaker, wrote in 2014 there are thousands of variations on the four curse words that make up the backbone of Russian profanity. Besides profanity, the LEAP scholars also had to use their best judgment to translate colloquial or military terms.

"Some of the military jargon, slang, wordplay, and colloquial expressions would not make sense in English if translated verbatim," said Berlin. "It was a fun challenge to find a creative way to convey the exact same meaning and find similar phrases that would be used in English."

LESSONS FOR THE US

When the translation was complete, it provids firsthand perspective of what many analysts had seen from a distance: The Russian war effort has been hampered by poor logistics, communication, and leadership. Zov illustrates how those issues affect front-line troops.

"Who will be accountable for these lives lost and the wounded?" Filatyev wrote about a suspected incident of friendly fire. "After all, the reason for their deaths was not the professionalism of the Ukrainian army, but the mess in ours."

The shortage of medical supplies and other equipment that Filatyev experienced reminded Wolfe, a medical logistics flight chief, just how important her work is to the larger U.S. military.

"In medical logistics, we do our job day to day and we do not necessarily see the outcome," she said. "Zov brings the importance of what we do to light and is an example that I can use to motivate my people."

Filatyev's memoir also showed the impact a corps of noncommissioned officers, or lack thereof, can have on a battlefield.

"There is a very large separation between officers and enlisted," said Wolfe. "It was almost like they are not even working on the same side."

Obolonskiy came away with a greater appreciation for corruption in the Russian military and political system, which may have contributed to the dysfunction at the front.

"We've always known about corruption within Russia, but I don't think we comprehended what that meant," he said. "Throughout reading this, from start to finish, every link in their chains of supply, appropriations, and logistics was impacted by a level of corruption where people were just stealing everything that they needed for the war effort."

MORE UNDERSTANDING

Despite Filatyev's criticisms of the war and the Russian military, the paratrooper declares: "I'm not a coward! I'm a patriot! ... I feel sorry for the Ukrainians, a fraternal nation to me! But even more, I feel sorry for the used Russian people and the nations of the great USSR, whose people were exploited by others, more unscrupulous individuals. Who are currently destroying the largest and the greatest country in the world!"

Filatyev may have witnessed war crimes firsthand. In March, Radio Free Europe/Radio Liberty alleged the paratrooper said he was aware some Ukrainians captured by his unit would later be executed. In Zov, he wrote that he did not witness any acts of torture or rape, though he saw at least one mutilated body. The paratrooper expressed guilt for participating in what he felt was an unjustified invasion.

In writing Zov, he may have "tried to do something that would clear his conscience," Wolfe said.

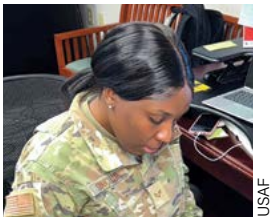
In reading the document, Americans must remember Filatyev's experience may not reflect that of the entire Russian military, Reinhold said. Zov is a primary source document, and other sources are needed for a more holistic picture of the conflict. With those limitations in mind, Filatyev's account could serve as a reminder that an army's strength on paper may not hold up on the battlefield.

"There is an opportunity to try and figure out how we can re-analyze other adversaries," said Obolonskiy. "Are we focusing on the right things when we try to calculate how capable a foreign military is?"

That mindset applies not only to adversaries, but also to allies, partners, and the U.S. itself.

"We need to look in the mirror as well and see what of this applies to us," Obolonskiy said. "Do we provide the correct training, or are we boggled as well? Do we provide the proper equipment or do we also have five guns at a base of a thousand?"

FACES OF THE FORCE


USAF

Senior Airman Kenia Sinclair, a religious affairs Airman assigned to the 628th Air Base Wing, Joint Base Charleston, S.C., is a four-time Olympian, representing Jamaica. She moved to the U.S. in 1999 with a track scholarship to Seton Hall University. After competing in four Olympic Games and signing a Nike contract, Sinclair made a promise to herself: "I would serve the country that paved the way for my success," she said. "I was able to go to college, my tuition was paid for with an athletic scholarship, and I was able to buy a house and my dream car. America did all this for me."


Senior Master Sgt. Vincent De Groot/ANG

Air Force veteran crew chief **Richard Devine's** interest was piqued recently when he found a news story about a KC-135 Stratotanker he once crewed over 60 years ago. The aircraft was still in service and stationed in nearby Sioux City, Iowa. "I was wondering if there is any chance this 82-year-old veteran could tour 057?" Devine wrote to the Iowa Air Guard. There was. He and the aircraft's current crew met on the flight line in Sioux City. During Devine's time in the Air Force, the KC-135 was one of the newest aircraft in the inventory, making him part of a unique club of first-generation KC-135 crew members.


Airman Troy Barnes/ANG

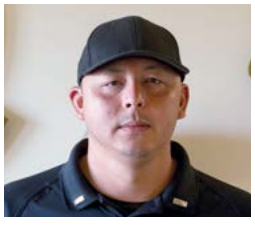
Tech. Sgt. Kara Clum, a material manager with the 126th Supply Chain Operations Squadron, is the 2022 Air National Guard Athlete of the Year. Clum served almost 15 years in the Air Force before joining the Illinois Air National Guard. An avid runner, she began lifting weights while stationed at Kunsan Air Base, South Korea. She moved to Scott Air Force Base, Ill., and became a competitive bodybuilder. "I kind of just transformed my body over the years and ended up winning three overalls in the past two years," Clum said. She now plans to get her International Fitness and Bodybuilding Federation Pro Card.


Senior Master Sgt. Emily Beightol-Deyerle/ANG

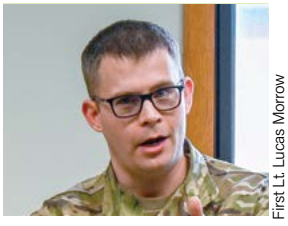
With 17 years of Air National Guard military intelligence experience, **Master Sgt. Paul Noel** recently shared his expertise with the Qatari military through the National Guard's State Partnership Program. An intelligence specialist for the 167th Operations Support Squadron, Noel was one of seven U.S. military representatives to provide training to the Qatar Military Intelligence and Security Authority in Doha, Qatar, in March. The training focused on joint military doctrine and the critical role military intelligence analysts play in joint operational planning and Joint Intelligence Preparation of the Operational Environment.


Tech. Sgt. AJ Hyatt

Master Sgt. Zachary Cooper, a Tactical Systems Operator who was deployed to Afghanistan in February 2019, received the Distinguished Flying Cross in March for his actions during a force protection patrol in Helmand Province. As the sole armed overhead asset, Cooper's crew provided ISR, airborne command and control, casualty evacuation, and armed overwatch for more than 180 U.S. and partner ground forces under heavy enemy fire. "It was one of those nights, like many others, where things just clicked for us as a team," he said.


Airman 1st Class Emily Saxton

Dwayne Pangelinan, 36th Security Forces Squadron supervisory police officer, received a Medal of Valor for his actions during two incidents. "I was just in the right place, at the right time," Pangelinan said. He said that some Airmen undergo a lot of distress, especially being away from family, and while some can withstand it, others turn to unhealthy methods to deal with problems. This is his third Medal of Valor award. "Helping people, that's my favorite part of the job," he said. "I was lucky to be there in both instances and both Airmen are alive and OK today."


First Lt. Lucas Morrow

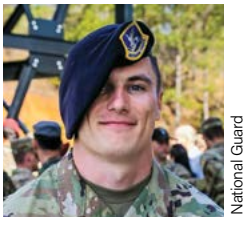
Maj. Matthew Bryant, a 914th Wing chaplain, received the Military Chaplains Association Distinguished Service Award, which recognizes ministry excellence of chaplains across DOD and is presented annually during the MCA National Institute. Bryant credited the award to those working with him at the Niagara Falls Air Reserve Station, N.Y., chapel. "Sometimes my name gets put onto some things we did as a team, and it represents a team effort … and how we have a unique service when it comes to caring for and supporting our Airmen." Bryant said. "It's an award that is born out of love."


Airman 1st Class Aleece Williams/USSF

First Lt. Kristin Eslinger, a mission management operator at 2nd Space Warning Squadron, Buckley Space Force Base, Colo., has been a part of the Space Delta 4 missile warning mission for two years. She is striving for something bigger than herself that allows her to give back. That ideology has reigned true as she has served on a team that has seen a record number of missile launches. She was recently accepted into graduate school, where she hopes to advance her career and ensure the Space Force has the best capabilities that will guarantee missile warning, defense, and battlespace awareness.


Airman 1st Class Christian Silvera

Staff Sgt. Christopher Conway, 437th Aircraft Maintenance Squadron crew chief at Joint Base Charleston, S.C., is revolutionizing Team Charleston's abilities through 3D printing. Conway has helped improve unit effectiveness since becoming an intern at the Palmetto Innovation Spark Lab. "I designed an adjustment to a pressure sensor for the 628th Bioenvironmental Engineering Flight," Conway said. "Making some manipulations, it was able to read the air pressure properly." In addition to innovating multiple resources on base, Conway's designs are cost-effective.


National Guard

A 127th Wing Defender completed the "10 toughest days in the Army" in March. **Senior Airman Joe Fitzgerald,** a member of the 127th Security Forces Squadron at Selfridge ANGB, Mich., became one of the relatively few Air National Guard Airmen authorized to wear the Air Assault Badge. During the two-week training at the Army Warrior Training Center, Fort Benning, Ga., students received instruction in how to transport supplies via helicopters in a contested environment, how to create and secure landing zones, and conduct offensive and defensive operations.

Tell us who you think we should highlight here. Write to afmag@afa.org.

Air Force & Space Forces
ALMANAC 2023

This Almanac was compiled by Amanda Miller, Aaron M.U. Church, and the staff of Air & Space Forces Magazine. We gratefully acknowledge Air Force Public Affairs offices at headquarters, agencies, major commands, and the reserve components for their invaluable help—The Editors.

Adobe Stock

DEPARTMENT OF THE AIR FORCE

The U.S. Air Force and U.S. Space Force are each distinct service branches operating within an overarching Department of the Air Force (DAF). The Secretary, Chief of Staff of the Air Force, and Chief of Space Operations are each supported by headquarters staffs, and together oversee their field organizations.

AIR&SPACE FORCES
airandspaceforces.com

SECRETARY OF THE AIR FORCE — Frank Kendall

UNDERSECRETARY OF THE AIR FORCE

Chief of Staff of the Air Force
Gen. Charles Q. Brown Jr.

Vice Chief of Staff of the Air Force
Gen. David W. Allvin

Chief Master Sgt. of the Air Force
CMSgt. JoAnne S. Bass

SECRETARIAT

- ★★★ Director of Staff
- ★★★ Inspector General
- ★★ Legislative Liaison
- SES Public Affairs
- SES Principal Cyber Advisor
- SES Chief Data & AI
- SES Small Business Programs
- SES Diversity & Inclusion
- SES Administrative Assistant
- SES International Affairs
- CIV Chief Information Officer
- CIV Auditor General
- CIV Management
- CIV General Counsel
- CIV Acquisition, Technology & Logistics
- CIV Space Acquisition & Integration
- CIV Manpower & Reserve Affairs
- CIV Energy, Installations, & Environment

AIR STAFF

- ★★★ Manpower, Personnel & Services (A1)
- ★★★ Intelligence, Surveillance, Reconnaissance and Cyber Effects (A2/6)
- ★★★ Operations (A3)
- ★★★ Logistics, Engineering & Force Protection (A4)
- ★★★ Plans & Programs (A5/7)
- ★★★ Plans & Requirements (A8)
- ★★★ Strategic Deterrence & Nuclear Integration (A10)
- ★★★ Strategy, Integration, & Requirements Chief of Chaplains
- ★★★ Surgeon General
- ★★ Judge Advocate General
- ★★ Chief of Safety
- CIV Studies & Analysis
- CIV Chief Scientist
- CIV Test & Evaluation
- CIV History & Museums

MAJOR COMMANDS, RESERVE COMPONENTS, & NUMBERED AIR FORCES

★★★★ PACIFIC AIR FORCES (PACAF)
- ★★★ 5th Air Force[3]—Supports PACAF
- ★★★ 7th Air Force—Supports U.S. Forces Korea (PACAF)
- ★★★ 11th Air Force—Provides forces to PACAF

★★★★ UNITED STATES AIR FORCES IN EUROPE-AIR FORCES AFRICA (USAFE)
- ★★ 3rd Air Force—Supports U.S. European Command/U.S. Africa Command

★★★★ AIR COMBAT COMMAND(ACC)
- ★★★ 1st Air Force/AFNORTH—Supports U.S. Northern Command to ensure air defense of continental United States
- ★★ 9th Air Force—Deployable, operational Joint Task Force (ACC)
- ★★ 12th Air Force/AFSOUTH—Air component of U.S. Southern Command
- ★★ 15th Air Force—Organizes, trains, & equips commands for expeditionary taskings (ACC)
- ★★★ 16th Air Force—Information warfare operations (ACC)

★★★★ AIR MOBILITY COMMAND (AMC)
- ★★ 18th Air Force[3]—Operational component of Air Mobility Command
- ★★ 22nd Air Force—Responsible for AFRC C-130 and WC-130 units operated by Air Mobility Command

★★★★ AIR FORCE GLOBAL STRIKE COMMAND (AFGSC)
- ★★ 8th Air Force/Air Forces Strategic—Supports U.S. Strategic Command and is responsible for all USAF bombers
- ★★ 20th Air Force—Responsible for ICBMs and nuclear operations support for Air Force Global Strike Command

★★★★ AIR FORCE MATERIEL COMMAND (AFMC)

★★★ AIR FORCE SPECIAL OPERATIONS COMMAND (AFSOC)

★★★ AIR EDUCATION AND TRAINING COMMAND (AETC)
- ★★ 2nd Air Force—Part of AETC, responsible for all USAF non-flying technical training
- ★★ 19th Air Force—Trains aircrews for manned and unmanned aircraft; air battle managers; and weapons directors (AETC)

★★★ AIR FORCE RESERVE COMMAND (AFRC)
- ★★ 4th Air Force—Supports AFRC
- ★★ 10th Air Force—Supports Air Force Reserve units nationwide

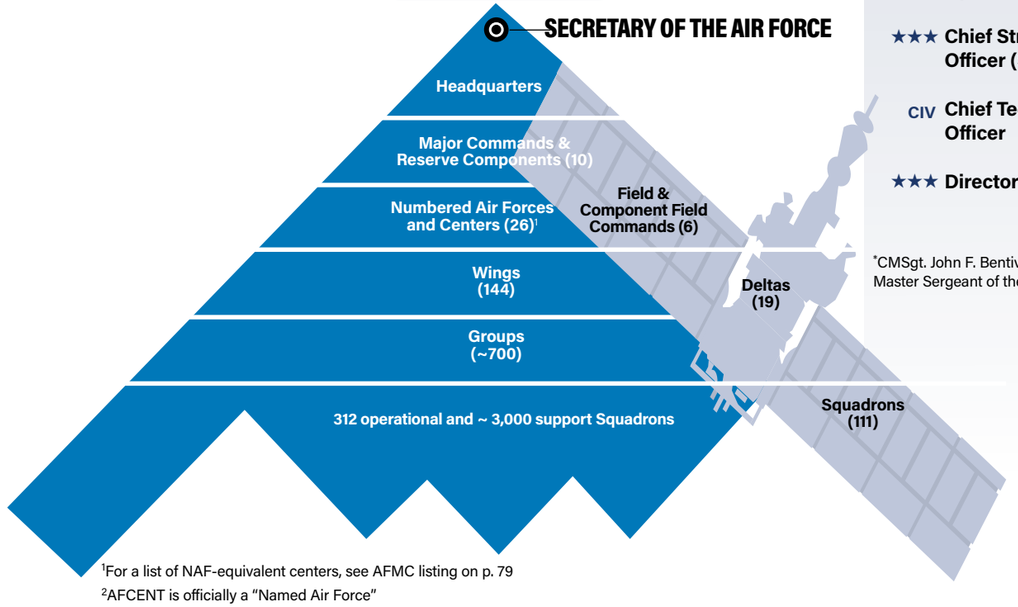
★★★ AIR NATIONAL GUARD (ANG)

★★★ U.S. Air Forces Central/AFCENT[2]—Supports U.S. Central Command

FIELD & COMPONENT FIELD COMMANDS

- ★★★ Space Operations Command (SpOC)
- ★★★ Space Systems Command (SSC)
- ★★ Space Training & Readiness Command (STARCOM)
- ★ U.S. Space Forces Indo-Pacific
- U.S. Space Forces—Korea
- U.S. Space Forces—Central

DAF HIERARCHY



[1]For a list of NAF-equivalent centers, see AFMC listing on p. 79
[2]AFCENT is officially a "Named Air Force"
[3]Also supports Unified Combatant Commands

Chief of Space Operations
Gen. B. Chance Saltzman

Vice Chief of Space Operations
Gen. David D. Thompson

Chief Master Sergeant of the Space Force
CMSgt. Roger A. Towberman*

SPACE STAFF

- CIV Chief Human Capital Officer (S1)
- ★★★ Chief Operations Officer (S3/4/6/7/10)
- ★★ Deputy Chief of Space Operations for Intelligence (S2)
- ★★★ Chief Strategy & Resourcing Officer (S5/8)
- CIV Chief Technology & Innovation Officer
- ★★★ Director of Staff (S9)

*CMSgt. John F. Bentivegna nominated to become Chief Master Sergeant of the Space Force on May 5, 2023.

(★) Stars indicate commander's rank.

PERSONNEL

DAF TOTAL FORCE END STRENGTH

(As of Sept. 30, 2022)

Fiscal Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
USAF Active Duty								Planned	Planned
Officers	60,961	61,597	62,640	63,902	64,245	64,873	64,941	60,838	61,396
Enlisted	252,762	256,983	258,978	263,976	265,369	265,658	263,480	257,010	259,304
Cadets	4,160	4,207	4,262	4,223	4,176	4,103	4,003	4,000	4,000
Total USAF Active Duty	**317,883**	**322,787**	**325,880**	**332,101**	**333,790**	**334,634**	**332,424**	**321,848**	**324,700**
USSF Active Duty									
Officers					84	3,656	4,220	4,314	4,576
Enlisted					1	2,907	3,841	4,286	4,824
Total USSF Active Duty					**85**	**6,563**	**8,061**	**8,600**	**9,400**
Civilian Personnel									
Direct hire (excluding technicians)	131,965	140,116	135,879	139,536	140,848	147,434*	142,293	148,633	149,571
ANG technicians	23,044	22,542	21,705	17,502	14,970	10,994	14,143	9,778	10,760
AFRC technicians	8,384	7,872	7,648	7,714	9,027	7,224	5,793	6,979	6,882
Total direct hire	163,393	170,530	165,232	164,752	164,845	165,652	162,229	165,390	167,213
Indirect hire	3,704	4,570	4,202	4,190	3,694	3,728	**	**	**
Total Civilian Personnel	**167,097**	**175,100**	**169,434**	**168,942**	**168,539**	**169,380**	**162,229**	**165,390**	**167,213**
Air National Guard									
Selected Reserve Officers	14,593	15,257	15,401	15,495	15,990	16,377	16,253	16,204	15,446
Selected Reserve Enlisted	90,907	90,413	92,068	91,702	91,424	92,106	88,731	88,896	92,954
Total ANG	**105,500**	**105,670**	**107,469**	**107,197**	**107,414**	**108,483**	**104,984**	**105,100**	**108,400**
Air Force Reserve Command									
Selected Reserve Officers	14,896	13,672	13,716	14,042	14,458	14,947	14,988	14,592	14,579
Selected Reserve Enlisted	54,304	55,126	54,987	55,347	54,598	55,623	53,060	54,308	55,021
Total AFRC Selected Reserve	69,200	68,798	68,703	69,389	69,056	70,570	68,048	68,927	69,600
Individual Ready Reserve Officers	7,492	7,492	6,593	7,631	7,631	7,631	7,340	7,379	7,419
IRR Enlisted	29,359	29,359	21,801	20,683	20,683	20,683	21,196	23,099	23,056
Total IRR	**36,851**	**36,851**	**28,394**	**28,314**	**28,314**	**28,314**	**28,536**	**30,478**	**30,475**
Total AFRC	**106,051**	**105,649**	**97,097**	**97,370**	**97,370**	**98,884**	**96,584**	**99,405**	**100,075**
TOTAL READY RESERVE	**211,551**	**211,319**	**204,566**	**204,567**	**204,784**	**207,367**	**201,568**	**204,505**	**208,474**

Source: Fiscal 2024 President's Budget Request
*Enacted
**Figures not available at press time

DAF ACTIVE DUTY AIRMEN MALE/FEMALE, 1970-2022

(As of Sept. 30, 2022)

	1970	1980	1990	2000	2010	2019	2020	2021	2022
Cadets									
Female	0	504	553	658	966	1,176	1,194	1,182	1,196
%	0	11.4	12.7	15.4	21.2	27.9	28.6	28.8	29.9
Male	4,144	3,907	3,817	3,617	3,592	3,047	2,982	2,921	2,807
%	100	88.6	87.3	84.6	78.8	72.2	71.4	71.2	70.1
Total	**4,144**	**4,411**	**4,370**	**4,275**	**4,558**	**4,223**	**4,176**	**4,103**	**4,003**
Enlisted									
Female	8,987	60,803	60,803	55,011	50,946	54,205	55,273	55,644	55,297
%	1.4	13.2	14	19.2	19.3	20.5	20.8	20.9	21.0
Male	652,559	399,517	374,385	231,620	212,491	209,771	210,279	210,014	208,183
%	98.6	86.8	86	80.8	80.7	79.4	79.2	79.1	79.0
Total	**661,546**	**460,320**	**435,188**	**286,631**	**263,437**	**263,976**	**265,552**	**265,658**	**263,480**
Officer									
Female	4,667	8,493	13,331	11,819	12,363	13,932	14,325	14,671	15,040
%	3.6	8.7	13.3	17.1	18.7	21.8	22.3	22.6	23.2
Male	125,136	89,156	86,714	57,204	53,838	49,970	49,920	50,202	49,901
%	94.6	91.3	86.7	82.9	81.3	78.2	77.7	77.4	76.8
Total	129,803	97,649	100,045	69,023	66,201	63,902	69,598	64,873	64,941
Grand Total	**795,493**	**562,380**	**539,603**	**359,929**	**334,196**	**332,101**	**339,326**	**334,634**	**332,424**

Sources: Defense Manpower Data Center: Table of Active Duty Females by Rank/Grade and Service, September 2022, and Active Duty Military Personnel by Rank/Grade, September 2022

ACTIVE DUTY AIR & SPACE PERSONNEL END STRENGTH: 1907-TODAY

(As of Sept. 30, 2022)

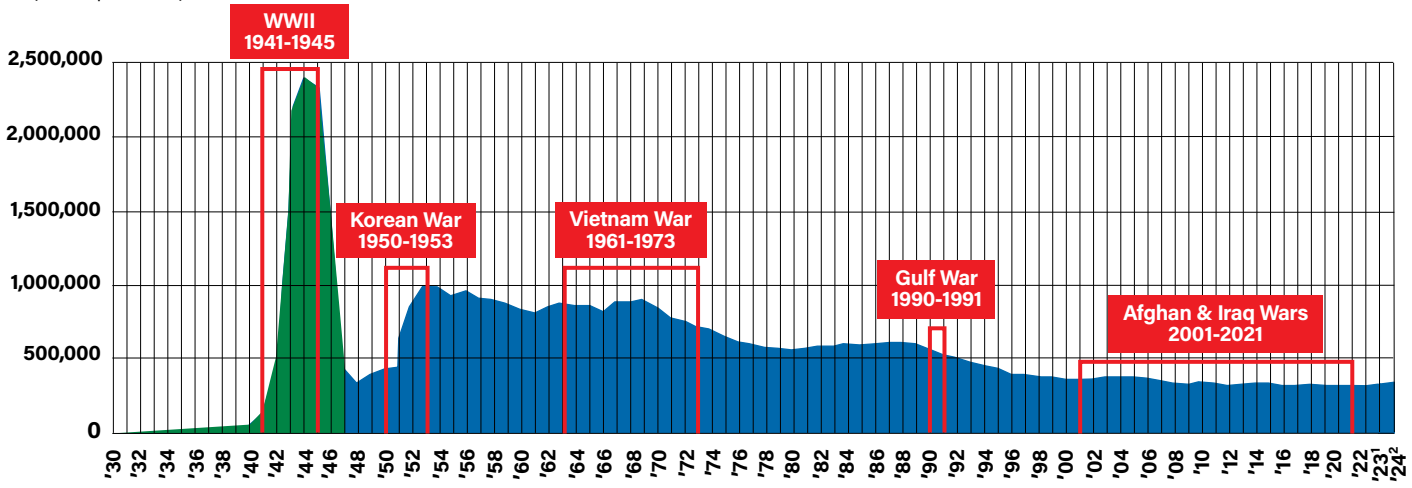
YEAR	NUMBER	YEAR	NUMBER	YEAR	NUMBER	YEAR	NUMBER
1907	3	1937	19,147	1967	897,494	1997	377,385
1908	13	1938	21,089	1968	904,850	1998	367,470
1909	27	1939	23,455	1969	862,353	1999	360,590
1910	11	1940	51,165	1970	791,349	2000	355,654
1911	23	1941	152,125	1971	755,300	2001	353,571
1912	51	1942	764,415	1972	725,838	2002	368,251
1913	114	1943	2,197,114	1973	691,182	2003	375,062
1914	122	1944	2,372,292	1974	643,970	2004	376,616
1915	208	1945	2,282,259	1975	612,751	2005	353,696
1916	311	1946	455,515	1976	585,416	2006	348,953
1917	1,218	1947	305,827	1977	570,695	2007	333,495
1918	195,023	1948	387,730	1978	569,712	2008	327,379
1919	25,603	1949	419,347	1979	559,455	2009	333,408
1920	9,050	1950	411,277	1980	557,969	2010	334,196
1921	11,649	1951	788,381	1981	570,302	2011	333,370
1922	9,642	1952	983,261	1982	582,845	2012	332,918
1923	9,441	1953	977,593	1983	592,044	2013	330,694
1924	10,547	1954	947,918	1984	597,125	2014	316,332
1925	9,670	1955	959,946	1985	601,515	2015	311,357
1926	9,674	1956	909,958	1986	608,199	2016	317,883
1927	10,078	1957	919,835	1987	607,035	2017	322,787
1928	10,549	1958	871,156	1988	576,446	2018	329,880
1929	12,131	1959	840,435	1989	570,880	2019	332,101
1930	13,531	1960	814,752	1990	535,233	2020	329,797
1931	14,780	1961	821,151	1991	510,432	2021	334,634
1932	15,028	1962	884,025	1992	470,315	2022	332,424
1933	15,099	1963	869,431	1993	444,351	2023*	333,944
1934	15,861	1964	856,798	1994	426,327	2024**	333,100
1935	16,247	1965	824,662	1995	400,409		
1936	17,233	1966	887,353	1996	389,001		

From 1907-1946, these Airmen were part of the U.S. Army. See p. 96 on organizational history.

*Planned **Requested

DAF ACTIVE DUTY END STRENGTH: 1930-TODAY

(As of Sept. 30, 2022)



ACTIVE DUTY BY REGION, 1970-2022

(As of Sept. 30, 2022)

REGIONS	1970	1980	1990	2000	2010	2018	2019	2020	2021	2022
U.S. and Territories	565,098	445,886	418,027	291,260	277,123	270,503	276,090	277,818	303,007	277,184
Europe	72,937	76,788	69,296	32,901	30,963	27,085	27,649	27,762	29,896	28,548
East Asia, Pacific	139,666	32,263	33,558	22,030	12,649	20,372	20,698	20,644	22,053	21,105
Africa, Mideast, S. Asia	608	674	376	8,972	891	450	2,076	2,032	2,162	2,093
Western Hemisphere	5,348	2,211	2,356	345	339	2,119	440	436	454	389
Other	7,692	147	11,620	146	12,231	1,138	1,096	1,105	1,183	1,097
TOTAL*	**791,349**	**557,969**	**535,233**	**355,654**	**334,196**	**321,667**	**328,049**	**329,797**	**358,755**	**330,416**

*Not including cadets.
**Not including Space Force.
Source: Air Force Personnel Center

DAF ACTIVE DUTY DEMOGRAPHICS: SEX, ETHNICITY, RACE, MARITAL STATUS, EDUCATION

(As of Sept. 30, 2022)

ENLISTED RANKS	E-1	%	E-2	%	E-3	%	E-4	%	E-5	%	E-6	%	E-7	%	E-8	%	E-9	%	Enlisted Total*	%	DAF Total*	%
TOTAL	8,741	2.71	8,019	2.49	45,703	14.18	62,626	19.44	59,577	18.49	44,073	13.68	25,397	7.88	4,739	1.47	2,597	0.81	261,472		322,197	
Sex																						
Female	1,807	20.67	1,637	20.41	10,758	23.54	14,149	22.59	12,196	20.47	7,564	17.16	5,206	20.50	1,094	23.09	505	19.45	54,917	21.0	69,188	21.47
Male	6,934	79.33	6,382	79.59	34,945	76.46	48,477	77.41	47,381	79.53	36,509	82.84	20,191	79.50	3,645	76.91	2,092	80.55	206,558	79.0	253,009	78.53
Ethnicity*																						
Declined to Respond	36	0.4	4	0.0	105	0.2	286	0.5	778	1.3	1,068	2.4	779	3.1	171	3.6	92	3.5	3,319	1.3	19,731	6.1
Hispanic or Latino	1,957	22.4	2,037	25.4	10,330	22.6	13,071	20.9	10,818	18.2	6,732	15.3	3,430	13.5	624	13.2	262	10.1	49,261	19	54,301	16.9
Not Hispanic or Latino	6,748	77.2	5,978	74.5	35,268	77.2	49,269	78.7	47,981	80.5	36,273	82.3	21,188	83.4	3,944	83.2	2,243	86.4	208,892	80	248,162	77.00
Race																						
American Indian or Alaska Native	109	1.2	111	1.4	469	1.0	572	0.9	464	0.8	295	0.7	192	0.8	35	0.7	11	0.4	2,258	0.9	2,571	0.8
Asian	459	5.3	452	5.6	2,687	5.9	3,051	4.9	2,623	4.4	1,616	3.7	846	3.3	118	2.5	43	1.7	11,895	4.5	15,319	4.8
Black or African American	1,750	20.0	1,545	19.3	8,424	18.4	12,025	19.2	9,910	16.6	6,404	14.5	3,723	14.7	840	17.7	503	19.4	45,124	17.3	48,990	15.2
Declined to Respond	117	1.3	11	0.1	214	0.5	763	1.2	1,420	2.4	1,955	4.4	1,622	6.4	410	8.7	254	9.8	6,766	2.6	10,657	3.3
Identified More Than One Race	567	6.5	514	6.4	2,845	6.2	3,445	5.5	3,242	5.4	2,169	4.9	1,017	4.0	155	3.3	71	2.7	14,025	5.4	16,189	5.0
Native Hawaiian or Other Pacific Islander	131	1.5	128	1.6	661	1.4	864	1.4	771	1.3	649	1.5	438	1.7	71	1.5	26	1.0	3,739	1.4	4,101	1.3
White	5,608	64.2	5,258	65.6	30,403	66.5	41,906	66.9	41,147	69.1	30,985	70.3	17,559	69.1	3,110	65.6	1,689	65.0	177,665	67.9	224,367	69.6
Marital Status																						
Divorced	56	0.6	42	0.5	631	1.4	2,761	4.4	5,274	8.9	4,848	11.0	2,793	11.0	450	9.5	246	9.5	17,101	6.5	19,654	6.1
Married	718	8.2	1,073	13.4	11,438	25.0	23,896	38.2	33,620	56.4	32,592	74.0	20,865	82.1	4,083	86.2	2,295	88.4	130,580	49.9	171,989	53.4
Single	7,967	91.1	6,899	86	33,614	73.5	35,935	57.4	20,639	34.6	6,596	15.0	1,697	6.7	199	4.2	52	2.0	113,598	43.4	130,298	40.4
Other**	0	0.0	5	0.1	20	0.0	34	0.1	44	0.1	37	0.1	42	0.2	7	0.1	4	0.2	193	0.1	253	0.1
Highest Educational Achievement																						
No High School Diploma or GED	12	0.1	5	0.1	20	0.0	22	0.0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	61	0.0	61	0.0
High School Diploma/GED	6,936	79.4	1,536	19.2	3,674	8	762	1.2	55	0.1	6	0.0	1	0.0	0	0.0	0	0.0	12,970	5.0	12,970	4.0
Some College	722	8.3	6,296	78.5	38,701	84.7	56,720	90.6	38,682	64.9	13,096	29.7	1,974	7.8	0	0.0	0	0.0	156,191	59.7	156,191	48.5
Associate Degree	23	0.3	5	0.1	581	1.3	2,890	4.6	15,590	26.2	21,089	47.9	12,520	49.3	1,418	29.9	423	16.3	54,539	20.9	54,539	16.9
Bachelor's Degree	12	0.1	7	0.1	903	2.0	2,000	3.2	4,709	7.9	8,527	19.3	8,508	33.5	2,085	44.0	1,175	45.2	27,926	10.7	52,422	16.3
Master's Degree	0	0.0	0	0.0	64	0.1	134	0.2	494	0.8	1,305	3.0	2,371	9.3	1,221	25.8	983	37.9	6,572	2.5	30,412	9.4
Ph.D. or Professional Degree	0	0.0	0	0.0	8	0.0	4	0.0	13	0.0	14	0.0	20	0.1	15	0.3	16	0.6	90	0.0	7,731	2.4
Unknown	1,036	11.9	170	2.1	1,752	3.8	94	0.2	32	0.1	36	0.1	3	0.0	0	0.0	0	0.0	3,123	1.2	7,868	2.4

OFFICER RANKS	O-1	%	O-2	%	O-3	%	O-4	%	O-5	%	O-6	%	O-7	%	O-8	%	O-9	%	O-10	%	Officer Total	%
TOTAL	6,119	1.9	7,609	2.4	20,381	6.3	13,834	4.3	9,299	2.9	3,231	1.0	114	0.0	80	0.0	45	0.0	10	0.0	60,722	
Sex																						
Female	1,704	27.9	1,984	26.1	5,040	24.7	3,245	23.5	1,704	18.3	565	17.5	14	12.3	9	11.3	5	11.1	1	10.0	14,271	23.5
Male	4,415	72.2	5,625	73.9	15,341	75.3	10,589	76.5	7,595	81.7	2,666	82.5	100	87.7	71	88.8	40	88.9	9	90.0	46,451	76.5
Ethnicity																						
Declined to Respond	1,636	26.7	1,617	21.3	9,208	45.2	1,998	14.4	1,797	19.3	154	4.8	1	0.9	1	1.3	0	0.0	0	0.0	16,412	27.0
Hispanic or Latino	620	10.1	798	10.5	1,869	9.2	1,029	7.4	561	6.0	161	5.0	1	0.9	1	1.3	0	0.0	0	0.0	5,040	8.3
Not Hispanic or Latino	3,863	63.1	5,194	68.3	9,304	45.7	10,807	78.1	6,941	74.6	2,916	90.3	112	98.2	78	97.5	45	100.0	10	100.0	39,270	64.7
Race*																						
American Indian or Alaska Native	23	0.4	42	0.6	99	0.5	96	0.7	40	0.4	13	0.4	0	0.0	0	0.0	0	0.0	0	0.0	313	0.5
Asian	401	6.6	483	6.3	1,285	6.3	730	5.3	434	4.7	90	2.8	1	0.9	0	0.0	0	0.0	0	0.0	3,424	5.6
Black or African American	391	6.4	513	6.7	1,359	6.7	900	6.5	472	5.1	215	6.7	7	6.1	3	3.8	4	8.9	2	20.00	3,866	6.4
Declined to Respond	447	7.3	483	6.3	1,060	5.2	1,094	7.9	628	6.8	176	5.4	3	2.6	0	0.0	0	0.0	0	0.0	3,891	6.4
Identified More Than One Race	326	5.3	396	5.2	836	4.1	348	2.5	198	2.1	54	1.7	3	2.6	3	3.8	0	0.0	0	0.0	2,164	3.6
Native Hawaiian or Other Pacific Islander	46	0.8	56	0.7	128	0.6	79	0.6	39	0.4	12	0.4	2	1.8	0	0.0	0	0.0	0	0.0	362	0.6
White	4,485	73.3	5,636	74.1	15,614	76.6	10,587	76.5	7,488	80.5	2,671	82.7	98	86.0	74	92.5	41	91.1	8	80.0	46,702	76.9
Marital Status																						
Divorced	88	1.4	233	3.1	873	4.3	743	5.4	465	5.0	146	4.5	2	1.8	3	3.8	0	0.0	0	0.0	2,582	4.2
Married	1,560	25.5	3,583	47.1	13,331	65.4	11,378	82.2	8,340	89.7	2,977	92.1	108	94.7	77	96.3	45	100.0	10	100.0	42,202	68.4
Single	4,468	73	3,786	49.8	6,166	30.3	1,698	12.3	479	5.2	99	3.1	4	3.5	0	0.0	0	0.0	0	0.0	16,877	27.3
Other**	3	0.0	7	0.1	11	0.1	15	0.1	15	0.2	9	0.3	0	0.0	0	0.0	0	0.0	0	0.0	60.8	0.1
Highest Educational Achievement																						
Bachelor's Degree	3,459	56.5	5,645	74.2	11,632	57.1	3,546	25.6	213	2.3	0	0.0	0	0.0	1	1.3	0	0.0	0	0.0	24,496	40.3
Master's Degree	210	3.4	810	10.6	5,209	25.6	7,688	55.6	7,249	78.0	2,450	75.8	104	91.2	68	85.0	42	93.3	10	100.0	23,840	39.3
Ph.D. or Professional Degree	1	0.0	23	0.3	2,527	12.4	2,472	17.9	1,816	19.5	778	24	10	8.8	11	13.8	3	6.7	0	0.0	7,641	12.6
Unknown	2,449	40.0	1,131	14.9	1,013	5.0	128	0.9	21	0.2	3	0.1	0	0.0	0	0.0	0	0.0	0	0.0	4,745	7.8

*Three enlisted members aren't included in some categories because of errors in the source data.

**Includes annulled, legally separated, and widowed.

AIR FORCE RESERVE DEMOGRAPHICS: SEX, ETHNICITY, RACE, MARITAL STATUS, EDUCATION

(As of Sept. 30, 2022)

ENLISTED RANKS	E-1	%	E-2	%	E-3	%	E-4	%	E-5	%	E-6	%	E-7	%	E-8	%	E-9	%	Enlisted Total	%	AFRC Total	%
TOTAL	**641**		**562**		**2757**		**11,128**		**11,324**		**12,176**		**9,465**		**2,950**		**1,025**		**52,029**		**66,461**	
Sex																						
Female	222	34.6	222	39.5	988	35.8	3,801	34.2	3,016	26.6	2,906	23.9	2,499	26.4	805	27.3	228	22.2	14,687	28.2	18,580	28.0
Male	420	65.4	340	60.5	1,769	64.2	7,327	65.8	8,308	73.4	9,270	76.1	6,966	73.6	2,145	72.7	797	77.8	37,342	71.8	47,881	72.0
Ethnicity																						
Declined to Respond or Blank Response	619	96.6	504	89.7	2,414	87.6	7,030	63.2	4,775	42.2	3,079	25.3	1,604	16.9	252	8.5	50	4.9	20,327	39.1	23,239	35.0
Hispanic or Latino	11	1.7	25	4.4	124	4.5	1,285	11,128	1,742	15.4	1,951	16.0	1,352	14.3	395	13.4	99	9.7	6,984	13.4	7,994	12.0
Not Hispanic or Latino	11	1.7	33	5.9	219	7.9	2,813	25.3	4,807	42.4	7,146	58.7	6,509	68.8	2,303	78.1	876	85.5	24,717	47.5	35,227	53.0
Race																						
American Indian or Alaska Native	7	1.1	5	0.9	34	1.2	97	0.9	85	0.8	64	0.5	189	2.0	18	0.6	8	0.8	507	1.0	567	0.9
Asian	42	6.5	37	6.6	222	8.0	798	7.2	616	5.4	492	4.0	158	1.7	64	2.2	24	2.3	2,453	4.7	3,116	4.7
Black or African American	201	31.3	176	31.3	885	32.1	2,967	26.7	1,215	10.7	2,108	17.3	1,361	14.4	351	11.9	118	11.5	9,382	18	10,322	15.5
Declined to Respond, Identification Pending, or Blank	0	0.0	2	0.4	3	0.1	4,539	40.8	311	2.7	550	4.5	493	5.2	101	3.4	38	3.7	6,037	11.6	6,830	10.3
Identified More Than One Race	39	6.1	26	4.6	128	4.6	510	4.6	1,693	15.0	524	4.3	287	3.0	66	2.2	31	3.0	3,304	6.4	3,662	5.5
Native Hawaiian or Other Pacific Islander	10	1.6	8	1.4	35	1.3	187	1.7	170	1.5	174	1.4	143	1.5	147	5.0	15	1.5	889	1.7	973	1.5
White	343	53.4	309	54.9	1,452	52.6	2,028	18.2	7,234	63.9	8,264	68	6,834	72	2,203	75	791	77.2	29,458	57	40,992	61.7
Marital Status*																					**66,462**	
Divorced	12	1.3	14	2	62	1.8	497	4.3	970	8.2	1,559	12.2	1,324	14.2	417	13.9	84	13.7	4,939	14.4	5,913	11.9
Married	67	7.5	70	9.8	707	20.9	3,532	30.3	5,690	48.3	7,970	62.4	6,707	71.9	2,294	76.7	484	79.1	27,521	80.5	37,595	75.8
Single	816	90.1	627	87.9	2,604	77.1	7,579	65.1	5,092	43.2	3,192	25.0	1,243	13.3	252	8.4	35	5.7	1,530	4.5	3,162	6.4
Other**	3	0.3	2	0.3	4	0.1	33	0.3	22	0.2	44	0.3	59	0.6	29	1	9	1.5	205	0.6	2,896	5.8
Highest Educational Achievement																					**49,566**	
No High School Diploma or GED	0	0.0	11	2.0	5	0.2	43	0.4	383	3.4	348	2.9	207	2.2	0	0.0	0	0.0	997	1.9	998	1.5
High School Diploma/GED	557	86.9	273	48.5	601	21.8	316	2.8	985	8.7	1,102	9.0	3	0.0	0	0.0	0	0.0	3,837	7.4	3,891	5.8
Some College	81	12.6	274	48.7	1,696	61.5	7,060	63.5	4,556	40.2	2,647	21.7	1,008	10.6	66	2	17	1.7	17,405	33.4	17,490	26.3
Associate Degree	1	0.2	3	0.5	333	12.1	2,300	20.7	2,908	25.6	3,385	27.8	1,853	19.6	1,413	47.9	367	35.8	12,563	24.1	12,644	19.0
Bachelor's Degree	2	0.3	0	0.0	98	3.6	659	5.9	405	3.6	568	4.7	1,170	12.4	975	33.1	369	36.0	4,246	8.2	9,007	13.5
Master's Degree	0	0	0	0.0	13	0.5	372	3.3	1,810	16.0	3,437	28.2	3,414	36.1	479	16	264	25.8	9,789	18.8	17,273	26.0
Ph.D. or Professional Degree	0	0	0	0.0	0	0.0	363	3.3	296	2.6	576	4.7	1,601	16.9	16	0.5	8	0.8	2,860	5.5	4,811	7.2
Unknown, None, or Not Applicable	0	0	2	0.4	11	0.4	13	0.1	0	0.0	117	1.0	209	2.2	1	0.0	0	0.0	353	0.7	368	0.6

OFFICER RANKS	O-1	%	O-2	%	O-3	%	O-4	%	O-5	%	O-6	%	O-7	%	O-8	%	O-9	%	Officer Total	%
TOTAL	**533**		**737**		**2,690**		**4,875**		**4,471**		**1,047**		**57**		**21**		**1**		**14,432**	
Sex																				
Female	148	27.8	212	28.8	895	33.3	1,196	24.5	1,141	25.5	282	26.9	14	24.6	5	23.8	0	0.0	3,893	27.0
Male	385	72.2	525	71.2	1,795	66.7	3,679	75.5	3,330	74.5	765	73.1	43	75.4	16	76.2	1	100.00	10,539	73.0
Ethnicity																				
Declined to Respond	209	23.8	300	41	781	29.0	1,044	21.4	529	11.8	47	4.5	1	1.8	0	0.0	1	100.00	2,912	20.2
Hispanic or Latino	46	8.6	70	9.5	232	8.6	330	6.8	270	6	58	5.5	4	7.0	0	0.0	0	0.0	1,010	7.0
Not Hispanic or Latino	278	52.2	367	49.8	1,677	62.3	3,501	71.8	3,672	82.1	942	90.0	52	91.2	21	100.00	0	0.0	10,510	72.8
Race																				
American Indian or Alaska Native	3	0.6	4	0.5	8	0.3	24	0.5	15	0.3	6	0.6	0	0.0	0	0.0	0	0.0	60	0.4
Asian	30	5.6	35	4.7	145	5.4	225	4.6	192	4.3	35	3.3	1	1.8	0	0.0	0	0.0	663	4.6
Black or African American	51	9.6	82	11.1	243	9.0	271	5.6	240	5.4	49	4.7	4	7	0	0.0	0	0.0	940	6.5
Declined to Respond, Identification Pending or Blank	20	3.8	19	2.5	119	4.4	296	6.1	284	6.4	54	5.2	1	1.8	0	0.0	0	0.0	793	5.5
Identified More Than One Race*	18	3.4	23	3.1	96	3.6	121	2.5	91	2.0	8	0.8	0	0.0	0	0.0	1	100.00	358	2.5
Native Hawaiian or Other Pacific Islander	7	1.3	7	1.2	19	0.7	28	0.6	20	0.4	3	0.3	0	0.0	0	0.0	0	0.0	84	0.6
White	404	75.8	567	76.9	2,060	77	3,910	80.2	3,629	81.2	892	85.2	51	89.5	21	100.00	0	0.0	11,534	79.9
Marital Status*																				
Divorced	46	1.4	49	7.3	45	1.5	352	7.1	395	8.6	80	8.0	4	7.1	1	5.0	2	100.0	974	6.3
Married	421	12.4	376	56.2	430	14.3	4,046	81.2	3,872	84.1	863	86.7	48	85.7	18	90	0	0.0	10,074	65.5
Single	327	9.6	209	31.2	169	5.6	572	11.5	310	6.7	44	4.4	1	1.8	0	0.0	0	0.0	1,632	10.6
Other**	2,598	76.6	35	5.2	3	0.1	15	0.3	28	0.6	8	0.8	3	5.4	1	5.0	0	0.0	2,691	17.5
Highest Educational Achievement																			**15,371**	
No High School Diploma or GED	0	0.0	0	0.0	0	0.0	0	0.0	1	0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
High School Diploma/GED	37	6.9	7	0.9	6	0.2	4	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	54	0.4
Some College	23	4.3	33	4.5	25	0.9	4	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	85	0.6
Associate Degree	31	5.8	31	4.2	15	0.6	1	0.0	3	0.0	0	0.0	0	0.0	0	0.0	0	0.0	81	0.6
Bachelor's Degree	348	65.3	526	71.4	1,544	57.4	1,582	32.5	746	16.7	14	1.3	1	1.8	0	0.0	0	0.0	4,761	33.0
Master's Degree	79	14.8	109	14.8	846	31.4	2,621	53.8	2,972	66.5	788	75.3	53	93.0	16	76.2	0	0.0	7,484	51.9
Ph.D. or Professional Degree	15	2.8	30	4.1	252	9.4	658	13.5	743	16.6	245	23.4	3	5.3	5	23.8	0	0.0	1,951	14
Unknown, None, or Not Applicable	0	0.0	1	0.1	2	0.1	5	0.1	6	0.1	0	0.0	0	0.0	0	0.0	1	100.0	15	0.1

*Totals in each category within Air Force Reserve Command's fiscal 2022 data didn't consistently add up to the same numbers for each rank. **Detailed marital statistics for fiscal 2022 were not available by press time. Fiscal 2021 marital statistics are shown.

ANG DEMOGRAPHICS: SEX, ETHNICITY, RACE, MARITAL STATUS, EDUCATION

(As of Sept. 30, 2022)

ENLISTED RANKS	E-1	%	E-2	%	E-3	%	E-4	%	E-5	%	E-6	%	E-7	%	E-8	%	E-9	%Enlisted Total	%	ANG Total	%
TOTAL	**1,386**	**1.6**	**1,132**	**1.2**	**10,978**	**12.4**	**11,951**	**13.5**	**20,763**	**23.4**	**19,666**	**22.2**	**16,274**	**18.3**	**4,521**	**5.1**	**2,060**	**2.3**	**88,731**	**100.0**	**104,984**	**100.0**
Sex																						
Female	437	31.5	412	36.4	3,055	27.8	3,057	25.6	4,286	20.6	3,726	18.9	3,356	20.6	919	20.3	348	16.9	19,596	22.1	22,918	21.8
Male	949	68.5	720	63.6	7,923	72.2	8,894	74.4	16,477	79.4	15,940	81.1	12,918	79.4	3,602	79.7	1,712	83.1	69,135	77.9	82,066	78.2
Ethnicity																						
Undeclared	1	0.1	2	0.2	38	0.3	217	1.8	616	3.0	874	4.4	672	4.1	128	2.8	39	1.9	2,587	2.9	3,696	3.5
Hispanic or Latino	229	16.5	208	18.4	1,890	17.2	1,968	16.5	2,959	14.3	2,435	12.4	1,511	9.3	373	8.3	150	7.3	11,723	13.2	12,770	12.2
Not Hispanic or Latino	1,156	83.4	922	81.4	9,050	82.4	9,766	81.7	17,188	82.8	16,357	83.2	14,091	86.6	4,020	88.9	1,871	90.8	74,421	83.9	88,518	84.3
Race																						
American Indian or Alaska Native	14	1.0	11	1.0	81	0.7	88	0.7	143	0.7	123	0.6	112	0.7	35	0.8	13	0.6	620	0.7	695	0.7
Asian	63	4.5	41	3.6	592	5.4	485	4.1	817	3.9	651	3.3	397	2.4	107	2.4	34	1.7	3,271	3.7	3,802	3.6
Black or African American	212	15.3	190	16.8	1,352	12.3	1,527	12.8	2,175	10.5	1,734	8.8	1,307	8.0	290	6.4	140	6.8	8,927	10.1	9,711	9.2
Undeclared	3	0.2	3	0.3	19	0.2	76	0.6	311	1.5	548	2.8	565	3.5	174	3.8	67	3.3	1,766	2.0	2,339	2.2
Identified More Than One Race	58	4.2	52	4.6	475	4.3	569	4.8	720	3.5	576	2.9	350	2.2	78	1.7	24	1.2	2,818	3.2	3,150	3.0
Native Hawaiian or Other Pacific Islander	22	1.6	14	1.2	153	1.4	131	1.1	250	1.2	242	1.2	161	1.0	32	0.7	11	0.5	1,016	1.1	1,115	1.1
White	1,014	73.2	821	72.5	8,306	75.7	9,075	75.9	16,347	78.7	15,792	80.3	13,382	82.2	3,805	84.2	1,771	86.0	70,313	79.2	84,172	80.2
Marital Status*																						
Divorced	16	0.7	6	0.5	184	1.5	530	4	1,537	7.7	2,225	10.6	1,798	12.4	534	11.5	223	10.7	7,053	7.7	8,271	7.7
Married	90	4.2	112	9.4	1,850	14.7	4,064	30.4	10,150	50.9	14,197	67.7	11,281	77.8	3,840	83	1,769	85.2	47,353	51.8	60,117	56
Single	2,043	95.1	1,079	90.1	10,574	83.8	8,766	65.6	8,217	41.2	4,506	21.5	1,386	9.6	232	5	78	3.8	36,881	40.3	38,860	36.2
Other**	0	0.0	0	0.0	4	0	8	0.1	18	0.1	42	0.2	36	0.2	22	0.5	7	0.3	137	0.1	166	0.2
Highest Educational Achievement																						
High School Diploma/GED or Technical Degree	735	53.0	170	15.0	2,407	21.9	625	5.2	496	2.4	81	0.4	9	0.1	1	0.0	2	0.1	4,526	5.1	4,590	4.4
Some College	310	22.4	887	78.4	7,141	65.0	10,015	83.8	14,748	71.0	10,736	54.6	6,086	37.4	150	3.3	84	4.1	50,157	56.5	50,407	48.0
Associate Degree	0	0.0	2	0.2	216	2.0	453	3.8	3,323	16.0	5,923	30.1	6,391	39.3	2,546	56.3	1,061	51.5	19,915	22.4	20,192	19.2
Bachelor's Degree	1	0.1	2	0.2	607	5.5	561	4.7	1,621	7.8	2,374	12.1	2,947	18.1	1,326	29.3	634	30.8	10,073	11.4	17,961	17.1
Master's Degree	0	0.0	1	0.1	91	0.8	66	0.6	264	1.3	420	2.1	778	4.8	483	10.7	263	12.8	2,366	2.7	8,010	7.6
Ph.D. or Professional Degree	0	0.0	0	0.0	8	0.1	2	0.0	16	0.1	25	0.1	25	0.2	15	0.3	16	0.8	107	0.1	1,627	1.5
Unknown or None Listed	340	24.5	70	6.2	508	4.6	229	1.9	295	1.4	107	0.5	38	0.2	0	0.0	0	0.0	1,587	1.8	2,197	2.1

OFFICER RANKS	O-1	%	O-2	%	O-3	%	O-4	%	O-5	%	O-6	%	O-7	%	O-8	%	O-9	%	Officer Total	%
Total	**1,167**	**7.2**	**1,373**	**8.4**	**3,813**	**23.5**	**4,304**	**26.5**	**4,348**	**26.8**	**1,052**	**6.5**	**140**	**0.9**	**52**	**0.3**	**4**	**0.0**	**16,253**	**100.0**
Sex																				
Female	299	25.6	346	25.2	885	23.2	827	19.2	771	17.7	164	15.6	22	15.7	8	15.4	0	0.0	3,322	20.4
Male	868	74.4	1,027	74.8	2,928	76.8	3,477	80.8	3,577	82.3	888	84.4	118	84.3	44	84.6	4	100.0	12,931	79.6
Ethnicity																				
Undeclared	31	2.7	60	4.4	170	4.5	475	11.0	343	7.9	29	2.8	0	0.0	1	1.9	0	0.0	1,109	6.8
Hispanic or Latino	97	8.3	138	10.1	277	7.3	238	5.5	232	5.3	54	5.1	8	5.7	2	3.8	1	25.0	1,047	6.4
Not Hispanic or Latino	1,039	89.0	1,175	85.6	3,366	88.3	3,591	83.4	3,773	86.8	969	92.1	132	94.3	49	94.2	3	75.0	14,097	86.7
Race																				
American Indian or Alaska Native	5	0.4	3	0.2	24	0.6	15	0.3	21	0.5	6	0.6	1	0.7	0	0.0	0	0.0	75	0.5
Asian	35	3.0	55	4.0	143	3.8	154	3.6	121	2.8	19	1.8	3	2.1	1	1.9	0	0.0	531	3.3
Black or African American	75	6.4	103	7.5	220	5.8	184	4.3	159	3.7	30	2.9	11	7.9	2	3.8	0	0.0	784	4.8
Undeclared	19	1.6	32	2.3	91	2.4	188	4.4	198	4.6	43	4.1	1	0.7	1	1.9	0	0.0	573	3.5
Identified More Than One Race	48	4.1	41	3.0	103	2.7	68	1.6	63	1.4	8	0.8	0	0.0	1	1.9	0	0.0	332	2.0
Native Hawaiian or Other Pacific Islander	8	0.7	14	1.0	21	0.6	32	0.7	19	0.4	4	0.4	1	0.7	0	0.0	0	0.0	99	0.6
White	977	83.7	1,125	81.9	3,211	84.2	3,663	85.1	3,767	86.7	942	89.5	123	87.9	47	90.4	4	100.0	13,859	85.3
Marital Status*																				
Divorced	87	6.9	69	5.6	281	7.7	331	7.7	372	8.6	66	6.5	10	7.1	2	4.5	0	0	1,218	7.6
Married	848	67	751	60.9	2,755	75	3,603	84.2	3,725	85.8	908	90	129	92.1	41	93.2	4	100.0	12,764	79.8
Single	328	25.9	413	33.5	630	17.2	340	7.9	236	5.4	30	3	1	0.7	1	2.3	0	0	1,979	12.4
Other**	2	0.2	0	0.0	6	0.2	6	0.1	10	0.2	5	0.5	0	0.0	0	0.0	0	0.0	29	0.2
Highest Educational Achievement																				
High School Diploma/GED or Technical Degree	36	3.1	11	0.8	5	0.1	7	0.2	3	0.1	1	0.1	1	0.7	0	0.0	0	0.0	64	0.4
Some College	160	13.7	57	4.2	29	0.8	4	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	250	1.5
Associate Degree	178	15.3	66	4.8	25	0.7	7	0.2	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	277	1.7
Bachelor's Degree	578	49.5	920	67.0	2,579	67.6	2,073	48.2	1469	33.8	228	21.7	32	22.9	9	17.3	0	0.0	7,888	48.5
Master's Degree	121	10.4	211	15.4	815	21.4	1,643	38.2	2,125	48.9	602	57.2	87	62.1	36	69.2	4	100.0	5,644	34.7
Ph.D. or Professional Degree	7	0.6	30	2.2	149	3.9	408	9.5	682	15.7	218	20.7	20	14.3	6	11.5	0	0.0	1,520	9.4
Unknown or None Listed	87	7.5	78	5.7	211	5.5	162	3.8	68	1.6	3	0.3	0	0.0	1	1.9	0	0.0	610	3.8

*Marital statuses are for FY 2021.
**Includes annulled, legally separated, widowed, interlocutory decree, and unknown.

DAF ENLISTED TOTAL FORCE BY AIR FORCE SPECIALTY CODE (AFSC)

(As of Sept. 30, 2022)

AFSC		Total
1A0	In-Flight Refueling Spc	1,956
1A1	Flight Eng	1,190
1A2	Aircraft Ldm	4,496
1A3	Airborne Mission Sys Spc	2,060
1A6	Flight Attendant	348
1A8	Airborne ISR	2,261
1A9	Spc Mission Aviator	1,219
1B0	Cyber Warfare Operations Supt	28
1B4	CW Ops	1,603
1C0	Aviation Rsc Mgmt	3,034
1C1	Air Traffic Control	3,104
1C3	C2 Ops	2,867
1C5	C2 Battle Mgmt Ops	2,419
1C6	Space Sys Ops	743
1C7	Airfield Mgmt	1,236
1C8	Radar, Airfield, and Weather Sys	1,855
1D7	Defensive Cyber Ops	31,182
1H0	Aerospace Physiology	237
1N0	Intelligence	6,806
1N1	Imagery Analysis	3,682
1N2	Sigint	2,330
1N3	Cryptologic Language Analyst	3,285
1N4	Network Intel Analysis	4,218
1N7	Humint Spc	154
1N8	Targeting Analyst	826
1P0	Aircrew Flight Equip	4,110
1S0	Safety	745
1T0	SERE Specialist	777
1U0	RPA Sensor Operator Manager	1,456
1U1	RPA Pilot Manager	57
1W0	Weather	3,096
1Z1	Pararescue	977
1Z2	Combat Control	660
1Z3	TACP	2,132
1Z4	Special Recon	139
2A0	Avionics	1,657
2A2	SOF/PR Integrated Comm/ Nav/Mission Sys	1,868
2A3	Fighter/RPA Maint	20,333
2A5	Airlift/Special Mission Aircraft Maint	21,343
2A6	Aircraft Sys	27,612
2A7	Aircraft Metals Technology	9,105
2A8	Mobility AF Integrated Comms/ Nav/Mission Sys	4,515
2A9	Bomber/Spc Integrated Comms/ Nav/Mission Sys	2,499
2F0	Fuels	4,644
2G0	Logistics Plans	1,538
2M0	Missile and Space Sys Maint	1,729
2P0	Precision Measurement Equipment Lab	815
2R0	Maintenance	1,193
2R1	Maint Prod Mgmt	1,330
2S0	Materiel Mgmt	10,151
2T0	Traffic Mgmt	2,703
2T1	Ground Trans	3,150
2T2	Air Trans	10,803
2T3	Vehicle Mgmt	5,264
2W0	Munitions Maint	9,677
2W1	Aircraft Armament Sys	9,892
2W2	Nuclear Weapons	756
3D0	Cyberspace Ops	22
3D1	Cyberspace Support Manager	53
3E0	Civil Engineer	4,962
3E1	Heating	2,428
3E2	Pavements and Construction Equip	3,238
3E3	Structural	2,738
3E4	Water and Fuel Systems	2,743
3E5	Engineering	1,583
3E6	Ops Mgmt	1,119
3E7	Fire Protection	5,575
3E8	Explosive Ordnance Disposal	1,933
3E9	Emergency Mgmt	1,602
3F0	Personnel	9,273
3F1	Services	7,378
3F2	Education and Training	2,647
3F3	Manpower	484
3F4	Equal Opportunity	369
3F5	Administration Manager	6,126
3H0	Historian	10
3N0	Public Affairs	1,875
3N1	Regional Band	494
3N2	Premier Band - The USAF Band	169
3N3	USAF Academy Band	45
3P0	Security Forces	37,543
3S0	Force Support Manager	
4A0	Health Services Mgmt	4,031
4A1	Medical Materiel	1,507
4A2	Biomedical Equip	697
4B0	Bioenvironmental Eng	1,232
4C0	Mental Health Svc	1,021
4D0	Diet Therapy	234
4E0	Public Health	1,360
4H0	Cardiopulmonary Lab	501
4J0	Physical Medicine	311
4M0	**AEROSPACE AND OPS PHYSIOLOGY**	
4N0	Aerospace Medical Svc	11,543
4N1	Surgical Technologist	662
4P0	Pharmacy	725
4R0	Diagnostic Imaging	805
4T0	Medical Lab	1,149
4V0	Optometry	362
4Y0	Dental	2,859
5C0	Cyper Ops (USSF)	2
5J0	Paralegal	1,317
5R0	Religious Affairs	986
5S0	Space Sys Ops (USSF)	27
6C0	Contracting	1,769
6F0	Financial Mgmt and Comptroller	3,558
7S0	Special Investigations	1,188
8A1	**CAREER ASSISTANCE ADVISOR**	
8A2	Enlisted Aide	65
8A3	Protocol	67
8B0	Military Training Instructor	660
8B1	Military Training Leader	462
8B2	Academy Military Training NCO	121
8B3	AFROTC Training Instructor	1
8C0	Amn and Family Readiness Center NCO	206
8D1	**LANGUAGE AND CULTURE ADVISOR**	
8F0	First Sergeant	2,514
8G0	Premier Honor Guard	255
8G1	USAF Installation Honor Guard Prgm Mgr	79
8H0	Amn Dorm Leader	330
8I0	Superintendent	250
8I1	Inspections Coordinator	332
8I2	Complaints Resolution Coordinator	9
8K0	Software Development Specialist	1
8L1	Enlisted Air Advisor-Basic	0
8L7	Enl Combat Aviation Advisor (SOF)	27
8P0	Courier	80
8P1	Defense Attache	106
8R0	Enlisted Accessions Recruiter	1,780
8R2	Second-Tier Recruiter	947
8R3	Third-Tier Recruiter	509
8S0	Missile Facility Mgr	187
8S2	**COMBAT CREW COMMUNICATIONS**	
8T0	PME Instructor	647
8T1	Enl PME Instructional Sys Designer	33
8T2	Airman Development Advisor	200
8U0	Unit Deployment Mgr	233
9A0	Enl Amn, Disqualified for Reasons Beyond Ctrl	162
9A1	Enl Amn, Disqualified for Reasons Within Ctrl	76
9A2	Enl Airman Awaiting Discharge, Separation, or Ret for Reasons Within Ctrl	75
9A3	Enl Awaiting Dis, Sep, or Ret for Reasons Beyond Ctrl	54
9A5	Enl Amn Temp Ineligible for Retraining, Disqualified for Reasons Beyond Ctrl	83
9C0	Chief Master Sergeant of the Air Force	1
9C1	Executive Asst to the CMSO	1
9D1	AF Developmental Senior Enlisted Positions	30
9D2	Key Developmental Senior Enlisted Positions	18
9E0	Command Chief Master Sergeant	381
9E1	Command Chief Executive Assistant	17
9E2	Individual Mobilization Augmentee to CCMS	11
9G1	Group Senior Enl Leader	782
9H0	Academic Faculty Inst	2
9J0	Prisoner	20
9L0	Interpreter/Translator	77
9L1	Enl Engagement Mgr/Int'l Affairs	3
9M0	**MILITARY ENTRANCE PROCESSING**	
9M2	Intl Health Spc	2
9M4	Chief, Medical Enl Force	17
9N0	SECAF Enl Legislative Fellows	1
9Q0	Reserve Force Generation and Oversight NCO	14
9S0	**CHIEF MASTER SERGEANT OF THE SPACE FORCE**	
9S1	Scientific Applications Spc	528
9T0	Basic Enl Amn	4,245
9T1	Officer Trainee	529
9T2	Pre-Cadet Assigned	376
9T4	AF Institute of Tech or Ed With Industry Enl Students	4
9T5	Basic Special Warfare Enlisted Airman	278
9V0	Key Developmental Joint Enlisted Position	6
9W3	Non-Combat Wounded Warrior	1
9Z0	Special Warfare Mission Support on HAF Staff	1
9Z2	Special Warfare Mission Support Supt	4
	Unknown	42

DAF OFFICER TOTAL FORCE BY AIR FORCE SPECIALTY CODE (AFSC)

(As of Sept. 30, 2022)

AFSC		Total
10C	Ops Cmdr	585
11B	Bomber Pilot	615
11E	Experimental Test Pilot	152
11F	Fighter Pilot	3,818
11G	Generalist Pilot	414
11H	Helicopter Pilot	940
11K	Trainer Pilot	1,634
11M	Mobility Pilot	8,030
11R	Recon/Surveillance/EW Pilot	937
11S	Spc Ops Pilot	1,542
11U	RPA Pilot	271
12B	Bomber Combat Systems Officer (CSO)	656
12E	Experimental Test CSO	27
12F	Fighter CSO	428
12G	Generalist CSO	123
12H	Rescue CSO	94
12K	Trainer CSO	159
12M	Mobility CSO	460
12R	Recon/Surveillance/EW CSO	931
12S	Spc Ops CSO	652
12U	RPA	100
13A	Astronaut	3
13B	Air Battle Mgr	1,859
13C	**SPECIAL TACTICS**	
13H	Aerospace Physiologist	85
13L	**AIR LIAISON OFFICER**	
13M	Airfield Ops	314
13N	Nuclear and Missile Ops	1,184
13O	Multi-Domain Warfare Officer	30
13S	Space Ops	501
14F	Info Ops	148
14N	Intelligence	5,197
15A	Operations Research Analyst	449
15W	Weather and Environmental Svcs	516
16F	Regional Affairs Strategist	409
16G	AF Ops Staff Officer	823
16K	Software Development Officer	11
16P	Political-Military Affairs Strategist	285
16R	Planning and Programming	744
17C	Cyberspace Warfare Ops Cmdr	20
17D	Warfighter Comms Ops	2,978
17S	Cyberspace Effects Ops	1,196
18A	Attack RPA Pilot	1,880
18E	Experimental Test RPA Pilot	12
18G	Generalist RPA Pilot	92
18R	Recon RPA Pilot	345
18S	Special Ops RPA Pilot	396
19Z	Special Warfare	730
20C	Logistics Cmdr	359
21A	Aircraft Maint	2,054
21M	Munitions and Missile Maint	308
21R	Logistics Readiness	2,199
30C	Support Cmdr	498
31P	Security Forces	955
32E	Civil Eng	1,895
35B	Band	12
35P	Public Affairs	621
38F	Force Support Officer	2,325
40C	Medical Cmdr	221
41A	Health Services Admin	1,758
42B	Physical Therapist	207
42E	Optometrist	262
42F	Podiatric Surgeon	15
42G	Physician Asst	793

AFSC		Total
42N	Audiology/Speech Pathologist	30
42P	Clinical Psychologist	295
42S	Clinical Social Worker	291
42T	Occupational Therapist	19
43A	Aerospace Operational Physiologist	9
43B	Biomedical Scientist	106
43D	Dietitian	40
43E	Bioenvironmental Eng	388
43H	Public Health Officer	273
43P	Pharmacist	301
43T	Biomedical Lab	149
44A	Chief, Hospital/Clinic Svcs	72
44B	Preventive Medicine	24
44D	Pathologist	77
44E	ER Services Physician	354
44F	Family Physician	564
44G	General Practice Physician	111
44J	Clinical Geneticist	2
44K	Pediatrician	374
44M	Internist	481
44N	Neurologist	49
44O	Physician	54
44P	Psychiatrist	169
44R	Diagnostic Radiologist	157
44S	Dermatologist	37
44T	Radiotherapist	6
44U	Occupational Medicine	16
44Y	Critical Care Medicine	68
44Z	Allergist	21
45A	Anesthesiologist	197
45B	Orthopedic Surgeon	106
45E	Ophthalmologist	51
45G	Obstetrician and Gynecologist	166
45N	Otorhinolaryngologist	53
45S	Surgeon	302
45U	Urologist	29
46A	Nursing Admin	200
46F	Flight Nurse	971
46N	Clinical Nurse	3,143
46P	Mental Health Nurse	72
46S	Operating Room Nurse	199
46Y	Adv Practice RN	669
47B	Orthodontist	30
47D	Oral and Maxillofacial Pathologist	6
47E	Endodontist	31
47G	Dentist	956
47H	Periodontist	44
47K	Pediatric Dentist	16
47P	Prosthodontist	50
47S	Oral and Maxillofacial Surgeon	62
48A	Aerospace Medicine Physician Spc	151
48G	General Med Officer, Flight Surgeon	171
48R	Residency Trained Flight Surgeon	800
48V	Pilot-Physician	3
51J	Judge Advocate	2,304
52R	Chaplain	1,173
60C	Sr Materiel Leader-Upper Echelon	14
61C	Chemist/Nuclear Chemist	71
61D	Physicist/Nuclear Eng	180
62E	Development Eng	1,816
62S	Materiel Leader	10
63A	Acquisition Mgr	2,092
63G	Sr Materiel Leader-Lower Echelon	65
63S	Materiel Leader	131

AFSC		Total
64P	Contracting	859
65F	Financial Mgmt	804
65W	Cost Analysis	56
71S	Spc Investigations	459
80C	Cmdr, Cadet Squadron, USAF Academy	39
81C	Instructor, Officer Training School	63
81D	ROTC Detachment Commander and Professor of Aerospace Studies	154
81L	Education and Training Leader	14
81T	Instructor	867
82A	Academic Program Mgr	75
83R	Recruiting Svc	154
84H	Historian	13
85G	USAF Honor Guard	4
86M	Ops Mgmt	258
86P	C2	75
87G	Wing IG	253
87I	Director, Wing Inspections	141
87Q	Director, Complaints Resolution	105
88A	Aide-de-camp	41
88B	Protocol Officer	17
88C	Sexual Assault Response Coordinator	24
89E	Officer Air Advisor Advanced	0
89G	Officer Combat Aviation Advisor	26
90G	General Officer	584
91C	Cmdr	163
91W	Wing Cmdr	450
92J	Non-Designated Lawyer	5
92M	Health Prof Scholarship Prgm Med Student	297
92P	Physician Assistant Student	19
92R	Chaplain Candidate	78
92S	Student Officer Authorization	1,812
92T	Pilot Trainee	2,859
93P	Patient	16
95A	Non-extended Active Duty USAFR Academy Liaison Officer or CAP Reserve Asst Prgm Officer	14
96A	Disq. Officer, Reasons Beyond Control	1
96B	Disq Officer, Reasons Within Control	6
96D	Officer N/A for Use in Awarded AFSC for Cause	16
97E	Executive Officer	742
99G	Gold Bar Diversity Recruiter	4

DAF ACTIVE DUTY BY COMMAND

(As of Sept. 30, 2022)

MAJOR COMMANDS	USAF	USSF	TOTAL
Air Combat Command	79,555	73	79,628
Air Education and Training Command	56,285	527	56,812
Air Force Global Strike Command	27,801	4	27,805
Air Force Materiel Command	17,693	101	17,794
Air Force Special Operations Command	16,117	4	16,121
Air Mobility Command	41,256	6	41,262
Pacific Air Forces	30,905	21	30,926
U.S. Air Forces Europe-Air Forces Africa	23,666	20	23,686
MAJCOMS TOTAL	**293,278**	**756**	**294,034**
DIRECT REPORTING UNITS	**USAF**	**USSF**	**TOTAL**
Air Force District of Washington	112	0	112
Air Force Operational Test and Evaluation Center	283	1	284
Air Force Reserve Command	50	14	64
U.S. Air Force Academy	236	0	236
DRU TOTAL	**681**	**15**	**696**

Source: Office of the Secretary of the Air Force

FIELD OPERATING AGENCIES	USAF	USSF	TOTAL
Air Force Agency for Modeling and Simulation	7	0	7
Air Force Audit Agency	0	0	0
Air Force Cost Analysis Agency	12	0	12
Air Force Flight Standards Agency	120	0	120
Air Force Historical Research Agency	0	0	0
Air Force Inspection Agency	86	1	87
Air Force Legal Operations Agency	539	0	539
Air Force Manpower Analysis Agency	170	0	170
Air Force Medical Readiness Agency	204	0	204
Air Force Mortuary Affairs Operations	23	0	23
Air Force Office of Special Investigations	141	0	141
Air Force Operations Group	41	0	41
Air Force Personnel Center	680	0	680
Air Force Public Affairs Agency	47	0	47
Air Force Review Boards Agency	26	0	26
Air Force Safety Center	50	0	50
Air National Guard Readiness Center	36	0	36
DOD Cyber Crime Center	7	7	14
National Air and Space Intelligence Center	117	0	117
FOA TOTAL	**2,306**	**8**	**2,314**
OTHER	**25,931**	**7,444**	**33,375**
TOTAL ACTIVE DUTY	**322,196**	**8,223**	**330,419**

ACTIVE DUTY BY BASE, 2022 vs. 2011

(As of Sept. 30, 2022)

BASE	2022	2011	# CHANGE	% CHANGE
JB San Antonio-Lackland, Texas	16,819	17,406	-587	-3.4
Ramstein AB, Germany	9,630	9,471	159	1.7
Hurlburt Field, Fla.	9,113	8,314	799	9.2
JB Langley-Eustis, Va.	7,792	7,986	-194	-7,986
Nellis AFB, Nev. [1]	7,771	9,900	-2,129	-21.5
Shaw AFB, S.C.	7,114	5,912	1,202	20.3
Travis AFB, Calif.	6,839	6,571	268	4.1
Kadena AB, Japan	6,729	6,673	56	0.8
Eglin AFB, Fla.	6,527	5,771	756	13.1
Davis-Monthan AFB, Ariz.	6,272	6,643	-371	-5.6
JB Andrews, Md.	6,127	7,603	-1,476	-19.4
Offutt AFB, Neb.	6,094	5,405	689	12.7
Sheppard AFB, Texas	5,699	5,357	342	5,357
Wright-Patterson AFB, Ohio	5,691	5,813	-122	-2.1
JB Pearl Harbor-Hickam, Hawaii	5,626	5,030	596	11.8
JB Elmendorf-Richardson, Alaska	5,512	5,608	-96	-1.7
Minot AFB, N.D.	5,470	5,323	147	2.8
Osan AB, South Korea	5,432	5,308	124	2.3
Cannon AFB, N.M.	5,203	4,275	928	21.7
Barksdale AFB, La.	5,201	5,814	-613	-10.5
JB McGuire-Dix-Lakehurst, N.J.	5,131	4,855	276	5.7
Holloman AFB, N.M.	5,021	4,030	991	24.6
RAF Lakenheath, U.K.	4,941	4,636	305	6.6
Scott AFB, Ill.	4,797	5,109	-312	-6.1
Tinker AFB, Okla.	4,753	5,876	-1,123	-19.1
Dyess AFB, Texas	4,661	5,093	-432	-8.5
Moody AFB, Ga.	4,617	4,654	-37	-0.8
Aviano AB, Italy	4,575	4,444	131	2.9
Keesler AFB, Miss.	4,456	5,263	-807	15.3
Luke AFB, Ariz.	4,427	3,917	510	13.0
RAF Mildenhall, U.K.	4,320	4,035	285	7.1
Hill AFB, Utah	4,302	3,864	438	11.3
Seymour Johnson AFB, N.C.	4,274	4,814	-540	11.2
Spangdahlem AB, Germany	3,961	4,815	-854	-17.7
Peterson SFB, Colo.	3,916	3,832	84	2.2
Whiteman AFB, Mo.	3,914	3,786	128	3.4
MacDill AFB, Fla.	3,685	3,649	36	1.0
JB Charleston, S.C.	3,556	3,783	-227	6.0
Fairchild AFB, Wash.	3,553	2,861	692	24.2
Beale AFB, Calif.	3,529	3,937	-408	-10.4
Pentagon, Va.	3,509	4,179	-670	-16.0

BASE	2022	2011	# CHANGE	% CHANGE
Little Rock AFB, Ark.	3,494	5,185	-1,691	-32.6
Mountain Home AFB, Idaho	3,444	3,553	-109	-3.1
Dover AFB, Del.	3,425	3,525	-100	-2.8
Yokota AB, Japan	3,388	2,931	457	15.6
Goodfellow AFB, Texas	3,365	4,513	-1,148	-25.4
Ellsworth AFB, S.D.	3,306	3,535	-229	-6.5
Kirtland AFB, N.M.	3,261	3,460	-199	-5.8
Robins AFB, Ga.	3,223	3,918	-695	-17.7
Eielson AFB, Alaska	3,202	1,925	1,277	66.3
Creech AFB [1]	3,188	n/a	n/a	n/a
JB Lewis-McChord, Wash.	3,184	3,680	-496	-13.5
Malmstrom AFB, Mont.	3,166	3,129	37	1.2
F.E. Warren AFB, Wyo.	3,127	3,128	-1	0.0
Fort Meade, Md.	3,062	2,583	479	18.5
Maxwell AFB, Ala.	3,033	2,915	118	4
JB San Antonio-Randolph, Texas	2,871	2,938	-67	-2.3
McConnell AFB, Kan.	2,865	3,023	-158	-5.2
Misawa AB, Japan	2,736	2,950	-214	-7.3
Edwards AFB, Calif.	2,732	2,652	80	3.0
Bolling AFB, D.C.	2,694	2,986	-292	-9.8
Vandenberg SFB, Calif.	2,607	2,809	-202	-7.2
Kunsan AB, South Korea	2,476	2,506	-30	-1.2
Pope Field, N.C.	2,322	2,574	-252	-9.8
U.S. Air Force Academy, Colo.	2,282	2,460	-178	-7.2
Tyndall AFB, Fla.	2,155	2,748	-593	-21.6
Schriever SFB, Colo.	2,086	1,616	470	29.1
Andersen AFB, Guam	2,079	2,070	9	0.4
Buckley SFB, Colo.	1,839	1,443	396	27.4
Patrick SFB, Fla.	1,825	1,777	48	2.7
Grand Forks AFB, N.D.	1,781	1,457	324	22.2
MCB Quantico, Va. [2]	1,655	n/a	n/a	n/a
JB San Antonio-Fort Sam Houston, Texas	1,620	1,322	298	22.5
Incirlik AB, Turkey	1,538	1,429	109	7.6
Hanscom AFB, Mass.	1,481	1,655	-174	-10.5
Columbus AFB, Miss.	1,469	1,592	-123	-7.7
Laughlin AFB, Texas	1,283	1,479	-196	-13.3
Altus AFB, Okla.	1,273	1,381	-108	-7.8
Los Angeles AFB, Calif.	1,252	1,400	-148	-10.6
Vance AFB, Okla.	1,232	1,209	23	1.9
USAG Stuttgart, Germany	827	1,265	-438	-34.6
Total [3]	**328,407**	**328,336**		

[1] Nellis AFB's personnel included Creech AFB until FY2020.
[2] Air Force personnel first recorded in 2012.
[3] Total at all locations. Some locations are not listed.

DOD PERSONNEL

DOD TOTAL FORCE END STRENGTH

(In thousands, as of Sept. 30, 2022)

FISCAL YEAR	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Active-Duty Military										Enacted	Requested
USAF	316	311	317	323	326	328	330	328	324	321	324
Army	508	491	475	476	476	484	481	487	465	452	452
Marine Corps	188	184	184	185	186	186	181	180	174	172	172
Navy	326	328	325	324	330	337	342	348	344	341	347
USSF								7	8	9	9
Full-time Guard and Reserve	77	76	76	75	79	83	87	90	90	91	92
Total	**1,415**	**1,390**	**1,378**	**1,382**	**1,397**	**1,422**	**1,421**	**1,439**	**1,405**	**1,386**	**1,396**
Selected Reserve											
Air National Guard	106	106	106	106	107	107	107	109	330	325	325
AFRC	70	68	69	69	69	69	69	71	68	69	70
Army National Guard	354	350	342	344	335	336	336	338	329	325	325
Army Reserve	195	199	198	194	189	191	189	184	176	177	175
Marine Corps Reserve	39	39	38	39	38	38	36	35	33	33	34
Navy Reserve	59	57	58	58	59	60	59	58	55	56	57
Total	**824**	**819**	**812**	**810**	**797**	**801**	**796**	**794**	**991**	**985**	**986**
Appropriated-Fund Civilian Full-time Equivalents											
DAF	167	166	167	167	170	172	170	173	175	179	178
Army	207	206	195	191	189	190	251	250	186	186	185
Navy/Marine Corps	193	199	204	206	209	218	220	205	212	215	215
Defense Agencies	189	187	189	191	193	216	114	114	213	213	217
Total	**756**	**758**	**755**	**756**	**761**	**796**	**755**	**762**	**785**	**793**	**795**

Source: National Defense Budget Estimates for Fiscal Year 2024.

DOD ACTIVE DUTY BY ENLISTED/OFFICER AND SEX

(As of Sept. 30, 2022)

	DOD		DAF		ARMY		MARINE CORPS		NAVY	
		%		%		%		%		%
CADET/MIDSHIPMAN										
Female	3,453	27.1	1,196	29.9	1,004	22.9	N/A	N/A	1,253	28.6
Male	9,305	72.9	2,807	70.1	3,375	77.1	N/A	N/A	3,123	71.4
ENLISTED										
Female	182,377	17.1	55,297	21.0	54,194	14.7	14,344	9.4	58,542	20.6
Male	885,290	83.0	208,183	79.0	313,391	85.3	138,742	90.6	224,974	79.4
OFFICER										
Female	46,533	19.7	15,040	23.2	17,586	18.8	2,096	9.8	11,811	20.9
Male	190,109	80.3	49,901	76.8	76,075	81.2	19,395	90.2	44,738	79.1
TOTAL ACTIVE DUTY	**1,317,067**		**332,424**		**465,625**		**174,577**		**344,441**	

Sources: Defense Manpower Data Center, Active Duty Military Personnel by Rank/Grade and Service; and Table of Active Duty Females by Rank/Grade and Service

DOD MILITARY DEMOGRAPHICS BY SERVICE

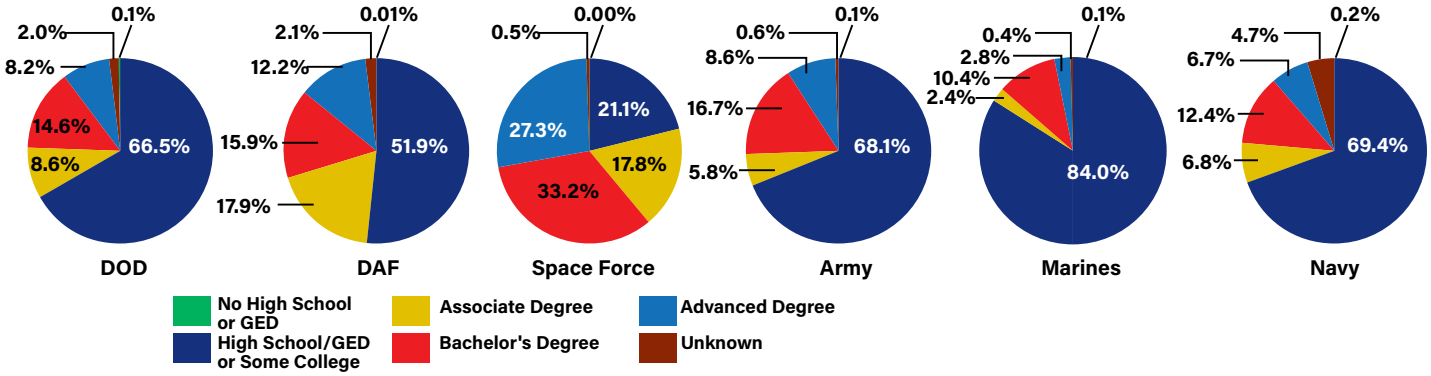
(As of Sept. 2022)

	DOD		AIR FORCE		SPACE FORCE		ARMY		MARINE CORPS		NAVY	
TOTAL	**1,335,848**		**328,887**		**1,643**		**482,416**		**179,678**		**343,223**	
Highest Educational Achievement		**%**		**%**		**%**		**%**		**%**		**%**
No High School Diploma or GED	1,251	0.1	69	0.0	0	0.0	502	0.1	25	0.0	655	0.2
High School Diploma/GED or Some College	888,300	66.5	170,751	51.9	347	21.1	328,609	68.1	150,993	84.0	237,600	69.2
Associate Degree	114,941	8.6	58,920	17.9	292	17.8	28,148	5.8	4,330	2.4	23,251	6.8
Bachelor's Degree	194,844	14.6	52,267	15.9	546	33.2	80,725	16.7	18,697	10.4	42,609	12.4
Advanced Degree	110,125	8.2	40,055	12.2	449	27.3	41,717	8.6	4,977	2.8	22,927	6.7
Unknown	26,387	2.0	6,826	2.1	9	0.5	2,715	0.6	656	0.4	16,181	4.7
Ethnicity												
Hispanic or Latino	236,569	17.7	52,519	16.0	245	14.9	82,245	17.0	43,897	24.4	57,663	16.8
Not Hispanic or Latino	1,099,279	82.3	276,369	84.0	1,398	85.1	400,171	83	135,781	75.6	285,560	83.2
Marital Status												
Divorced	64,515	4.8	20,005	6.1	69	4.2	24,898	5.2	5,345	3.0	14,198	4.1
Married	668,009	50.0	177,249	53.9	1,013	61.7	252,894	52.4	70,841	39.4	166,012	48.4
Never Married	601,224	45.0	131,395	40.0	557	33.9	204,020	42.3	103,405	57.6	161,847	47.2
Other*	2,100	0.2	239	0.1	4	0.2	604	0.1	87	0.0	1,166	0.3
Race												
American Indian or Alaska Native	14,224	1.1	2,526	0.8	17	1.0	3,532	0.7	1,908	1.1	6,241	1.8
Asian	65,936	4.9	14,522	4.4	117	7.1	24,951	5.2	5,907	3.3	20,439	6.0
Black or African American	230,055	17.2	48,753	14.8	156	9.5	102,176	21.2	18,746	10.4	60,224	17.5
Native Hawaiian or Other Pacific Islander	15,543	1.2	3,977	1.2	14	0.9	5,638	1.2	1,873	1.0	4,041	1.2
Multi-racial**	40,239	3.0	15,571	4.7	107	6.5	N/A	N/A	2,442	1.4	22,119	6.4
White	920,264	68.9	232,113	70.4	1,159	70.5	328,082	68.0	143,148	79.7	215,762	62.9
Other/Unknown	49,587	3.7	11,426	3.5	73	4.4	18,037	3.7	5,654	3.1	14,397	4.2
Sex												
Female	231,741	82.7	69,991	21.3	324	19.7	74,873	84.5	16,301	9.1	70,252	20.5
Male	1,104,106	17.3	258,896	78.7	1,319	80.3	407,543	15.5	163,377	90.9	272,971	79.5

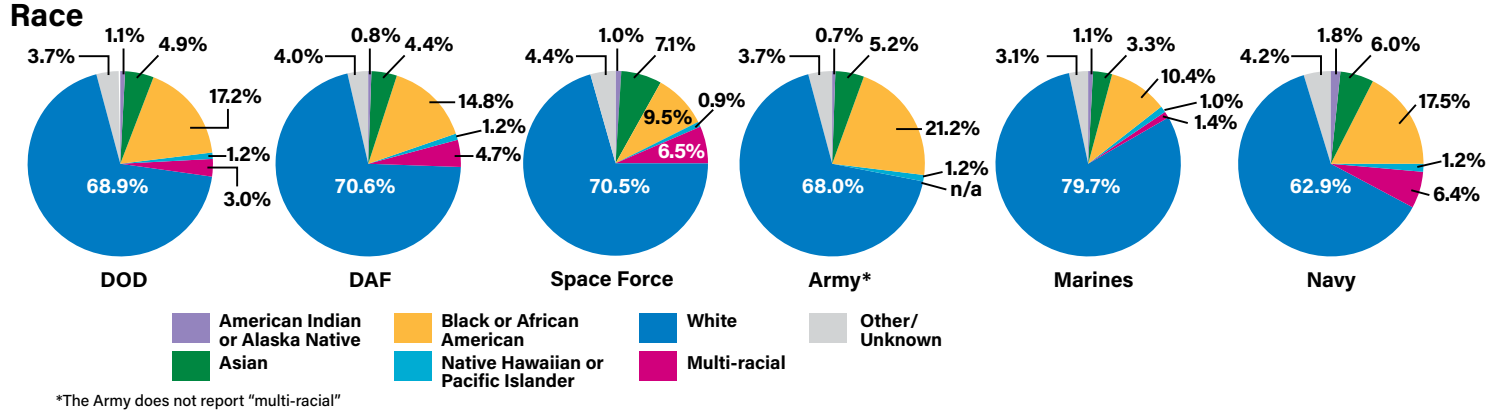
*Includes annulled, widowed, and unknown.
**The Army does not report "Multi-racial."
Source: 2021 Demographics Profile of the Military Community

DOD MILITARY DEMOGRAPHICS BY SERVICE

Education



Race



*The Army does not report "multi-racial"
Source: 2021 Demographics Profile of the Military Community

PAY & ALLOWANCES

MONTHLY MILITARY BASIC PAY

(Effective Jan. 1, 2023)

		YEARS OF SERVICE														
	PAY GRADE	< 2	2	3	4	6	8	10	12	14	16	18	20	22	24	26
COMMISSIONED OFFICERS	O-10	-	-	-	-	-	-	-	-	-	-	-	17,675	17,675	17,675	17,675
	O-9	-	-	-	-	-	-	-	-	-	-	-	17,201	17,450	17,675	17,675
	O-8	12,171	12,570	12,834	12,908	13,238	13,790	13,918	14,442	14,593	15,044	15,697	16,298	16,700	16,700	16,700
	O-7	10,113	10,583	10,800	10,973	11,286	11,595	11,953	12,309	12,667	13,790	14,738	14,738	14,738	14,738	14,814
	O-6	7,669	8,425	8,978	8,978	9,013	9,399	9,450	9,450	9,987	10,936	11,494	12,050	12,368	12,689	13,311
	O-5	6,393	7,202	7,700	7,794	8,106	8,291	8,701	9,002	9,390	9,983	10,265	10,545	10,862	10,862	10,862
	O-4	5,516	6,385	6,812	6,906	7,302	7,726	8,255	8,666	8,951	9,116	9,210	9,210	9,210	9,210	9,210
	O-3	4,850	5,498	5,933	6,470	6,780	7,121	7,340	7,702	7,891	7,891	7,891	7,891	7,891	7,891	7,891
	O-2	4,191	4,773	5,497	5,683	5,799	5,799	5,799	5,799	5,799	5,799	5,799	5,799	5,799	5,799	5,799
	O-1	3,637	3,786	4,577	4,577	4,577	4,577	4,577	4,577	4,577	4,577	4,577	4,577	4,577	4,577	4,577
	O-3E	-	-	-	6,470	6,780	7,121	7,340	7,702	8,007	8,183	8,421	8,421	8,421	8,421	8,421
	O-2E	-	-	-	5,683	5,799	5,984	6,296	6,537	6,716	6,716	6,716	6,716	6,716	6,716	6,716
	O-1E	-	-	-	4,577	4,887	5,068	5,253	5,434	5,683	5,683	5,683	5,683	5,683	5,683	5,683
ENLISTED MEMBERS	E-9	-	-	-	-	-	-	6,056	6,193	6,366	6,569	6,775	7,103	7,382	7,674	8,122
	E-8	-	-	-	-	-	4,957	5,177	5,312	5,475	5,651	5,969	6,130	6,404	6,557	6,931
	E-7	3,446	3,761	3,905	4,095	4,245	4,501	4,645	4,901	5,114	5,259	5,414	5,473	5,675	5,783	6,194
	E-6	2,981	3,280	3,425	3,566	3,712	4,042	4,171	4,420	4,496	4,551	4,616	4,616	4,616	4,616	4,616
	E-5	2,730	2,914	3,055	3,199	3,424	3,659	3,852	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875
	E-4	2,504	2,632	2,774	2,915	3,039	3,039	3,039	3,039	3,039	3,039	3,039	3,039	3,039	3,039	3,039
	E-3	2,260	2,402	2,548	2,548	2,548	2,548	2,548	2,548	2,548	2,548	2,548	2,548	2,548	2,548	2,548
	E-2	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149
	E-1	1,918	1,918	1,918	1,918	1,918	1,918	1,918	1,918	1,918	1,918	1,918	1,918	1,918	1,918	1,918

NOTE: BASIC PAY FOR O7-O10 IS LIMITED TO LEVEL II OF THE EXECUTIVE SCHEDULE DURING 2023 ($17,675.10).
NOTE: BASIC PAY FOR O6 AND BELOW IS LIMITED TO LEVEL V OF THE EXECUTIVE SCHEDULE IN EFFECT DURING 2023 ($14,341.80).

ANNUAL PAY FOR FEDERAL CIVILIANS

(Effective Jan. 1, 2023)

GENERAL SCHEDULE										
Grade	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10
GS-1	$ 20,999	$ 21,704	$ 22,401	$ 23,097	$ 23,794	$ 24,202	$ 24,893	$ 25,589	$ 25,617	$ 26,273
GS-2	23,612	24,174	24,956	25,617	25,906	26,668	27,430	28,192	28,954	29,716
GS-3	25,764	26,623	27,482	28,341	29,200	30,059	30,918	31,777	32,636	33,495
GS-4	28,921	29,885	30,849	31,813	32,777	33,741	34,705	35,669	36,633	37,597
GS-5	32,357	33,436	34,515	35,594	36,673	37,752	38,831	39,910	40,989	42,068
GS-6	36,070	37,272	38,474	39,676	40,878	42,080	43,282	44,484	45,686	46,888
GS-7	40,082	41,418	42,754	44,090	45,426	46,762	48,098	49,434	50,770	52,106
GS-8	44,389	45,869	47,349	48,829	50,309	51,789	53,269	54,749	56,229	57,709
GS-9	49,028	50,662	52,296	53,930	55,564	57,198	58,832	60,466	62,100	63,734
GS-10	53,990	55,790	57,590	59,390	61,190	62,990	64,790	66,590	68,390	70,190
GS-11	59,319	61,296	63,273	65,250	67,227	69,204	71,181	73,158	75,135	77,112
GS-12	71,099	73,469	75,839	78,209	80,579	82,949	85,319	87,689	90,059	92,429
GS-13	84,546	87,364	90,182	93,000	95,818	98,636	101,454	104,272	107,090	109,908
GS-14	99,908	103,238	106,568	109,898	113,228	116,558	119,888	123,218	126,548	129,878
GS-15	117,518	121,435	125,352	129,269	133,186	137,103	141,020	144,937	148,854	152,771

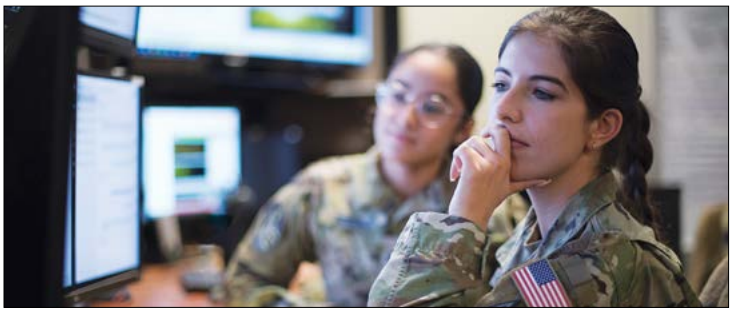
Does not include locality pay assigned by geographic area, such as 19.18% for Dayton, Ohio, and 30.48% for Washington, D.C. Source: Office of Personnel Management

SENIOR EXECUTIVE SERVICE PAY

(Effective Jan. 1, 2023)

SES Pay System Structure	Minimum	Maximum
Certified SES performance appraisal system	$141,022	$212,100
Noncertified SES performance appraisal system	$141,022	$195,000

Note: Section 747 of Division E of the Consolidated Appropriations Act, 2023, continues a freeze on the payable rates of pay for certain senior political officials through the end of the last day of the last pay period that begins in calendar year 2023 (i.e., Jan. 13, 2024, for those on the standard biweekly pay period cycle). See https://www.chcoc.gov/content/continued-pay-freeze-certain-senior-political-officials-7 for more information.



Judi Tomich/USSF

First Lt. Laura Drapinski and Spc. 4 Ariana Gonzalez monitor simulated missiles during SPACE FLAG 23-1 at Schriever Space Force Base, Colo.

SAMPLE HOUSING ALLOWANCES

(As of Jan. 1, 2023)

Pay Grade	San Antonio JB San Antonio		Niceville-Valparaiso, Fla. Eglin AFB		Fairfield, Calif. Travis AFB		Hampton, Va. JB Langley-Eustis		Albuquerque, N.M. Kirtland AFB	
	Dependants	No Dependants	Dependants	No Dependants	Dependants	No Dependants	Dependants	No Dependants	Dependants	No Dependants
O-7 to O-10	$2,553	$2,103	$3,096	$2,952	$3,702	$3,405	$2,733	$2,112	$2,421	$2,019
O-6	2,535	2,100	3,075	2,907	3,672	3,384	2,715	2,082	2,406	1,992
O-5	2,514	2,097	3,048	2,697	3,642	3,381	2,691	2,055	2,385	1,974
O-4	2,334	2,091	2,997	2,565	3,525	3,375	2,442	2,037	2,229	1,959
O-3	2,112	2,082	2,913	2,385	3,393	3,366	2,097	2,028	2,007	1,935
O-2	2,076	1,995	2,367	2,364	3,357	3,225	2,022	1,950	1,950	1,848
O-1	2,073	1,656	2,346	2,337	3,354	2,625	2,019	1,647	1,920	1,551
E-9	2,151	2,076	2,940	2,379	3,408	3,360	2,190	2,022	2,067	1,929
E-8	2,106	2,070	2,778	2,373	3,387	3,354	2,076	2,016	1,992	1,923
E-7	2,097	1,866	2,553	2,361	3,378	3,000	2,046	1,833	1,971	1,734
E-6	2,079	1,677	2,370	2,340	3,360	2,667	2,025	1,665	1,953	1,566
E-5	2,061	1,545	2,343	2,220	3,342	2,535	2,007	1,551	1,908	1,506
E-4 to E-1	1,863	1,398	2,340	2,013	2,988	2,382	1,830	1,386	1,731	1,446

Source: Defense Travel Management Office

AVIATION INCENTIVE PAY

(Effective since Oct. 1, 2017)

Years of Service as Aviation Officer Monthly Rate	
Two or fewer	$150
More than two	$250
More than six	$700
More than 10	$1,000
More than 22	$700
More than 24	$450

Years of Service as Aviation Enlisted Monthly Rate	
Four of fewer	$225
More than four	$350
More than eight	$500
More than 14	$600

Source: Defense Finance and Accounting Service

HAZARDOUS DUTY INCENTIVE PAY

(Effective since Jan. 1, 2017)

Duty	Rate per month
Aircrew Members	$250
Parachute Duty, Static Line	$150
Parachute Duty, Military Free Fall	$225
Flight Deck Duty	$150
Demolition Duty	$150
Experimental Stress Duty	$150
Toxic Fuels (or Propellants) Duty	$150
Toxic Pesticides Duty	$150
Dangerous Viruses (or Bacteria) Lab Duty	$150
Chemical Munitions Duty	$150
Maritime Visit, Board, Search, Seizure (VBSS) Duty	$150
Polar Region Flight Operations Duty	$150
Weapons of Mass Destruction Civil Support (WMDCS) Team	$150

Source: Defense Finance and Accounting Service

SUBSISTENCE ALLOWANCE

(Effective Jan. 1, 2023)

Officers	Enlisted Members
$311.68/month	$452.56/month

Staff Sgt. Scott Warner

Staff Sgt. Chris Waller, a 60th Civil Engineer Squadron Explosive Ordnance Disposal team member, pours a solution over a simulated unexploded explosive ordnance chemical to render it safe for disposal at Travis Air Force Base, Calif.

COMMAND THE SKIES

Dignitaries and officials around the world choose Gulfstream for peak performance, secure communications and mission flexibility.

Gulfstream™

A General Dynamics Company

RANK INSIGNIA OF THE ARMED FORCES

Air Force Officer		Air Force Enlisted		Space Force Officer		Space Force Enlisted		Army						Navy & Coast Guard						Marine Corps					
O-1	Second Lieutenant	E-1	Airman Basic No insignia	O-1	Second Lieutenant	E-1	Specialist 1	O-1	2nd Lieutenant	W-1	Warrant Officer 1	E-1	Private	O-1	Ensign	W-1	USN Warrant Officer 1	E-1	Seaman Recruit	O-1	2nd Lieutenant	W-1	Warrant Officer 1	E-1	Private
O-2	First Lieutenant	E-2	Airman	O-2	First Lieutenant	E-2	Specialist 2	O-2	1st Lieutenant	W-2	Warrant Officer 2	E-2	Private E-2	O-2	Lieutenant Junior Grade	W-2	USN Chief Warrant Officer 2	E-2	Seaman Apprentice	O-2	1st Lieutenant	W-2	Chief Warrant Officer 2	E-2	Private First Class
O-3	Captain	E-3	Airman First Class	O-3	Captain	E-3	Specialist 3	O-3	Captain	W-3	Warrant Officer 3	E-3	Private First Class	O-3	Lieutenant	W-3	USN Chief Warrant Officer 3	E-3	Seaman	O-3	Captain	W-3	Chief Warrant Officer 3	E-3	Lance Corporal
O-4	Major	E-4	Senior Airman	O-4	Major	E-4	Specialist 4	O-4	Major	W-4	Warrant Officer 4	E-4	Corporal / Specialist	O-4	Lieutenant Commander	W-4	USN Chief Warrant Officer 4	E-4	Petty Officer Third Class	O-4	Major	W-4	Chief Warrant Officer 4	E-4	Corporal
O-5	Lieutenant Colonel	E-5	Staff Sergeant	O-5	Lieutenant Colonel	E-5	Sergeant	O-5	Lieutenant Colonel	W-5	Warrant Officer 5	E-5	Sergeant	O-5	Commander	W-5	USN Chief Warrant Officer 5	E-5	Petty Officer Second Class	O-5	Lieutenant Colonel	W-5	Chief Warrant Officer 5	E-5	Sergeant
O-6	Colonel	E-6	Technical Sergeant	O-6	Colonel	E-6	Technical Sergeant	O-6	Colonel			E-6	Staff Sergeant	O-6	Captain			E-6	Petty Officer First Class	O-6	Colonel			E-6	Staff Sergeant
O-7	Brigadier General	E-7	Master Sergeant / First Sergeant	O-7	Brigadier General	E-7	Master Sergeant	O-7	Brigadier General			E-7	Sergeant First Class	O-7	Rear Admiral Lower Half			E-7	Chief Petty Officer	O-7	Brigadier General			E-7	Gunnery sergeant
O-8	Major General	E-8	Senior Master Sergeant / First Sergeant	O-8	Major General	E-8	Senior Master Sergeant	O-8	Major General			E-8	Master Sergeant / First Sergeant	O-8	Rear Admiral Upper Half			E-8	Senior Chief Petty Officer	O-8	Major General			E-8	Master Sergeant / First Sergeant
O-9	Lieutenant General	E-9	Chief Master Sergeant / First Sergeant / Command Chief Master Sergeant	O-9	Lieutenant General	E-9	Chief Master Sergeant	O-9	Lieutenant General			E-9	Sergeant Major / Command Sergeant Major	O-9	Vice Admiral			E-9	Master Chief Petty Officer / Fleet/ Command Master Chief Petty Officer	O-9	Lieutenant General			E-9	Master Gunnery Sergeant / Sergeant Major
O-10	General	CMSAF	Chief Master Sergeant of the Air Force	O-10	General	CMSSF	Chief Master Sergeant of the Space Force	O-10	General General of the Army (Reserved for wartime only)			SMA	Sergeant Major of the Army	O-10	Admiral Fleet Admiral (Reserved for wartime only)			MCPON	Master Chief Petty Officer of the Navy and Coast Guard	O-10	General			SMMC	Sergeant Major of the Marine Corps

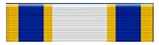
AWARDS AND DECORATIONS

Shown in order of precedence.


Medal of Honor (AF)


Air Force Cross


Defense Distinguished Service Medal


Distinguished Service Medal (AF)


Silver Star


Defense Superior Service Medal


Legion of Merit


Distinguished Flying Cross


Airman's Medal


Bronze Star Medal


Purple Heart


Defense Meritorious Service Medal


Meritorious Service Medal (AF)


Air Medal


Aerial Achievement Medal


Joint Service Commendation Medal


Air Force Commendation Medal


Joint Service Achievement Medal


Air Force Achievement Medal


Air Force Combat Action Medal


Presidential Unit Citation (AF)


Joint Meritorious Unit Award


Gallant Unit Citation


Air Force Meritorious Unit Award


Air Force Outstanding Unit Award


Air Force Organizational Excellence Award


Prisoner of War Medal


Combat Readiness Medal


Air Force Good Conduct Medal


Good Conduct Medal


Air Reserve Forces Meritorious Service Medal


Outstanding Airman of the Year Ribbon


Air Force Recognition Ribbon


American Defense Service Medal


American Campaign Medal


Asiatic-Pacific Campaign Medal


European-African-Middle Eastern Campaign Medal


World War II Victory Medal


Army of Occupation Medal


Medal for Humane Action

National Defense Service Medal

Korean Service Medal

Antarctica Service Medal

Armed Forces Expeditionary Medal

Vietnam Service Medal

Southwest Asia Service Medal

Kosovo Campaign Medal

Afghanistan Campaign Medal

Iraq Campaign Medal

Inherent Resolve Campaign Medal

Global War on Terrorism Expeditionary Medal

Global War on Terrorism Service Medal

Korean Defense Service Medal

Armed Forces Service Medal

Humanitarian Service Medal

Military Outstanding Volunteer Service Medal

Air & Space Campaign Medal

Nuclear Deterrence Operations Service Medal

Air Force Overseas Ribbon-Short

Air Force Overseas Ribbon-Long

Air Force Expeditionary Service Ribbon

Air Force Longevity Service Award Ribbon

Air Force Special Duty Ribbon

USAF Basic Military Training Instructor Ribbon

Air Force Recruiter Ribbon

Armed Forces Reserve Medal

USAF NCO PME Graduate Ribbon

USAF Basic Military Training Honor Graduate Ribbon

Small Arms Expert Marksmanship Ribbon

Air Force Training Ribbon

Continued from previous page

Philippine Defense Ribbon

Philippine Liberation Ribbon

Philippine Independence Ribbon

Philippine Presidential Unit Citation

ROK Presidential Unit Citation

RVN Gallantry Cross with Palm

United Nations Service Medal

United Nations Medal

NATO Meritorious Service Medal

NATO Medal for Yugoslavia

NATO Medal for Kosovo

Article 5 NATO Medal-Eagle Assist

Article 5 NATO Medal-Active Endeavor

Non-Article 5 NATO Medal-Balkans

Non-Article 5 NATO Medal-ISAF*

Republic of Vietnam Campaign Medal

Kuwait Liberation Medal, Kingdom of Saudi Arabia

Kuwait Liberation Medal, Government of Kuwait

Republic of Korea Korean War Service Medal

*International Security Assistance Force

Devices

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

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

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

Bronze Oak Leaf Cluster
For second and subsequent awards.

Silver Oak Leaf Cluster
For sixth, 11th, etc., entitlements or in lieu of five bronze OLCs.

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

Valor Device
Denotes heroism above what is normally expected while engaged in direct combat with an enemy of the U.S., or an opposing foreign or armed force, with exposure to enemy hostilities and personal risk; not an additional award; only one per ribbon; worn to the wearer's right of OLCs on the same ribbon.

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

Combat Device
Denotes meritorious service or achievement performed under combat conditions.

Remote Device
Denotes hands-on employment of a weapons system, performed remotely without personal physical combat risk that had a direct and immediate effects on the outcome of an engagement or specific effects on a target.

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

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

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

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

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

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

USAF Specialty Berets

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

Combat Controller/ Special Tactics Officer

Pararescue/Combat Rescue Officer

Security Forces

Survival, Evasion, Resistance, and Escape

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

Air Liaison Officer
(TACP flash and rank)

Weather Parachutist

SPENDING

The B-21 Raider was unveiled to the public at a ceremony in Palmdale, Calif., on Dec. 2, 2022. The bomber is designed to operate in tomorrow's high-end threat environment and will play a critical role in ensuring America's enduring airpower capability.

USAF

Each year, the President submits a budget request to Congress. Congress can add to or subtract from that request, and does, on an item-by-item basis. After debate, which takes months, Congress must pass both an Authorization bill that directs the President's spending and an Appropriation bill to fund those programs. The Defense Department Budget rolls up the total spending by each military department—the Departments of the Air Force (which also includes the Space Force), the Navy (which also includes the Marine Corps), and the Army. Budget figures sometimes disagree, either because of rounding or because of different approaches to financial reporting. Variations appearing among the tables on the following pages are due to one or the other factor.

DOD BUDGET AUTHORITY

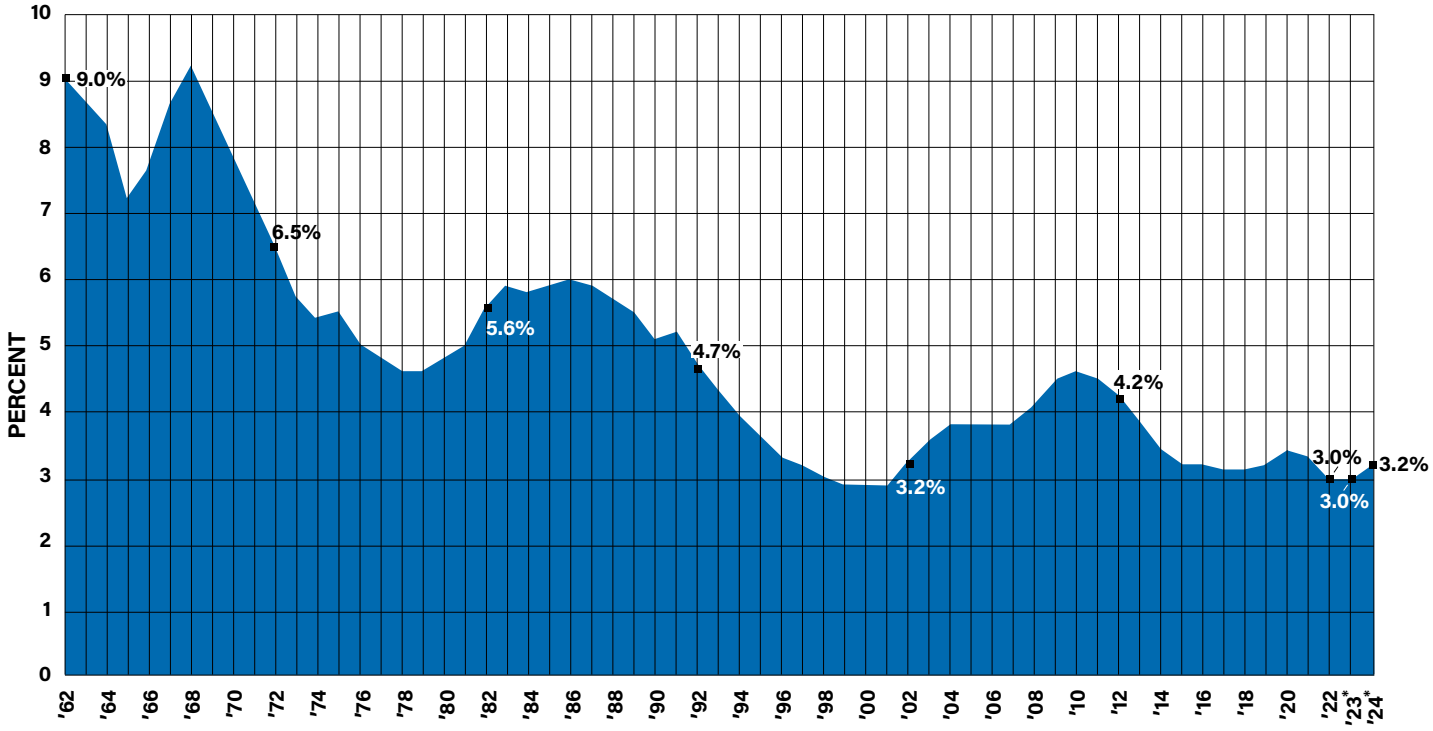
($ billions)

	2018	2019	2020	2021	2022*	Enacted* 2023*	Requested** 2024**
Base Budget	$600.0	$616.0	$633.0	$703.7	$742.2	$816.0	$842.0
With Supplementals* **	$671.0	$688.0	$723.0	$704.7	$776.6	$851.8	$842.0

***2022 includes supplemental funding for Operation Allies Welcome ($6.512 billion), Natural Disaster Relief ($895 million), Red Hill Bulk Fuel Storage Facility ($350 million), and Ukraine. ($26.632 billion). 2023 includes supplemental funding for Ukraine ($35.678 billion), and Disaster Relief ($147 million).
Source: Budget of the U.S. Government, Fiscal Year 2024

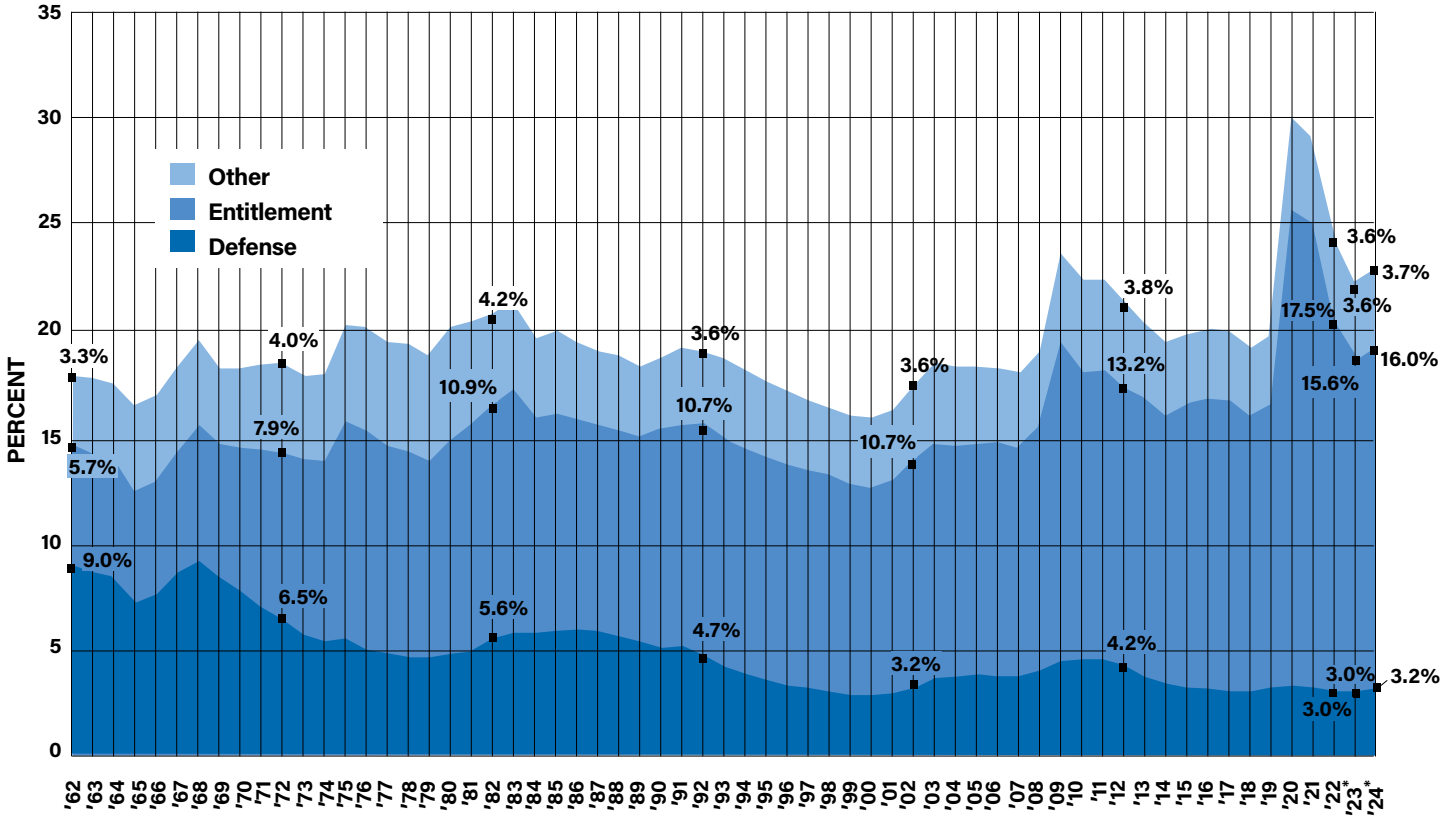
DOD SPENDING AS PERCENTAGE OF GDP

Percent by Fiscal Year



*Based on estimate. Source: Budget of the U.S. Government, Fiscal Year 2023

FEDERAL SPENDING AS A PERCENTAGE OF GDP



*Based on estimates. Sources: Budget of the U.S. Government, Fiscal Year 2023; White House Office of Management and Budget's Historical Tables

FEDERAL SPENDING AS PERCENTAGE OF GROSS DOMESTIC PRODUCT (GDP)

YEAR	TOTAL %	DEFENSE %	ENTITLEMENTS %	OTHER %
1962	18.2	9.0	5.7	3.3
1963	18.0	8.7	5.5	3.5
1964	17.9	8.3	5.6	3.6
1965	16.7	7.2	5.3	3.8
1966	17.2	7.6	5.3	4.0
1967	18.8	8.6	5.7	4.1
1968	19.8	9.2	6.4	4.0
1969	18.7	8.4	6.3	3.5
1970	18.7	7.8	6.7	3.7
1971	18.8	7.1	7.4	3.9
1972	19.0	6.5	7.9	4.0
1973	18.2	5.7	8.2	3.9
1974	18.2	5.4	8.5	3.9
1975	20.7	5.5	10.3	4.4
1976	20.8	5.0	10.3	4.8
1977	20.2	4.8	9.7	4.9
1978	20.2	4.6	9.7	5.0
1979	19.6	4.6	9.3	4.8
1980	21.2	4.8	10.1	5.1
1981	21.6	5.0	10.5	4.8
1982	22.5	5.6	10.9	4.2
1983	22.9	5.9	11.3	4.1
1984	21.6	5.8	10.0	3.8
1985	22.2	5.9	10.2	3.8
1986	21.9	6.0	9.9	3.6
1987	21.1	5.9	9.7	3.4
1988	20.7	5.7	9.6	3.4
1989	20.6	5.5	9.5	3.3
1990	21.2	5.1	10.3	3.4
1991	21.7	5.2	10.4	3.5
1992	21.5	4.7	10.7	3.6
1993	20.8	4.3	10.5	3.7
1994	20.4	3.9	10.5	3.6
1995	20.0	3.6	10.4	3.6
1996	19.6	3.3	10.4	3.4
1997	18.9	3.2	10.2	3.3
1998	18.5	3.0	10.2	3.2
1999	18.0	2.9	9.9	3.1
2000	17.7	2.9	9.8	3.2
2001	17.7	2.9	10.0	3.3
2002	18.6	3.2	10.7	3.6
2003	19.2	3.6	11.0	3.7
2004	19.1	3.8	10.8	3.7
2005	19.3	3.8	10.8	3.7
2006	19.5	3.8	10.9	3.6
2007	19.1	3.8	10.7	3.5
2008	20.2	4.1	11.4	3.5
2009	24.3	4.5	15.1	4.0
2010	23.2	4.6	13.4	4.4
2011	23.3	4.5	13.7	4.2
2012	21.9	4.2	13.2	3.8
2013	20.7	3.8	12.7	3.5
2014	20.2	3.4	12.6	3.4
2015	20.4	3.2	13.3	3.3
2016	20.8	3.2	13.6	3.2
2017	20.7	3.1	13.6	3.2
2018	20.2	3.1	12.9	3.1
2019	21.0	3.2	13.4	3.1
2020	31.1	3.4	22.3	4.3
2021	30.1	3.3	21.9	3.9
2022	25.1	3.0	17.5	3.6
2023 estimate	24.2	3.0	15.6	3.6
2024 estimate	25.3	3.2	16.0	3.7

Sources: Budget of the U.S. Government, Fiscal Year 2023; White House Office of Management and Budget's Historical Tables

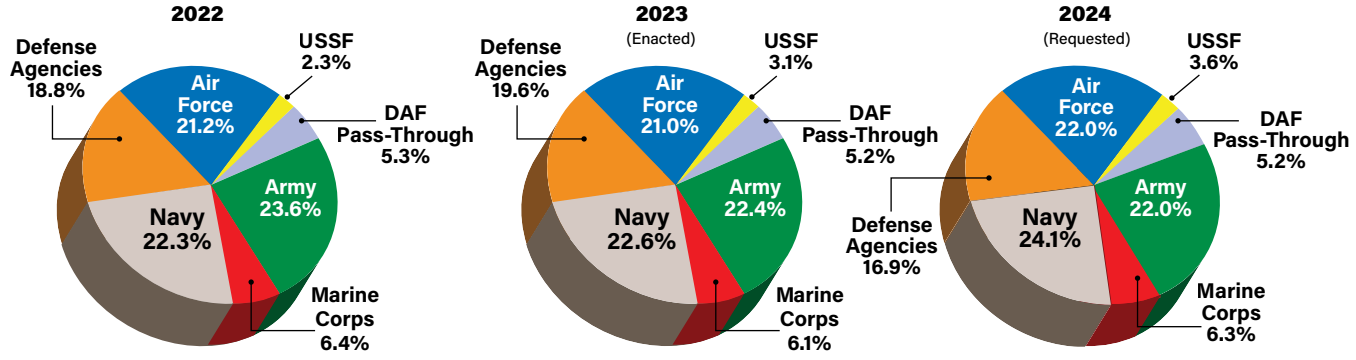
DOD BUDGET BY SERVICE, INCLUDING PASS-THROUGH

($ in millions)

	2022	%	Enacted 2023	%	Requested 2024	%
Department of the Air Force	$223,553	28.8	$249,175	29.3	$259,240	30.8
USAF	156,300*	21.2	179.7**	21.0**	185.1**	22.0**
USSF	17,400*	2.3	26.1**	3.1**	30.0**	3.6**
Pass-Through	41,437*	5.3	43.9**	5.2**	44.2**	5.2**
Army	183,512	23.6	190,805	22.4	185,337	22.0
Department of the Navy	223,231	28.7	244,508	28.7	255,753	30.4
Navy	173,268	22.3	192,845	22.6	202,553	24.1
Marine Corps	49,917	6.4	51,860	6.1	53,219	6.3
Defense Agencies	146,336	18.8	167,319	19.6	141,670	16.8
Total	**776,632**		**851,807**		**842,000**	

May not add due to rounding.
*Enacted. Limited details available
**Limited details available
Sources: Defense Budget Overview, United States Department of Defense Fiscal Year 2023 Budget Request; Department of the Air Force and Department of the Navy FY 2023 budget documents.

DOD BUDGET SHARES: 2022 vs. 2023 vs. 2024



May not add due to rounding.
Sources: Defense Budget Overview, United States Department of Defense Fiscal Year 2023 Budget Request; Department of the Air Force and Navy FY 2023 budget documents.

DOD BUDGET SHARES BY MILITARY DEPARTMENT

($ millions)

	2015	2016	2017	2018	2019	2020	2021	2022	Enacted 2023	Requested 2024
Department of the Air Force*	$153,567	$164,009	$171,457	$190,359	$196,066	$206,691	$204,574	$223,553	$249,175	$259,240
%	27.2	27.9	28.1	28.3	28.3	29.0	29.0	28.8	29.3	30.8
Department of the Army	$150,887	$151,296	$159,018	$178,260	$181,166	$184,195	$174,040	$183,512	$190,805	$185,337
%	26.7	25.7	26.1	26.5	26.1	26.2	24.7	23.6	22.4	22.0
Department of the Navy	$160,512	$170,325	$174,058	$190,489	$197,778	$209,383	$206,936	$223,231	$244,508	$255,753
%	28.39	28.97	28.57	28.31	28.54	29.8	29.4	28.7	28.7	30.4
Defense Agencies	$100,437	$102,348	$104,754	$113,853	$117,991	$122,955	$119,184	$146,336	$167,319	$141,670
%	17.8	17.4	17.2	16.9	17	17.5	16.9	18.8	19.6	16.8
Total	**$565,403**	**$587,978**	**$609,287**	**$672,960**	**$693,001**	**$723,224**	**$704,734**	**$776,632**	**$851,807**	**$842,000**

*Includes Pass-Through
Sources: Defense Budget Overview, United States Department of Defense Fiscal Year 2023 Budget Request; Department of the Air Force and Department of the Navy FY 2023 budget documents.

DOD BUDGET BY SPENDING CATEGORY

(Base budget not including war funding; current $ billions)

	2015	2016	2017	2018	2019	2020	2021	2022	Enacted 2023	Requested 2024
Military Personnel	$139.0	$138.3	$139.00	$136.00	$144.7	$149.9	$162.8	$166.8	$172.2	$178.8
O&M	$248.2	$247.8	$258.10	$199.70	$231.4	$237.2	$283.6	$294.5	$319.9	$329.7
Procurement	$104.0	$119.9	$126.00	$107.10	$133.8	$129.1	$140.7	$145.1	$163.7	$170.0
RDT&E	$64.1	$70.6	$74.80	$71.80	$94.1	$103.6	$105.9	$118.5	$139.4	$145.0
Military Construction	$6.4	$7.6	$7.60	$6.40	$8.8	$9.9	$7.1	$13.4	$16.6	$14.7
Family Housing	$1.3	$1.5	$1.40	$1.20	$1.6	$1.5	$1.4	$1.5	$2.3	$1.9
Revolving Funds	$2.3	$2.3	$2.30	$1.50	$1.9	$2.3	$2.1	$2.3	$1.7	$1.7
Total	**$565.4**	**$588.0**	**$609.20**	**$523.70**	**$616.3**	**$633.3**	**$703.7**	**$742.2**	**$816.0**	**$842.0**

Source: Defense Budget Overview, United States Department of Defense Fiscal Year 2023 Budget Request; National Defense Budget Estimates for FY 2024

DAF BUDGET BY SPENDING CATEGORY

(Base budget in $ billions; does not include war or emergency funding)

								Enacted	Requested
	2016	2017	2018	2019	2020	2021	2022	2023	2024
Military Personnel	$34	$34.6	$34.7	$37.4	$39.4	$42.8	$44.4	$46.1	$48.5
O&M	$44.4	$45.9	$50.2	$51.2	$53.4	$65.5	$69.9	$75.9	$79.5
Procurement	$40.9	$38.1	$41.7	$43.2	$43.3	$47.8	$49.5	$58.2	$61.7
RDT&E	$24.5	$27.3	$28.9	$40.6	$45.3	$46.2	$52.8	$61.3	$65.8
Military Construction	$1.6	$2	$2	$2	$2.4	$1.3	$3.5	$4.6	$3.2
Family Housing	$0.5	$0.3	$0.3	$0.4	$0.4	$0.4	$0.4	$0.6	$0.6
Revolving and Management	$0.1	$0.1	$0.1	$0.1	$0.2	$0.4	$0.5	$0.1	$0.1
Total	**$146.1**	**$148**	**$158.2**	**$174.8**	**$184.5**	**$204.5**	**$221.0**	**$246.8**	**$259.2**

PERCENTAGE CHANGE	2016	2017	2018	2019	2020	2021	2022	2023	2024
Military Personnel	1.2	1.6	0.4	7.8	5.3	8.6	3.7	3.8	5.2
O&M	-0.4	3.3	9.3	2.1	4.3	22.7	6.7	8.6	4.7
Procurement	20.7	-6.9	9.5	3.5	0.2	10.4	3.6	17.6	6
RDT&E	3.8	11.8	5.9	40.1	11.6	2	14.3	16.1	7.3
Military Construction	58.3	20.3	9.7	-10.6	20	45.8	169.2	31.4	-30.4
Family Housing	50	-31.7	0	17.9	0	0	0	50	0
Revolving and Management	-6	1.6	4.7	16.4	100	100	25	-80	0
Total	**6.5**	**1.5**	**15.8**	**1.8%**	**5.5%**	**10.8%**	**8.1%**	**11.7%**	**5%**

Source: National Defense Budget Estimates for FY 2024.

DAF SPENDING VS. PASS-THROUGH

(Total Obligation Authority; $ in billions)

										Enacted	Requested
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
DAF	$116.4	$120.8	$120.8	$129.8	$136.60	$151.50	$156.80	$168.10	$168.20	$180.8	$205.8	$215.1
Pass-Through	**29.8**	**31.3**	**31.7**	**33.1**	**34.3**	**37.2**	**37.8**	**39.0**	**37.3**	**41.4**	**43.9**	**44.2**
Total	**146.2**	**152.1**	**152.5**	**162.9**	**170.9**	**188.7**	**194.6**	**207.1**	**205.5**	**222.3**	**249.7**	**259.3**
Pass-Through %	**20.4%**	**20.6%**	**20.8%**	**20.3%**	**20.1%**	**19.7%**	**19.4%**	**18.8%**	**18.2%**	**18.6%**	**17.6%**	**17%**

MAJOR USAF PROGRAMS (RDT&E)

PROGRAM	2022	2023 Enacted	2024 Request	2025 FYDP	2026 FYDP	2027 FYDP	2028 FYDP
BOMBER							
B-1B	37.951	20.044	12.619	17.926	2.023	0.008	0.008
B-2A	123.749	101.79	87.623	33.136	0.004	0.004	0.004
B-2B	-	-	-	-	-	-	-
B-21	2,775.581	3,143.584	2,984.143	2,465.817	2,047.838	1,645.873	1,475.913
B-52	620.115	723.107	950.815	1,010.21	624.664	400.669	463.007
FIGHTER/ATTACK							
A-10	33.434	64.593	-	-	-	-	-
F-15C/D/E	231.898	200.139	50.965	92.149	52.128	163.42	0.353
EPAWSS	100.232	67.956	13.982	-	-	-	-
F-15EX	103.95	83.83	100.006	56.129	-	-	-
F-16	221.838	247.536	98.633	117.307	113.747	109.784	112.589
F-22	626.329	559.709	725.889	682.082	646.849	473.498	581.822
F-35	58.374	65.73	97.231	78.548	72.578	90.326	76.418
NGAD	1,452.934	1,657.635	2,326.128	3,485.24	3,783.618	5,298.181	7,164.165
F-35 BLK 4 C2D2	1,085.909	1,032.528	1,275.268	1,325.999	1,164.122	1,097.2	911.395
F-35 Mods	-	-	-	-	-	-	-
HELO							
HH-60W	53.363	58.974	48.268	42.22	33.219	99.325	85.939
UH1 Replacement	15.913	15.922	25.737	9.057	9.796	-	-
ICBM							
Minuteman III Squadrons	111.754	73.650	33.237	3.133	3.148	3.148	3.261
LGM-35A Sentinel	2,464.875	3,614.290	3,746.935	3,401.679	3,246.870	2,610.928	1,855.302
MMIII Fuze Modernization	115.2	98.376	71.732	10.39	-	-	-
Minuteman III Modifications	-	-	-	-	-	-	-
ISR/BM/C3							
Air and Space Operations Center	87.873	78.889	72.059	88.521	103.77	106.729	111.669
DCGS	40.421	28.774	31.589	30.878	31.341	31.95	33.068
CRC	-	-	2.005	2.012	-	-	-
E-3	-	-	-	-	-	-	-
E-3 Block 40/45	-	-	-	-	-	-	-
E-7	-	426.776	681.039	417.774	296.813	161.546	167.393
E-8	-	-	-	-	-	-	-
ABMS	262.452	237.332	500.575	815.046	951.369	721.619	711.021
E-4B	22.798	25.701	39.868	26.767	24.715	5	3
Compass Call	87.925	50	66.932	82.229	131.884	120.806	125.177
MQ-9	76.847	145.499	81.123	44.938	46.050	46.993	48.694
RQ-4	82.355	68.801	1.242	12.570	-	-	-
RC-135	42.774	42.439	43.443	41.843	45.673	46.714	48.404
U-2 Mods	40.713	20.17	16.842	-	-	-	-
MOBILITY							
C-5	16.998	3.1	29.502	33.612	51.848	52.909	54.823
C-17	15.779	25.387	2.753	12.373	27.949	82.029	127.232
C-32	-	-	-	-	-	-	-
C-130J	18.392	10.06	19.1	19.35	14.885	15.131	15.662
KC-10 (ATCA)	-	-	-	-	-	-	-
KC-135	3.461	12.955	51.105	33.084	20.589	-	-
KC-46	54.145	177.529	124.662	67.702	29.381	0.383	-
PAR (VC-25B)	407.147	147.932	490.701	294.829	112.744	56.851	-
VC-25A	-	-	-	-	-	-	-
MUNITION							
AIM-9	31.863	34.536	41.958	34.871	16.118	16.448	17.043
AIM-120	49.686	52.704	53.679	54.041	51.903	52.966	54.883
JASSM	114.018	117.198	132.937	57.141	40.945	17.908	21.818
SDB1	-	-	-	-	-	-	-
SDB2	31.003	32.713	37.518	29.857	24.874	25.373	25.77
JDAM	-	-	-	-	-	-	-
SiAW	161.199	263.152	298.585	381.867	407.928	386.462	305.871
LRASM	-	-	-	-	-	-	-
AGM-114 Hellfire	-	-	-	-	-	-	-
ARRW	308.089	114.981	150.34	-	-	-	-
LRSO	580.365	928.85	911.406	704.911	600.531	287.752	76.348
SOF							
CV-22B	16.663	10.121	18.127	16.444	16.878	17.197	17.819
HC-130/MC-130	0.611	0.287	0.926	0.746	0.892	0.763	0.79
Block 8.X (HC-130J/MC-130J)	42.484	52.653	35.61	24.143	24.979	25.372	26.184
TRAINERS							
T-6	0.061	6.815	36.721	36.141	6.292	6.419	2.482
T-7A	-	-	-	-	-	-	-
T-38	4.482	9.595	3.866	0.145	0.147	0.148	0.157
T-1	-	-	-	-	-	-	-

MAJOR USAF PROGRAMS (Procurement)

PROGRAM	2022	2023 Enacted	2024 Request	2025 FYDP	2026 FYDP	2027 FYDP	2028 FYDP
BOMBER							
B-1B	27.406	36.313	12.757	3.315	2.743	1.001	1.367
B-2A	1.651	1.802	1.838	1.881	1.914	-	-
B-2B	39.929	36.325	15.207	15.68	15.996	16.825	17.175
B-21	108.027	1,651.60	2,325.09	3,925.81	4,597.18	4,332.39	5,653.72
B-52 Mods	3.602	5.883	-	0.110	0.111	0.113	0.115
FIGHTER/ATTACK							
A-10 Mods	63.3	84	-	-	-	-	-
F-15C/D/E Mods	162.473	194.379	34.83	29.69	159.093	36.185	15.059
EPAWSS	163.8	259.8	280.7	321.3	234.8	118.4	120.9
F-15EX	1,252.36	2,581.37	2,898.04	2,534.90	60.601	-	-
F-16 Mods	599.32	741.334	297.342	334.863	807.886	580.217	353.511
F-22 Mods	407.927	747.933	794.676	860.834	1,000.90	1,033.28	426.761
F-35	4,560.14	4,482.17	5,279.12	5,124.12	5,485.31	5,519.61	5,893
NGAD	-	-	-	-	-	-	-
F-35 BLK 4 C2D2	149.488	204.539	291.233	379.562	384.094	403.467	415.679
F-35 Mods	247.928	333.096	451.798	555.594	556.869	554.573	566.112
HELO							
HH-60W	9.109	10.82	4.207	2.032	2.063	-	-
UH1 Replacement (MH-139)	141.36	186.192	228.807	317.287	494.374	442.527	419.218
ICBM							
Minuteman III Squadrons	-	-	-	-	-	-	-
LGM-35A Sentinel	8.895	-	539.3	502.72	5,735.106	6,456.735	6,172.57
MMIII Fuze Modernization	69.363	114.188	159.195	156.595	137.493	140.48	129.378
Minuteman III Modifications	78.853	61.672	48.639	47.233	16.315	10.344	10.564
ISR/BM/C3							
Air and Space Operations Center	23.019	21.709	5.032	21.163	22.904	23.709	24.214
DCGS	261.07	216.731	129.655	52.464	71.497	111.458	115.12
CRC	43.442	13.986	-	80.867	60.804	38.279	39.084
E-3	91.301	29.187	1.35	32.577	0.818	0.837	1.396
E-3 Block 40/45	24.827	-	-	-	-	-	-
E-7	-	-	-	-	-	-	-
E-8	7.5	-	-	-	-	-	-
ABMS	38.162	121.333	73.593	49.958	65.156	56.235	63.179
E-4B	19.081	5.973	13.055	32.962	36.767	44.408	45.334
Compass Call	-	553.7	-	-	-	-	-
MQ-9	92.267	16.039	-	-	-	-	-
RQ-4 (Mods?)	24.133	40.845	-	-	-	-	-
RC-135	213.495	213.428	220.138	222.554	225.912	231.006	235.814
U-2 Mods	125.109	81.65	54.727	69.677	13.047	13.343	13.62
MOBILITY							
C-5	20.33	15.673	24.377	45.361	32.417	33.153	33.843
C-17	54.649	142.653	140.56	100.013	134.375	134.373	123.025
C-32	1.949	4.068	19.06	7.111	0.01	0.01	0.01
C-130J	2,385.21	1,775.29	34.921	-	-	-	-
KC-10 (ATCA)	1.902	1.722	-	-	-	-	-
KC-135	58.776	144.557	153.595	184.956	186.983	183.527	167.369
KC-46	2,289.02	2,458.72	2,882.59	2,843.55	2,835.25	1,548.23	-
PAR (VC-25B)	-	-	-	-	-	-	-
VC-25A	0.096	2.146	29.707	12.562	9.377	-	-
MUNITION							
AIM-9	102.507	111.855	95.643	106.898	127.649	129.845	132.613
AIM-120	326.35	320.056	701.459	446.386	666.198	115.527	39.899
JASSM	710.55	784.971	1,685.67	823.06	819.713	827.541	849.067
SDB1	65.214	46.475	48.734	42.177	41.682	44.503	84.408
SDB2	275.934	379.006	291.553	327.758	310.736	281.213	315.496
JDAM	48.584	251.434	132.364	125.564	360.157	137.03	272.397
SiAW	-	77.975	41.947	173.091	149.268	347.445	399.393
LRASM	-	105.989	187.667	165.333	295.731	336.38	338.711
AGM-114 Hellfire	103.684	1.04	1.049	-	-	-	-
ARRW	-	-	-	-	-	-	-
LRSO	31.454	66.816	135.218	295.087	1,073.04	1,682.16	6,485.74
SOF							
CV-22B	226.962	153.026	153.006	164.495	165.656	158.238	161.531
HC-130/MC-130	147.993	109.785	101.055	186.558	345.671	230.219	94.086
Block 8.X (HC-130J/MC-130J)	220.049	40.351	-	-	-	-	-
TRAINERS							
T-6	8.735	6.215	2.942	157.727	417.022	147.110	371.645
T-7A	-	10.507	-	330.597	516.86	524.060	834.237
T-38	45.039	97.485	125.34	83.254	52.294	88.267	56.418
T-1	0.872	6.262	10.950	0.133	0.137	0.14	3.571

EQUIPMENT

AIRCRAFT TOTAL ACTIVE INVENTORY (TAI)

(As of Sept. 30, 2022)

	ACTIVE	ANG	AFRC	TOTAL FORCE	AVG. AGE
BOMBER					
B-1B Lancer	45	0	0	45	35.40
B-2A Spirit	20	0	0	20	27.35
B-52H Stratofortress	58	0	18	76	60.80
Total	**123**	**0**	**18**	**141**	**47.95**
FIGHTER/ATTACK					
A-10C Thunderbolt II	142	84	55	281	41.10
F-15C Eagle	59	126	0	185	38.25
F-15D Eagle	4	14	0	18	37.42
F-15E Strike Eagle	218	0	0	218	30.43
F-15X	2	0	0	2	1.50
F-16C Fighting Falcon	426	274	52	752	32.07
F-16D Fighting Falcon	98	45	2	145	31.72
QF-16A	14	0	0	14	38.72
QF-16C	60	0	0	60	35.82
F-22A Raptor	165	20	0	185	16.22
F-35A Lightning II	334	20	0	354	4.28
Total	**1,522**	**583**	**109**	**2,214**	**27.94**
SPECIAL OPERATIONS FORCES					
AC-130J Ghostrider	29	0	0	29	4.34
CV-22B Osprey	52	0	0	52	9.30
MC-130H Combat Talon II	8	0	0	8	34.15
MC-130J Commando II	54	0	0	54	6.08
Total	**143**	**0**	**0**	**143**	**8.47**
ISR/BM/C3					
E-3B Sentry (AWACS)	8	0	0	8	42.98
E-3G Sentry (AWACS)	23	0	0	23	42.97
E-4B NAOC	4	0	0	4	48.38
E-8C JSTARS	0	12	0	12	21.7
TE-8A JSTARS (trainer)	0	1	0	1	31.7
E-9A	2	0	0	2	30
E-11A BACN	3	0	0	3	10.73
EC-130H Compass Call	7	0	0	7	48.04
EC-130J Commando Solo	0	7	0	7	22.27
MQ-1B Predator	1	0	0	1	18.80
MQ-9A Reaper	314	24	0	338	6.22
NC-135W (test bed)	1	0	0	1	60.5
P-9A	3	0	0	3	6
RC-26B Condor	0	11	0	11	27.4
RC-135S Cobra Ball	3	0	0	3	60.47
RC-135U Combat Sent	2	0	0	2	57.65
RC-135V Rivet Joint	8	0	0	8	57.94
RC-135W Rivet Joint	12	0	0	12	59.07
RQ-4B Global Hawk	11	0	0	11	11.45
TC-135W (trainer)	3	0	0	3	60.3
TU-2S Dragon Lady (trainer)	4	0	0	4	37.92
U-2S Dragon Lady	27	0	0	27	39.85
WC-130J Hercules	0	0	10	10	21.45
WC-135R	3	0	0	3	59.55
Total	**439**	**55**	**10**	**504**	**16.47**

	ACTIVE	ANG	AFRC	TOTAL FORCE	AVG. AGE
TANKER					
HC-130J Combat King II	21	12	6	39	6.00
KC-10A Extender	36	0	0	36	37.61
KC-46A	29	12	7	48	2.19
KC-135R Stratotanker	128	140	62	330	60.60
KC-135T Stratotanker	21	24	0	45	62.61
Total	**235**	**188**	**75**	**498**	**49.22**
TRANSPORT					
C-5M Super Galaxy	36	0	16	52	35.32
C-12C Huron	16	0	0	16	46.17
C-12D Huron	6	0	0	6	38.43
C-12F Huron	3	0	0	3	37.25
C-12J Huron	4	0	0	4	34.72
C-17A Globemaster III	146	50	26	222	20.04
C-20H	1	0	0	1	28
C-21A Learjet	19	0	0	19	37.50
C-32A Air Force Two	4	0	0	4	24
C-32B Air Force Two	0	2	0	2	19.24
C-37A Gulfstream V	9	0	0	9	21.47
C-37B Gulfstream V	7	0	0	7	6.59
C-40B	4	0	0	4	18.65
C-40C Clipper	0	3	4	7	16.76
C-130H Hercules	0	86	42	128	29.53
C-130J Super Hercules	101	40	10	151	12.20
LC-130H Hercules	0	10	0	10	37.06
VC-25A Air Force One	2	0	0	2	31.95
Total	**358**	**191**	**98**	**647**	**22.98**
HELICOPTER					
HH-60G Pave Hawk	40	18	16	74	27.14
HH-60U Pave Hawk	3	0	0	3	10.37
HH-60W	24	0	0	24	1.10
TH-1H Iroquois (trainer)	28	0	0	28	41.53
UH-1N Iroquois	63	0	0	63	50.59
Total	**158**	**18**	**16**	**192**	**33.42**
TRAINER					
T-1A Jayhawk	177	0	0	177	27.91
A-29C (New)	3	0	0	3	6.00
AT-6C	2	0	0	2	1.25
T-6A Texan II	442	0	0	442	16.98
T-38A Talon	53	0	0	53	55.85
(A)T-38B Talon	6	0	0	6	59.12
T-38C Talon	438	0	0	438	56.29
T-41D Mescalero	4	0	0	4	53.1
T-51A Cessna	3	0	0	3	17.2
T-53A Kadet II	24	0	0	24	10.66
TG-15A (NEW)	2	0	0	2	17.80
TG-15B (NEW)	3	0	0	3	17.80
TG-16A (NEW)	19	0	0	19	9.64
TG-17A (NEW)	1	0	0	1	2.00
UV-18B Twin Otter	3	0	0	3	38.53
Total	**1,180**	**0**	**0**	**1,180**	**35.02**
GRAND TOTAL	**4,158**	**1,035**	**326**	**5,519**	**28.44**

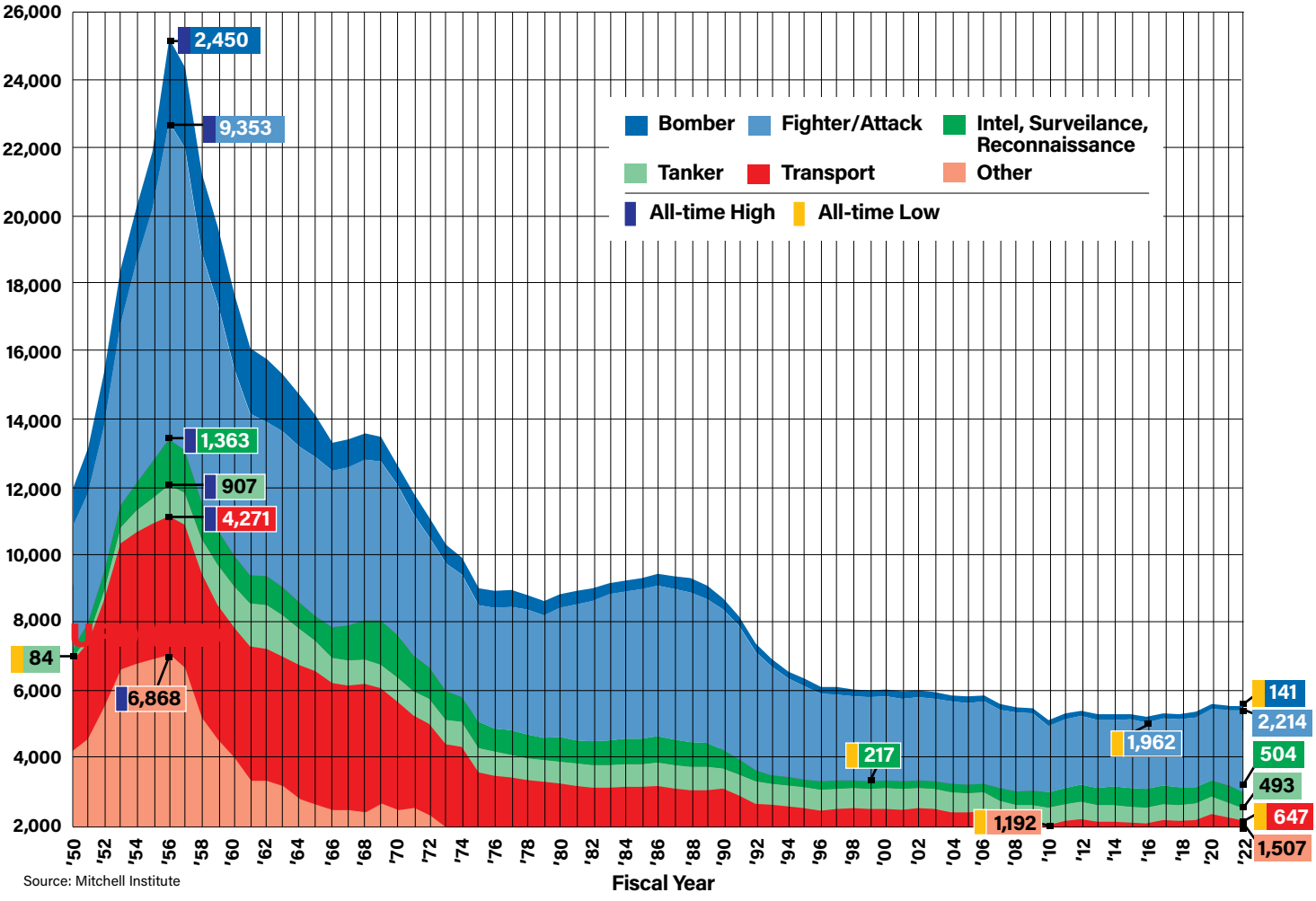
Total active inventory (TAI): aircraft assigned to operating forces for mission, training, test, or maintenance. Includes primary, backup, and attrition reserve aircraft. For other aircraft acronyms, see Gallery of Weapons.

ICBMs IN SERVICE OVER TIME

(As of Sept. 30, 2022)

TYPE OF SYSTEM	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Minuteman III	450	450	450	450	450	450	406	400	400	400	400	400
Total ICBMs	**450**	**450**	**450**	**450**	**450**	**450**	**406**	**400**	**400**	**400**	**400**	**400**

USAF AIRCRAFT INVENTORY, FY50-22 TOTAL ACTIVE AIRCRAFT



Source: Mitchell Institute

TOTAL NUMBER OF ACTIVE DUTY AIRCRAFT IN SERVICE OVER TIME

(As of Sept. 30, 2022)

ACTIVE	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bomber	144	144	141	141	140	140	139	139	140	140	123	123
Fighter/Attack	1,287	1,289	1,287	1,273	1,312	1,282	1,297	1,332	1,370	1,391	1,519	1,522
Special Ops Forces	105	117	122	124	144	132	138	135	144	154	139	143
ISR/BM/C3	381	413	394	444	437	434	441	432	428	422	471	439
Tanker	247	246	243	244	239	236	234	215	238	289	264	235
Transport	429	425	413	410	381	384	363	356	361	366	366	358
Helicopter	151	170	138	137	157	160	131	154	159	159	155	158
Trainer	1,190	1,213	1,189	1,195	1,187	1,194	1,211	1,181	1,180	1,179	1,176	1,180
Total Active Duty	**3,934**	**4,017**	**3,927**	**3,968**	**3,997**	**3,962**	**3,954**	**3,944**	**4,015**	**4,100**	**4,213**	**4,158**
ANG												
Bomber	0	0	0	0	0	0	0	0	0	0	0	0
Fighter/Attack	639	635	630	585	611	577	575	575	577	594	593	583
Special Ops Forces	4	4	4	4	4	4	4	1	0	0	0	0
ISR/BM/C3	80	87	86	88	91	89	93	78	59	59	35	55
Tanker	189	189	187	185	184	181	181	185	181	164	188	188
Transport	242	232	223	207	207	212	210	208	208	319	191	191
Helicopter	17	17	17	17	17	17	17	17	23	23	18	18
Total ANG	**1,171**	**1,164**	**1,147**	**1,086**	**1,114**	**1,080**	**1.080**	**1,064**	**1,048**	**1,159**	**1,025**	**1,035**
AFRC												
Bomber	18	18	18	18	18	18	18	18	18	18	18	18
Fighter/Attack	100	101	95	104	111	111	109	109	109	109	109	109
Special Ops Forces	10	5	4	0	0	0	0	0	00	0	0	0
ISR/BM/C3	12	11	11	10	10	10	10	10	10	10	10	10
Tanker	72	72	71	68	68	72	72	72	74	73	75	75
Transport	152	148	147	145	139	101	91	96	98	140	98	98
Helicopter	15	15	15	15	15	15	15	15	15	16	16	16
Total AFRC	**379**	**370**	**361**	**360**	**361**	**327**	**315**	**320**	**324**	**366**	**326**	**326**
TOTAL FORCE	5,484	5,551	5,435	5,414	5,472	5,369	5,349	5,328	5,387	5,625	5,564	5,519

2022 AIRCRAFT MISSION CAPABLE RATES

MDS	2022 12-HOUR FIX %	2022 BREAKS %	2022 MC %
A-10C	63.30	9.80	69.70
AC-130J	59.10	10.40	80.80
AC-130U	—	—	—
AC-130W	48.90	12.90	64.30
AT-38B	79.50	7.90	74.20
B-1B	27.80	27.60	54.80
B-2A	58.50	23.20	52.80
B-52H	29.00	42.00	59.30
C-5M	42.80	14.00	52.60
C-12C	—	—	98.70
C-12D	—	—	100
C-12F	—	—	95.60
C-12J	—	—	100
C-17A	55.20	2.80	77.50
C-21A	—	—	100
C-32A	—	—	88.40
C-37A	100	0.10	94.50
C-37B	—	0.40	91.20
C-40B	—	0.50	89.90
C-40C	22.20	0.80	90.10
C-130H	28.80	5.50	68.40
C-130J	57.90	4.40	74.90
CV-22B	42.40	34	51.90
E-3B	44.20	37	40.20
E-3C	—	—	—
E-3G	42.80	44.10	63.90
E-4B	35.00	5.40	55.40
E-8C	52.90	31.70	49.20
EC-130H	52.60	27.40	68.90
EC-130J	14.30	9.10	67.20
F-15C	57.20	13.60	45.70
F-15D	64.00	11.00	58.50
F-15E	52.90	15.50	51.60
F-15X	80.00	8.00	84.60
F-16C	56.20	9.10	70.70
F-16D	54.10	8.50	68.90
F-22A	59.50	8.70	57.40
F-35A[1]	—	—	65.40
HC-130J	53.00	12.60	76.40
HH-60G	50.20	9.70	68.90
HH-60W	68.20	8.90	60.80
KC-10A	49.00	7.40	80.40
KC-46A	50.00	2.40	69.90
KC-135R	48.50	11.10	72.00
KC-135T	44.60	14.20	69.60
LC-130H	25.00	14.10	54.70
MC-12W	—	—	100
MC-130H	48.50	24.30	68.50
MC-130J	47.70	10.40	79.40
MQ-9A	60.70	2.90	89.90
QF-16A	20.00	9.50	44.20
QF-16C	9.60	5.50	35.90
RC-135S	45.80	28.10	80.60
RC-135U	15.40	11.50	79.50
RC-135V	22.60	27.30	70.00
RC-135W	40.90	25.60	67.70
RQ-4B	39.70	16.50	70.80
T-1A	63.20	8.50	76.30
T-6A	64.10	4.80	71.40
T-38A	72.90	6.00	69.50
T-38C	52.60	6.60	57.20
TC-130H	44.40	28.10	50.60
TC-135W	44.80	12.30	76.10
TE-8A	77.80	13.80	83.00
TH-1H	59.20	7.50	71.70
TU-2S	65.60	8.50	69.60
U-2S	60.50	10.40	73.50
UH-1N	59.00	5.40	81.80
WC-130J	32.40	10.70	64.10
WC-135R	—	30.00	73.30
WC-135W	18.20	20.80	81.40
Total	**41.09**	**12.19**	**71.24**

[1]F-35 data pulled from Lockheed Martin's JDL data; MDS: Mission Design Series.

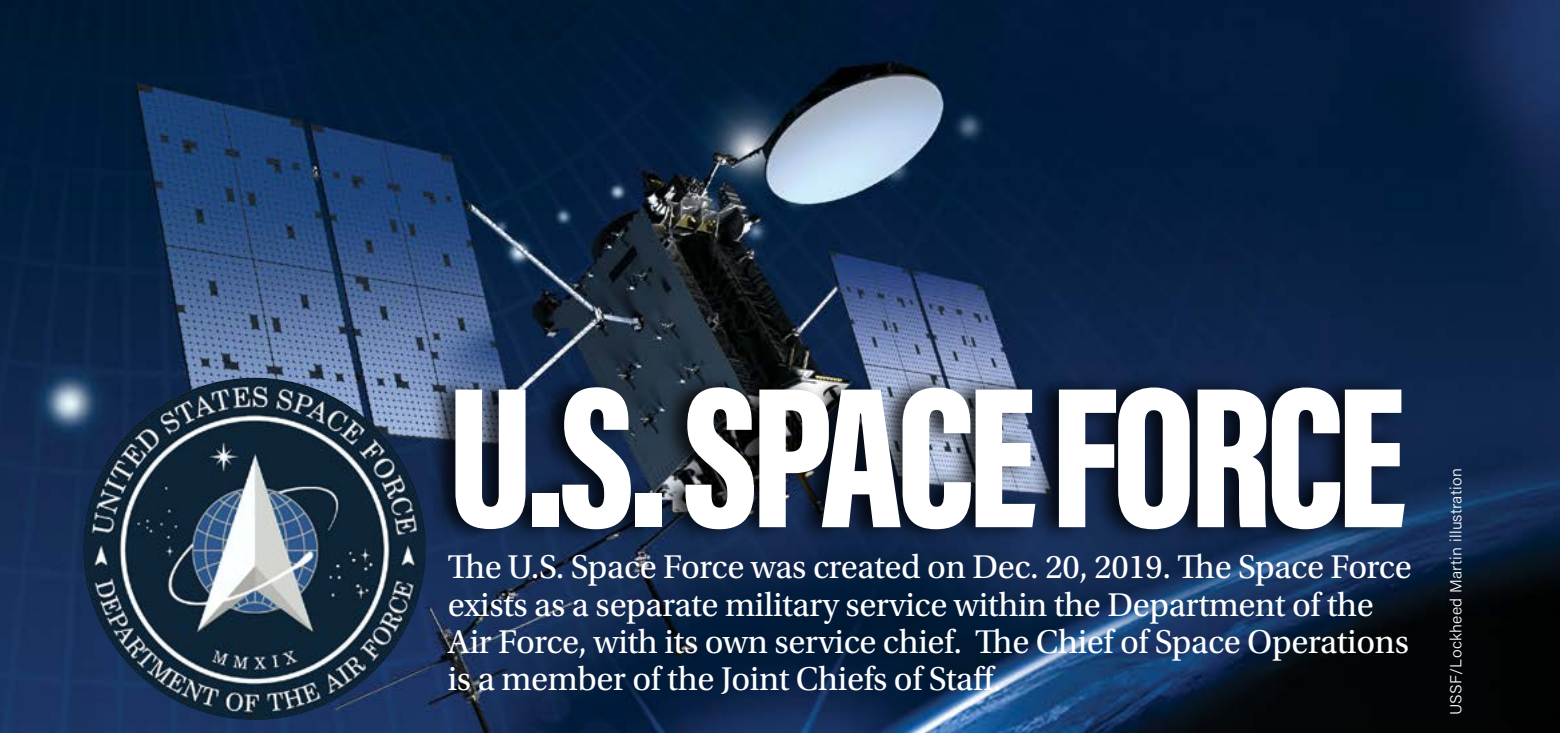
PILOT TRAINING HOURS/MONTH BY AIRCRAFT TYPE 2018-2022

	COMPONENT	2018	2019	2020	2021	2022
ALL MDS	Active Duty	10.7	6.8	10.9	10.1	14.4
	ANG	9.3	5.3	9	8.6	10.1
	AFRC	8	4.2	7.2	8.3	9.4

AIRCRAFT TYPE	COMPONENT	2018	2019	2020	2021	2022
AIRLIFT	Active Duty	12.7	8	12.2	12	18
	ANG	9.8	5.8	10.3	9.3	10.1
	AFRC	10.7	5.2	8.3	9.3	9.3
BACN	Active Duty	26	21.6	23.4	9.2	57.5
	ANG				2.3	N/A
	AFRC					N/A
BOMBER	Active Duty	6.1	4	7.2	7.1	12.9
	ANG	4.2	1.6	2.2	1.4	8.6
	AFRC	3.5	2.9	4.7	4.6	8.2
FIGHTER	Active Duty	8.2	5.7	8.1	6.8	10.7
	ANG	7.1	4.2	6.4	7.3	9.0
	AFRC	5.2	3.9	5.5	6.7	7.1
FIX WING	Active Duty	9	5.7	8.7	6.1	15.4
	ANG	6.8	5.8	10.8	7.9	10.9
	AFRC			4.8	10.9	12.9

AIRCRAFT TYPE	COMPONENT	2018	2019	2020	2021	2022
RECON	Active Duty	7.8	4.7	7	8.4	11.6
	ANG	8	5.7	9	8.1	11.8
	AFRC	5.7	2.7	5.3	5.4	11.0
ROTARY	Active Duty	6.8	4.5	6.9	6.5	11.1
	ANG	5.8	3.9	7.9	6.4	9.1
	AFRC	8.5	3.4	4.9	6.9	11.7
SPEC OPS	Active Duty	11.1	6.6	13	11.6	14.4
	ANG	6.9	3.7	5.8	10.1	7.6
	AFRC	5	3	5.2	5.9	8.0
TANKER	Active Duty	13.6	8	12.1	12	16.0
	ANG	12.4	7.5	10.4	9.4	10.1
	AFRC	10	5.7	8.3	9.1	10.0
TRAINER	Active Duty	10.2	6.8	9.6	8	17.0
	ANG	7.9	1.7	0.9	1	0
	AFRC	1.2	2.2	2.9	0.4	9.5

NOTE: These reflect Flying Hours only and do not include Simulator Hours.



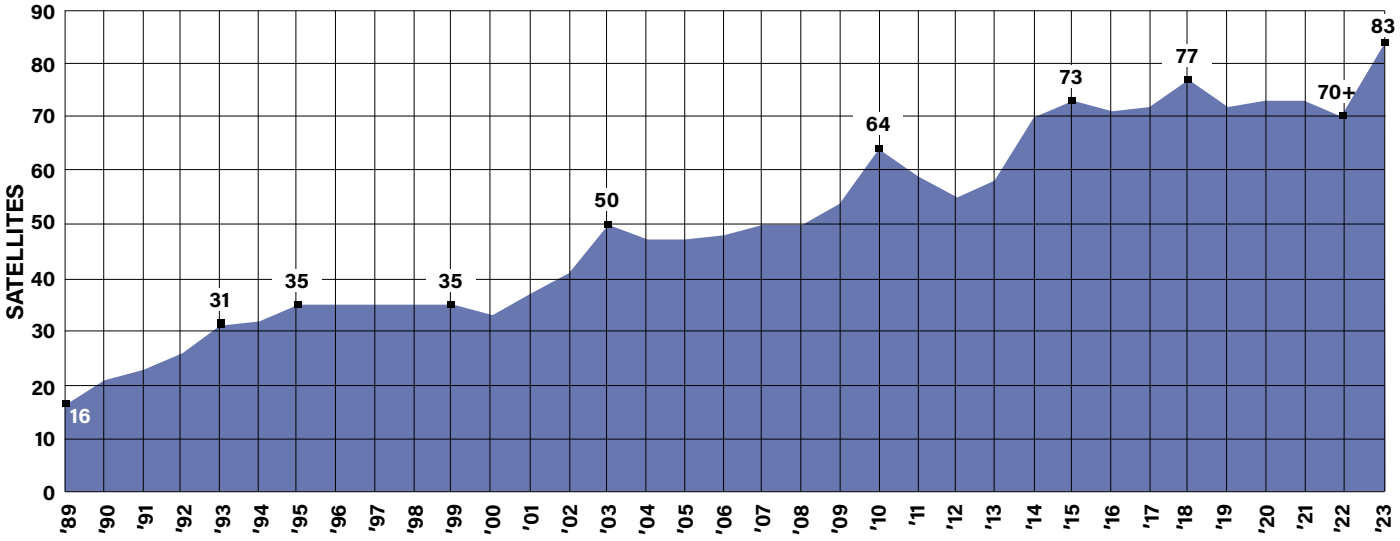
U.S. SPACE FORCE

The U.S. Space Force was created on Dec. 20, 2019. The Space Force exists as a separate military service within the Department of the Air Force, with its own service chief. The Chief of Space Operations is a member of the Joint Chiefs of Staff.

USSF/Lockheed Martin illustration

The Global Positioning System (GPS) is a constellation of orbiting satellites that provides position, navigation, and timing data to military and civilian users globally. This GPS III satellite in orbit above the Earth is operated and controlled by Delta 8, Schriever Space Force Base, Colo.

TOTAL SATELLITES OVER TIME



SATELLITES IN SERVICE OVER TIME

(As of Sept. 30, 2022)

TYPE OF SYSTEM	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AEHF	2	2	3	3	3	3	4	5	5	5	6	6
ATRR	1	1	0	0	0	1	1	1	1	1	1	1
DMSP	4	4	6	6	6	5	5	4	4	4	4	3
DSCS	8	8	7	6	6	6	6	6	6	6	6	4
GPS	30	31	38	41	37	35	31	29	31	31	32	31
GSSAP	0	0	2	2	4	4	4	4	4	4	6	6
Milstar	5	5	5	5	5	5	5	5	4	4	5	4
ORS-5								1	1	1	1	1
SBIRS	1	2	2	2	2	3	7	6	6	6	7	7
SBSS	1	1	1	1	1	1	2	1	1	1	1	1
WGS	3	3	4	6	7	7	9	10	10	10	10	10
MUOS												5
UFO												4
Total Satellites*	**55**	**58**	**70**	**73**	**71**	**72**	**77**	**72**	**73+**	**73+**	**70+**	**83**

*Classified systems not listed.

USSF

Gen. B. Chance Saltzman, Chief of Space Operations

Headquarters: Pentagon, Va.
Date of current designation: Dec. 20, 2019

Secretary of the Air Force

Chief of Space Operations:
Gen. B. Chance Saltzman

Vice Chief of Space Operations:
Gen. David D. Thompson

Chief Master Sergeant of the Space Force:
Roger A. Towberman

Space Staff

- **Chief Human Capital Office** — Katharine Kelley
  - **Chief Technology & Innovation Officer** — Dr. Lisa Costa
- **ISR Directorate** — Maj. Gen. Gregory Gagnon
  - **Director of Staff** — Lt. Gen. Nina Armagno
- **Chief Operations Officer** — Lt. Gen. DeAnna Burt
- **Strategic Resources Directorate** — Lt. Gen. Philip Garrant

USAF

Gen. David D. Thompson Vice Chief of Space Operations

USAF

Chief Master Sgt. Roger A. Towberman*

*Chief Master Sgt. John F. Bentivegna was nominated to succeed Towberman as Chief Master Sergeant of the Space Force on May 5, 2023.

FIELD COMMANDS

Space Operations Command

Headquarters: Peterson SFB, Colo.
Date of activation: Oct. 21, 2020
Commander: Lt. Gen. Stephen N. Whiting

MAJOR UNITS	LOCATION	MISSION
Space Delta 2	Peterson SFB, Colo.	Space domain space awareness
Space Delta 3	Peterson SFB, Colo.	Electromagnetic warfare
Space Delta 4	Buckley SFB, Colo.	Missile warning
Space Delta 5	Vandenberg SFB, Calif.	Operational level command and control
Space Delta 6	Schriever SFB, Colo.	Space access, cyberspace operations
Space Delta 7	Peterson SFB, Colo.	ISR
Space Delta 8	Schriever SFB,Colo.	SATCOMS, position, navigation, timing
Space Delta 9	Schriever SFB, Colo.	Orbital warfare, Space domain awareness
Space Base Delta 2	Buckley SFB, Colo.	Mission support

Space Systems Command

Headquarters: Los Angeles AFB, Calif.
Date of activation: Aug. 13, 2021
Commander: Lt. Gen. Michael A. Guetlein

MAJOR UNITS	LOCATION	MISSION
Space Development Agency	Pentagon	Acquisition
Space Launch Delta 30	Vandenberg SFB, Calif.	Space launch, ICBM test, launch range operations
Space Launch Delta 45	Patrick SFB, Fla.	Space launch, launch range operations
Space Rapid Capabilities Office	Kirtland AFB, N.M.	Acquisition

Space Training and Readiness Command

Headquarters: Peterson SFB, Colo.*
Date of activation: Aug. 23, 2021
Commander: Maj. Gen. Shawn N. Bratton

MAJOR UNITS	LOCATION	MISSION
Space Delta 1	Vandenberg SFB, Calif.	Space training
25th Space Range Squadron	Schriever SFB, Colo.	Operates the space test and training range
527th Space Aggressor Squadron	Schriever SFB, Colo.	Simulates adversary threats for training
705th Combat Training Squadron Operating Location Alpha	Schriever SFB, Colo.	Virtual exercises
National Security Space Institute	Peterson SFB, Colo.	Space education and training
USAF Warfare Center, Detachment 1	Schriever SFB, Colo.	Operational test and evaluation, tactics development, and training

*The Department of the Air Force announced in May 2023 that its preferred permanent location for STARCOM's headquarters is Patrick Space Force Base, Fla.

U.S. SPACE FORCE BUDGET SUMMARY

Funding ($ billions)	**2023** (Estimated)	**2024** (Requested)
Operations & Maintenance	$4.0	$4.9
Research, Development, Test & Evaluation	16.6	19.2
Military Personnel	1.0	1.2
Procurement	4.5	4.7
Total	**26.1**	**30.0**
Authorized Manpower	**2023** (Enacted)	**2024** (Requested)
Military	8,600	9,400
Civilian	4,714	4,909
Total Force Personnel	**13,527**	**14,526**
Major USSF Procurement Quantities	**2023** (Enacted)	**2024** (Requested)
National Security Space Launches	3.0	10.0
SDA Launch	2.0	1.8
Space-Based Missile Warning Systems	7.0	5.0

Source: Fiscal 2024 Department of the Air Force Budget Overview

MAJOR USSF PROGRAMS (RDT&E)

(Current $ millions)

	2022	2023 (Enacted)	2024	2025	2026	2027	2028
Counterspace Systems	46.872	31.544	36.537	37.014	37.322	38.084	39.46
Next-Gen OPIR	125.853	226.601	222.178	227.501	230.095	233.231	241.905
Weather System Follow-On	64.759	0.0	0.0	0.0	0.0	0.0	0.0
Protected Tactical Service	221.355	252.078	360.126	348.387	345.422	464.18	482.389
Protected Tactical Enterprise Service	96.942	110.801	76.554	88.871	38.525	36.177	87.552
Space Test Program	20.185	25.291	30.192	30.226	29.781	30.39	31.487
Space C2 Software Pilot	0.0	155.553	122.326	123.422	126.137	128.715	133.365
Polar MILSATCOM	79.557	67.215	73.757	0.0	0.0	0.0	0.0
Wideband Global SATCOM	0.0	48.288	49.445	0.0	0.0	0.0	0.0
GPS III Space Segment	6.998	1.526	0.0	0.0	0.0	0.0	0.0
GPS III Follow-On Satellites	237.947	292.847	308.999	254.025	193.634	167.288	70.12
GPS III Operational Control Segment	388.977	277.052	317.309	82.385	22.836	6.616	6.855
Ballistic Missile Defense Radars	7.432	21.615	20.752	9.065	1.468	0.0	0.0
Space Science and Technology Research and Development (Space Development Agency)	0.0	447.472	472.493	489.58	493.127	509.703	525.104
Space Development Agency Launch	N/A	N/A	N/A	N/A	N/A	N/A	N/A

MAJOR USSF PROGRAMS (PROCUREMENT)

(Current $ millions)

	2022	2023 (Enacted)	2024	2025	2026	2027	2028
Counterspace Systems	64.804	60.241	52.665	4.27	2.056	2.109	2.153
Next-Gen OPIR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Weather System Follow-On	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Protected Tactical Service	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Protected Tactical Enterprise Service	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Space Test Program	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Space C2 Software Pilot	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Polar MILSATCOM	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wideband Global SATCOM	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GPS III Space Segment	84.452	103.34	121.77	75.491	50.078	2.809	0
GPS III Follow-On Satellites	835.176	616.962	119.7	678.531	708.802	743.06	758.646
GPS III Operational Control Segment	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ballistic Missile Defense Radars	36.622	18.116	N/A	N/A	N/A	N/A	N/A
Space Science and Technology Research and Development (Space Development Agency)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Space Development Agency Launch	0	746.288	529.468	498.405	412.147	241.559	246.626

US SPACE FORCE DEMOGRAPHICS

(As of Sept. 30, 2022)

ENLISTED RANKS	E-1	%	E-2	%	E-3	%	E-4	%	E-5	%	E-6	%	E-7	%	E-8	%	E-9	%	Total	%	Space Force Total*	%
TOTAL	89	1.1	153	1.9	746	9.1	597	7.3	948	11.5	740	9.01	541	6.6	124	1.5	43	0.5	3,981	48.5	8,216	100.0
Sex																						
Female	25	28.1	42	27.5	166	22.3	114	19.1	162	17.1	116	15.7	92	17.0	33	26.6	12	27.9	762	19.1	1,564	19.0
Male	64	71.9	111	72.6	580	77.8	483	80.9	786	82.9	624	84.3	449	83.0	91	73.4	31	72.1	3,219	80.9	6,652	81.0
Ethnicity																						
Declined to Respond	0	0.0	0	0.0	0	0.0	5	0.8	11	1.2	15	2	18	3.3	7	5.6	2	4.7	58	1.5	865	10.5
Hispanic or Latino	22	24.7	12	7.8	175	23.5	130	21.8	169	17.8	131	17.7	85	15.7	18	14.5	5	11.6	747	18.8	1,127	13.7
Not Hispanic or Latino	67	75.3	141	92.2	571	76.5	462	77.4	768	81	594	80.3	438	81.0	99	79.8	36	83.7	3,176	80	6,224	75.8
Race																						
American Indian or Alaska Native	3	3.4	2	1.3	8	1.1	7	1.2	10	1.1	4	0.5	4	0.7	2	1.6	0	0.0	40	1.0	62	0.8
Asian	8	9.0	8	5.2	53	7.1	29	4.9	44	4.6	30	4.1	18	3.3	8	6.5	0	0.0	198	5.0	558	6.8
Black or African American	6	6.7	25	16.3	82	11.0	70	11.7	96	10.1	65	8.8	51	9.4	11	8.9	4	9.3	410	10.3	667	8.1
Declined to Respond	0	0.0	1	0.7	1	0.1	13	2.2	29	3.1	29	3.9	32	5.9	9	7.3	6	14.0	120	3.0	368	4.5
Identified More Than One Race	12	13.5	15	9.8	72	9.7	39	6.5	60	6.3	42	5.7	39	7.2	7	5.6	1	2.3	287	7.2	495	6.0
Native Hawaiian or Other Pacific Islander	2	2.2	5	3.3	15	2.0	3	0.5	8	0.8	7	0.9	8	1.5	4	3.2	0	0.0	52	1.3	76	0.9
White	58	65.2	97	63.4	515	69.0	436	73.0	701	73.9	563	76.1	389	71.9	83	66.9	32	74.4	2,874	72	5,990	72.9
Marital Status																						
Divorced	0	0.0	2	1.3	10	1.3	20	3.4	68	7.2	64	8.6	39	7.2	11	8.9	4	9.3	218	5.5	377	4.6
Married	4	4.5	21	13.7	190	25.5	229	38.4	523	55.2	559	75.5	454	83.9	109	87.9	39	90.7	2,128	54	4,927	60.0
Single	85	95.5	130	85.0	546	73.2	347	58.1	355	37.4	116	15.7	48	8.9	4	3.2	0	0.0	1,631	41.0	2,901	35.3
Other*	0	0.0	0	0.0	0	0.0	1	0.2	2	0.2	1	0.1	0	0.0	0	0.0	0	0.0	4	0.1	11	0.1
Highest Educational Achievement																						
No High School Diploma or GED	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
High School Diploma/GED	73	82.0	50	32.7	80	10.7	62	10.4	117	12.3	101	13.6	20	3.7	0	0.0	0	0.0	503	12.6	503	6.1
Some College	13	14.6	95	62.1	563	75.5	414	69.3	448	47.3	176	23.8	38	7.0	5	40	0	0.0	1,752	44.0	1,752	21.3
Associate Degree	0	0.0	0	0.0	6	0.8	77	12.9	258	27.2	281	38.0	205	37.9	26	21.0	5	11.6	858	21.6	858	10.4
Bachelor's Degree	0	0.0	0	0.0	32	4.3	41	6.9	104	11.0	155	20.9	210	38.8	47	37.9	19	44.2	608	15.3	2,153	26.2
Master's Degree	0	0.0	0	0.0	0	0.0	1	0.2	19	2.0	27	3.6	67	12.4	45	36.3	1	2.3	160	4.0	2,434	29.6
Ph.D. or Professional Degree	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	1	0.8	18	41.9	20	0.5	114	1.4
Unknown, None, or Not Applicable	3	3.4	8	5.2	65	8.7	2	0.3	2	0.2	0	0.0	0	0.0	0	0.0	0	0.0	80	2.0	402	4.9

OFFICER RANKS	O-1	%	O-2	%	O-3	%	O-4	%	O-5	%	O-6	%	O-7	%	O-8	%	O-9	%	O-10	%	Officer Total	%
TOTAL	486	5.9	534	6.5	1,303	15.9	1,009	12.3	667	8.1	212	2.6	10	0.1	6	0.1	5	0.1	3	0.0	4,235	51.6
Sex																						
Female	141	29.0	130	24.3	240	18.4	160	15.9	100	15.0	29	13.7	0	0.0	0	0.0	1	20.0	0	0.0	802	18.9
Male	345	71.0	404	75.7	1,063	81.6	849	84.1	567	85.0	183	86.3	10	100.0	6	100.0	4	80.0	3	100.0	3,433	81.1
Ethnicity																						
Declined to Respond	179	36.8	135	25.3	218	16.7	136	13.5	134	20.1	5	2.4	0	0.0	0	0.0	0	0.0	0	0.0	807	19.1
Hispanic or Latino	40	8.2	65	12.2	131	10.1	87	8.6	46	6.9	11	5.2	0	0.0	0	0.0	0	0.0	0	0.0	380	9.0
Not Hispanic or Latino	267	54.9	334	62.5	954	73.2	786	77.9	487	73.0	196	92.5	10	100.0	6	100.0	5	100.0	3	100.0	3,048	72.0
Race																						
American Indian or Alaska Native	0	0.0	5	0.9	5	0.4	10	1.0	1	0.1	1	0.5	0	0.0	0	0.0	0	0.0	0	0.0	22	0.5
Asian	54	11.1	48	9.0	125	9.6	80	7.9	48	7.2	5	2.4	0	0.0	0	0.0	0	0.0	0	0.0	360	8.5
Black or African American	24	4.9	30	5.6	90	6.9	62	6.1	38	5.7	11	5.2	1	10.0	1	16.7	0	0.0	0	0.0	257	6.1
Declined to Respond	27	5.6	38	7.1	67	5.1	67	6.6	38	5.7	11	5.2	0	0.0	0	0.0	0	0.0	0	0.0	248	5.9
Identified More Than One Race	26	5.3	33	6.2	85	6.5	40	4.00	18	2.7	6	2.8	0	0.0	0	0.0	0	0.0	0	0.0	208	4.9
Native Hawaiian or Other Pacific Islander	3	0.6	5	0.9	8	0.6	6	0.6	2	0.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	24	0.6
White	352	72.4	375	70.2	923	70.8	744	73.7	522	78.3	178	84.0	9	90.0	5	83.3	5	100.0	3	100.0	3,116	74
Marital Status																						
Divorced	3	0.6	14	2.6	50	1.9	50	5.0	32	4.8	10	4.7	0	0.0	0	0.0	0	0.0	0	0.0	159	2.9
Married	103	21.2	232	43.4	830	31.8	822	81.5	592	88.8	196	92.5	10	100.0	6	100.0	5	100.0	3	100.0	2,799	50.5
Single	379	78.0	288	53.9	423	16.2	135	13.4	41	6.1	4	1.9	0	0.0	0	0.0	0	0.0	0	0.0	1,270	22.9
Other*	1	0.2	0	0.0	0	50.0	2	0.2	2	0.3	2	0.9	0	0.0	0	0.0	0	0.0	0	0.0	7	23.7
Highest Educational Achievement																						
Bachelor's Degree	318	65.4	404	75.7	681	52.3	139	13.8	3	0.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1,545	36.5
Master's Degree	10	2.1	73	13.7	578	44.4	812	80.5	593	88.9	184	86.8	10	100.0	6	100.0	5	100.0	3	100.0	2,274	53.7
Ph.D. or Professional Degree	0	0.0	0	0.0	6	0.5	26	2.6	44	6.6	18	8.5	0	0.0	0	0.0	0	0.0	0	0.0	94	2.2
Unknown, None, or Not Applicable	158	32.5	57	10.7	38	2.9	32	3.2	27	4.0	10	4.7	0	0.0	0	0.0	0	0.0	0	0.0	322	7.6

*Includes annulled, legally separated, widowed, interlocutory decree, and unknown.

USSF PERSONNEL

Active Duty as of Sept. 30, 2022

Active duty entering via transfers and accessions: **8,216**

SPACE FORCE PERSONNEL BY AFSC AND SEX

As of Sept. 30, 2022

	GENDER				TOTAL	
ENLISTED	Male		Female			
CORE AFSC	**#**	**%**	**#**	**%**	**#**	**%**
5C0-Cyber Ops.	1,312	34.16%	246	6.40%	1,558	40.56%
5I0-All Source Intelligence Analyst	197	5.13%	87	2.27%	284	7.39%
5I1-Geospatial Intelligence Analyst	44	1.15%	27	0.70%	71	1.85%
5I2-Signals Intelligence Analyst	266	6.93%	73	1.90%	339	8.83%
5I4-Intelligence Analyst	74	1.93%	39	1.02%	113	2.94%
5I8-Targeting Analyst	21	0.55%	6	0.16%	27	0.70%
5S0-Space Systems Operations	1,014	26.40%	198	5.15%	1,212	31.55%
5Z8-Space Operations Superintendent	81	2.11%	33	0.86%	114	2.97%
5Z9-Space Operations CEM	31	0.81%	11	0.29%	42	1.09%
Unknown	56	1.46%	25	0.65%	81	2.11%
Total Space Force Enlisted	**3,096**	**80.60%**	**745**	**19.40%**	**3,841**	**100.00%**
	GENDER				**TOTAL**	
OFFICER	Male		Female			
CORE AFSC	**#**	**%**	**#**	**%**	**#**	**%**
13A-Astronaut	2	0.05%	0	0.00%	2	0.05%
13S-Space Ops.	1,482	35.12%	420	9.95%	1,902	45.07%
14N-Intelligence	123	2.91%	74	1.75%	197	4.67%
17S-Cyberspace Effects Ops.	186	4.41%	36	0.85%	222	5.26%
62E-Development Engineer	971	23.01%	140	3.32%	1,111	26.33%
63A-Acquisition Manager	630	14.93%	124	2.94%	754	17.87%
90G-General Officer	20	0.47%	2	0.05%	22	0.52%
Unknown	8	0.19%	2	0.05%	10	0.24%
Total Space Force Officer	**3,422**	**81.09%**	**798**	**18.91%**	**4,220**	**100.00%**

Staff Sgt. Jared Bunn

U.S. Space Force Maj. Brandon Hammond, Space Delta 6—Cyberspace Operations Detachment 3 commander, oversees the personnel at Ka'ena Point Space Force Station, Hawaii. Ka'ena Point SFS is a remote tracking station of the Satellite Control Network responsible for tracking satellites in orbit, receiving and processing data, and enabling control of satellites.

USSF HISTORICAL LINEAGE

The U.S. Space Force traces its roots to the beginning of the Cold War, with the first Air Force space programs starting in 1945. USAF's Western Development Division, under Gen. Bernard A. Schriever, was established in 1954 as the first dedicated space organization within the U.S. Armed Forces. Military space forces were organized under several different Air Force major commands until they were unified when Air Force Space Command was established in September 1982. In December 2019, AFSPC became the cornerstone for the U.S. Space Force as a separate military branch. Below, we trace space organizational lineage within the Department of the Air Force. Because the space mission was—and to some extent still is—spread across several commands, offices, organizations, divisions, and services, some entries are concurrent and non-USAF organizations are not listed. This Space Force history is not intended to be all-inclusive.

WESTERN DEVELOPMENT DIVISION		
Gen. Bernard A. Schriever	July 1, 1953	May 31, 1957

AIR FORCE BALLISTIC MISSILE DIVISION		
Gen. Bernard A. Schriever	June 1, 1957	April 24, 1959
Maj. Gen. Osmond J. Ritland	April 25, 1959	March 31, 1961

SPACE AND MISSILE SYSTEMS ORGANIZATION		
Lt. Gen. John W. O'Neill	July 1, 1967	Aug. 31, 1969
Lt. Gen. Samuel C. Phillips	Sept. 1, 1969	Aug. 24, 1972
Lt. Gen. Kenneth W. Schultz	Aug. 25, 1972	Aug. 28, 1975
Lt. Gen. Thomas W. Morgan	Aug. 29, 1975	April 28, 1978
Lt. Gen. Richard C. Henry	April 29, 1978	Sept. 30, 1979

SPACE DIVISION		
Lt. Gen. Richard C. Henry	Oct. 1, 1979	May 1, 1983
Lt. Gen. Forrest S. McCartney	May 1, 1983	Sept. 30, 1986
Lt. Gen. Aloysius G. Casey	Oct. 9, 1986	June 23, 1988
Lt. Gen. Donald L. Cromer	June 24, 1988	March 14, 1989

BALLISTIC MISSILE OFFICE		
Maj. Gen. John W. Hepfer	Oct. 1, 1979	Oct. 31, 1980
Maj. Gen. Forrest S. McCartney	Oct. 31, 1980	May 19, 1982
Maj. Gen. Aloysius G. Casey	May 19, 1982	Sept. 30, 1986
Maj. Gen. Edward P. Berry Jr.	Sept. 30, 1986	March 14, 1989

SPACE SYSTEMS DIVISION (SSD) AND BALLISTIC SYSTEM DIVISION (BSD)		
Lt. Gen. Donald L. Cromer (SSD)	March 15, 1989	May 31, 1991
Lt. Gen. Edward P. Barry Jr. (SSD)	July 8, 1991	June 30, 1992
Lt. Gen. Edward P. Barry Jr. (BSD)	March 15, 1989	May 30, 1989
Brig. Gen. Ralph G. Tourino (BSD)	May 30, 1989	May 4, 1990

SPACE AND MISSILE SYSTEMS CENTER		
Lt. Gen. Edward P. Barry Jr.	July 1, 1992	Nov. 16, 1994
Lt. Gen. Lester L. Lyles	Nov. 16, 1994	Aug. 18, 1996

SPACE SYSTEMS DIVISION (SSD) AND BALLISTIC SYSTEMS DIVISION (BSD)		
Maj. Gen. Osmond J. Ritland (SSD)	April 1, 1961	May 13, 1962
Lt. Gen. Howell M. Estes Jr. (SSD)	May 14, 1962	Oct. 2, 1962
Maj. Gen. Ben I. Funk (SSD)	Oct. 3, 1962	Aug. 31, 1966
Maj. Gen. Paul T. Cooper (SSD)	Sept. 1, 1966	June 30, 1967
Maj. Gen. Thomas P. Gerrity (BSD)	April 1, 1961	June 30, 1962
Lt. Gen. W. Austin Davis (BSD)	July 1, 1962	July 18, 1964
Maj. Gen. Harry Sands Jr. (BSD)	July 20, 1966	June 30, 1967
Maj. Gen. John L. McCoy (BSD)	July 20, 1966	June 30, 1969

SPACE AND MISSILE SYSTEMS CENTER		
Lt. Gen. Roger G. DeKok	Aug. 18, 1996	Aug. 12, 1998
Lt. Gen. Eugene L. Tattini	Aug. 13, 1998	May 25, 2001
Lt. Gen. Brian A. Arnold	May 25, 2001	May 20, 2005
Lt. Gen. Michael A. Hamel	May 20, 2005	May 16, 2008
Lt. Gen. John T. Sheridan	May 16, 2008	June 3, 2011
Lt. Gen. Ellen M. Pawlikowski	June 3, 2011	June 19, 2014
Lt. Gen. Samuel A. Greaves	Jun 19, 2014	March 22, 2017
Lt. Gen. John F. Thompson	March 22, 2017	Aug. 1, 2021

Gen. Bernard A. Schriever was the chief architect of the U.S. Air Force's early ballistic missile and space programs.

AIR FORCE SPACE COMMAND		
Gen. James V. Hartinger	Sept. 1, 1982	July 30, 1984
Gen. Robert T. Herres	July 30, 1984	Oct. 1, 1986
Maj. Gen. Maurice C. Padden	Oct. 1, 1986	Oct. 29, 1987
Lt. Gen. Donald J. Kutyna	Oct. 29, 1987	March 29, 1990
Lt. Gen. Thomas S. Moorman Jr.	March 29, 1990	March 23, 1992
Gen. Donald J. Kutyna	March 23, 1992	June 30, 1992
Gen. Charles A. Horner	June 30, 1992	Sept. 13, 1994
Gen. Joseph W. Ashy	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes III	Aug. 26, 1996	Aug. 14, 1998
Gen. Richard B. Myers	Aug. 14, 1998	Feb. 22, 2000
Gen. Ralph E. Eberhart	Feb. 22, 2000	April 19, 2002
Gen. Lance W. Lord	April 19, 2002	April 1, 2006
Lt. Gen. Frank G. Klotz (acting)	April 1, 2006	June 26, 2006
Gen. Kevin P. Chilton	June 26, 2006	Oct. 3, 2007
Lt. Gen. Michael A. Hamel (acting)	Oct. 3, 2007	Oct. 12, 2007
Gen. C. Robert Kehler	Oct. 12, 2007	Jan. 5, 2011
Gen. William L. Shelton	Jan. 5, 2011	Aug. 15, 2014
Gen. John E. Hyten	Aug. 15, 2014	Oct. 25, 2016
Gen. John W. Raymond	Oct. 25, 2016	Jan. 14, 2020

U.S. SPACE FORCE		
Gen. John W. Raymond	Jan. 14, 2020	Nov. 2, 2022
Gen. B. Chance Saltzman	Nov. 22, 2022	

SPACE OPERATIONS COMMAND (SpOC)	
Lt. Gen. Stephen N. Whiting	Oct. 2020

SPACE SYSTEMS COMMAND (SSC)	
Lt. Gen. Michael A. Guetlein	Aug. 13, 2021

SPACE TRAINING AND READINESS COMMAND (STARCOM)	
Maj. Gen. Shawn N. Bratton	Aug. 23, 2021

USAF MAJOR COMMANDS AND AIR NATIONAL GUARD

The Air Force has nine major commands and two Air Reserve Components. (Air Force Reserve Command is both a majcom and an ARC.) In late 2019, Air Force Space Command was redesignated U.S. Space Force, a separate military branch under the Department of the Air Force.

As significant subdivisions of the Air Force, major commands conduct a considerable part of the service's mission and are directly subordinate to Headquarters USAF.

Majcoms are organized on a functional basis in the U.S. 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.

The majcom sits atop a skip-echelon staffing structure, which means every other organizational level (i.e., majcom, wing, and squadron) will have a full range of staff functions. The other organizations (NAF, group, and flight) are tactical, mission-centered echelons. These tactical echelons are designed to increase operational effectiveness without the burden of additional staff functions.

AFGSC

Air Force Global Strike Command

Headquarters: Barksdale AFB, La.
Date of current designation: Aug. 7, 2009
Commander: Gen. Thomas A. Bussiere ★★★★

USAF

Primary Mission

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

AFGSC Structure

COMMANDER

8th Air Force
Barksdale AFB, La.
Commander: ★★

20th Air Force
F. E. Warren AFB, Wyo.
Commander: ★★

AFGSC AIRCRAFT BY TYPE	
B-1B	43
B-2A	19
B-52H	56
E-4B	4
T-38A	14
UH-1N	25

PERSONNEL	
Active-duty USAF	27,801
Active-duty USSF	4

EQUIPMENT (TOTAL AIRCRAFT INVENTORY)	
Bomber	118
Helicopter	25
ICBM	400
ISR/BM/C3	4
Trainer	14

Source: U.S. Air Force Total Aircraft Inventory (TAI) as of Sept. 30, 2022

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
2nd Bomb Wing (BW)	Barksdale AFB, La.	B-52H
5th BW	Minot AFB, N.D.	B-52H
7th BW	Dyess AFB, Texas	B-1B
28th BW	Ellsworth AFB, S.D.	B-1B
90th Missile Wing (MW)	F. E. Warren AFB, Wyo.	Minuteman III, UH-1N
91st MW	Minot AFB, N.D.	Minuteman III, UH-1N
341st MW	Malmstrom AFB, Mont.	Minuteman III, UH-1N
377th Air Base Wing	Kirtland AFB, N.M.	Nuclear operations, expeditionary force training, base support
509th BW	Whiteman AFB, Mo.	B-2A, T-38C
576th Flight Test Squadron	Vandenberg SFB, Calif.	Minuteman III
595th Command and Control Group	Offutt AFB, Neb.	Command and control, E-4B

ACC

Primary Mission

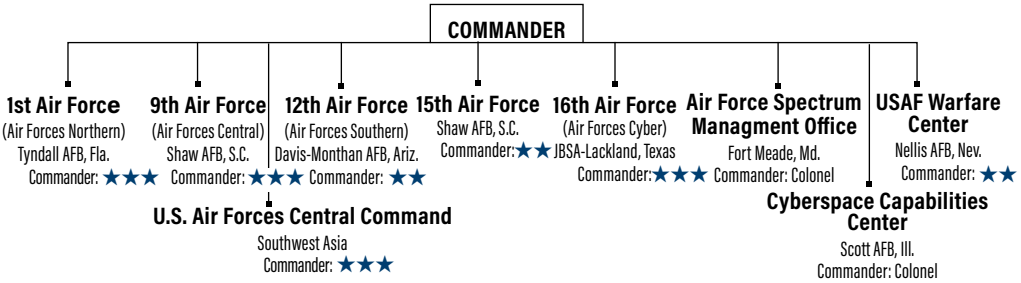
Primary force provider of combat airpower—fighter, conventional bomber, reconnaissance, battle management, and electronic combat aircraft—to combatant commands. Provide command, control, communications, and intelligence (C3I) systems. Conduct global information operations.

Air Combat Command

Headquarters: JB Langley-Eustis, Va.
Date of current designation: June 1, 1992
Commander: Gen. Mark D. Kelly ★★★★

USAF

ACC Structure



PERSONNEL	
Active-duty USAF	79,555
Active-duty USSF	73

EQUIPMENT (TAI)	
Fighter/Attack	683
Helicopter	35
ISR/BM/C3	351
Trainer	122

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
1st Fighter Wing (FW)	JB Langley-Eustis, Va.	F-22, T-38A
4th FW	Seymour Johnson AFB, N.C.	F-15E
9th Reconnaissance Wing	Beale AFB, Calif.	RQ-4, T-38A, U-2
20th FW	Shaw AFB, S.C.	F-16CM
23rd Wing	Moody AFB, Ga.	A-10C, HC-130J, HH-60G
53rd Wing	Eglin AFB, Fla.	A-10C, BQM-167A, E-9A, F-15C/E, F-16C/D, F-22A, F-35A, HC-130J, HH-60G, MQ-9, QF-4, QF-16, RQ-4, U-2
55th Wing	Offutt AFB, Neb.	EC-130H, OC-135B, RC-135S/U/V/W, TC-135S/W
57th Wing	Nellis AFB, Nev.	A-10C, EC-130, F-15, F-15E, F-16, F-22A, F-35A, HH-60G (23rd Wing), MQ-9
67th Cyberspace Wing	JBSA-Lackland, Texas	Cyberspace operations
70th ISR Wing (ISRW)	Fort Meade, Md.	Cryptologic operations
93rd Air Ground Operations Wing	Moody AFB, Ga.	Battlefield Airmen operations, support
99th Air Base Wing (ABW)	Nellis AFB, Nev.	Base support
319th Reconnaissance Wing	Grand Forks AFB, N.D.	Base support
325th FW	Tyndall AFB, Fla.	F-22A
355th Wing	Davis-Monthan AFB, Ariz.	A-10, EC-130H, (55th Wing), F-16CG, HC-130J, HH-60G (23rd Wing)
363rd ISRW	JB Langley-Eustis, Va.	Multi-intelligence analysis, targeting
366th FW	Mountain Home AFB, Idaho	F-15E
388th FW	Hill AFB, Utah	F-16C/D, F-35A
432nd Wing	Creech AFB, Nev.	MQ-1, MQ-9, RQ-170
480th ISRW	JB Langley-Eustis, Va.	DCGS, cyber ISR, CFACC support, signals intelligence integration
461st Air Control Wing (ACW)	Robins AFB, Ga.	E-8C (AA)
505th Command and Control Wing	Hurlburt Field, Fla.	Command and control operational-level tactics, testing, training
552nd ACW	Tinker AFB, Okla.	E-3B/C/G
557th Weather Wing	Offutt AFB, Neb.	Weather information
601st Air Operations Center	Tyndall AFB, Fla.	Plan and direct air operations
616th Operations Center	JBSA-Lackland, Texas	Plan and direct cyber operations
633rd ABW	JB Langley-Eustis, Va.	Joint base facilities support
688th Cyberspace Wing	JBSA-Lackland, Texas	Information operations, engineering installations
AF Rescue Coordination Center	Tyndall AFB, Fla.	National search and rescue coordination
AF Technical Applications Center	Patrick SFB, Fla.	Nuclear treaty monitoring, nuclear event detection

ACC AIRCRAFT BY TYPE

A-10	116
AT-38	6
AT-6	2
E-3B	4
E-3G	23
E-9A	2
E-11	3
EC-130	7
F-15C	9
F-15E	158
F-15X	2

F-16C	148
F-16D	19
F-22A	107
F-35A	122
HC-130J	18
HH-60G	18
HH-60W	17
MQ-1	1
MQ-9	224
P-9A	3
QF-16A	14

QF-16C	60
RC-135S	3
RC-135U	2
RC-135V	8
RC-135W	9
RQ-4B	10
T-38A	39
TC-135W	3
TU-2S	4
U-2S	27
WC-135R	3

Source: U.S. Air Force Total Aircraft Inventory (TAI) as of Sept. 30, 2022

AETC

Air Education and Training Command

Headquarters: JBSA-Randolph, Texas
Date of current designation: July 1, 1993
Commander: Lt. Gen. Brian S. Robinson ★★★


USAF

Primary Mission

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

AETC Structure

COMMANDER

- **2nd Air Force** — Keesler AFB, Miss. — Commander: ★★
- **19th Air Force** — JBSA-Randolph, Texas — Commander: ★★
- **Air Force Recruiting Service** — JBSA-Randolph, Texas — Commander: ★★
- **Air University** — Maxwell AFB, Ala. — Commander: ★★★

PERSONNEL	
Active-duty USAF	**56,285**
Active-duty USSF	**527**

EQUIPMENT (TAI)	
Fighter/Attack	250
Helicopter	25
Tanker	25
Trainer	1,126
Transport	52

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
12th Flying Training Wing (FTW)	JBSA-Randolph, Texas	T-1A, T-6A, T-38C (CSO at NAS Pensacola, Fla.)
14th FTW	Columbus AFB, Miss.	T-1A, T-6A, T-38C (A-29 at Moody AFB, Ga.)
17th Training Wing (TRW)	Goodfellow AFB, Texas	Technical training
33rd Fighter Wing (FW)	Eglin AFB, Fla.	F-35
37th TRW	JBSA-Lackland, Texas	Basic military and technical training
42nd Air Base Wing (ABW)	Maxwell AFB, Ala.	Base support
47th FTW	Laughlin AFB, Texas	T-1A, T-6A, T-38C
49th Wing	Holloman AFB, N.M.	MQ-1, MQ-9, QF-16
56th FW	Luke AFB, Ariz.	F-16, F-35
56th Air Refueling Squadron	Altus AFB, Okla.	KC-46
58th Special Operations Wing	Kirtland AFB, N.M.	CV-22, HC-130J/P/N, HH-60G, HH-60W, MC-130H/J/P, UH-1N, TH-1H
59th Medical Wing	JBSA-Lackland, Texas	Wilford Hall Ambulatory Surgical Center
71st FTW	Vance AFB, Okla.	T-1A, T-6A, T-38C
80th FTW	Sheppard AFB, Texas	T-6A, T-38C
81st TRW	Keesler AFB, Miss.	Technical training
82nd TRW	Sheppard AFB, Texas	Technical training
97th Air Mobility Wing	Altus AFB, Okla.	C-17, KC-135R, KC-46
314th Airlift Wing	Little Rock AFB, Ark.	C-130J
502nd ABW	JBSA-Fort Sam Houston, Texas	JBSA facilities support
AF Profession of Arms Center of Excellence	JBSA-Randolph, Texas	Professional training
AF Institute of Technology	Wright-Patterson AFB, Ohio	Postgraduate education
Carl A. Spaatz Center for Officer Education	Maxwell AFB, Ala.	Officer professional military education (PME)
Curtis E. LeMay Center for Doctrine Dev. & Education	Maxwell AFB, Ala.	Air Force doctrine development
Ira C. Eaker Center for Leadership Dev.	Maxwell AFB, Ala.	Professional and technical continuing education
Jeanne M. Holm Center for Officer Accessions and Citizen Development	Maxwell AFB, Ala.	Officer training, ROTC and JROTC oversight
Muir S. Fairchild Research Information Center	Maxwell AFB, Ala.	Information resources
Thomas N. Barnes Center for Enlisted Education	Maxwell AFB, Ala.	Enlisted PME

AETC AIRCRAFT BY TYPE

C-130J	14	KC-135R	17	T-51A	3
C-17A	17	KC-135T	1	T-53A	24
CV-22B	8	KC-46A	7	TG-15A	2
F-16C	69	MC-130J	7	TG-15B	3
F-16D	41	MQ-9	24	TG-16A	19
F-35A	140	T-1A	177	TG-17A	1
HC-130J	3	T-6A	442	TH-1H	28
HH-60G	8	T-38C	423	UH-1N	10
HC-60W	7	T-41D	4	UV-18B	3

Source: U.S. Air Force Total Aircraft Inventory (TAI) as of Sept. 30, 2022

AFMC

Primary Mission

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

PERSONNEL	
Active-duty USAF	17,693
Active-duty USSF	101

EQUIPMENT (TAI)	
Bomber	5
Fighter/Attack	48
Helicopter	5
ISR/BM/C3	19
Tanker	1
Trainer	15
Transport	24

Air Force Materiel Command

Headquarters: Wright-Patterson AFB, Ohio
Date of current designation: July 1, 1992
Commander: Gen. Duke Z. Richardson ★★★★


USAF

AFMC Structure

COMMANDER

- **Air Force Installation & Mission Support Center (AFIMSC)** — JBSA-Lackland, Texas — Commander: ★★
- **Air Force Research Laboratory (AFRL)** — Wright-Patterson AFB, Ohio — Commander: ★★
- **Air Force Sustainment Center (AFSC)** — Tinker AFB, Okla. — Executive Dir: SES
- **Air Force Life Cycle Management Center (AFLCMC)** — Wright-Patterson AFB, Ohio — Commander: ★★★
- **Air Force Test Center (AFTC)** — Edwards AFB, Calif. — Commander: ★★
- **Air Force Nuclear Weapons Center (AFNWC)** — Kirtland AFB, N.M. — Commander: ★★
- **National Museum of the U.S. Air Force** — Wright-Patterson AFB, Ohio — Director: SES

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

AFMC AIRCRAFT BY TYPE	
A-10C	2
B-1B	2
B-2A	1
B-52H	2
C-12C	16
C-12D	6
C-12F	1
C-12J	1
F-15C	1
F-15E	5
F-16C	12
F-16D	22
F-22A	4
F-35A	2
HH-60U	3
KC-135R	1
MQ-9A	17
NC-135W	1
RQ-4B	1
T-38C	15
UH-1N	2

Source: U.S. Air Force Total Aircraft Inventory (TAI) as of Sept. 30, 2022

AFRC

Air Force Reserve Command

Headquarters: Robins AFB, Ga.
Date of current designation: Feb. 17, 1997
Commander: Lt. Gen. John P. Healy ★★★


USAF

Primary Mission

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

AFRC Structure

COMMANDER

- **4th Air Force** — March ARB, Calif. — Commander: ★★
- **AFRC Recruiting Service** — Robins AFB, Ga. — Commander: Colonel
- **Air Reserve Personnel Cntr.** — Buckley SFB, Colo. — Commander: ★
- **10th Air Force** — NAS Fort Worth JRB, Texas — Commander: ★★
- **Force Generation Center** — Robins AFB, Ga — Commander: ★
- **22nd Air Force** — Dobbins ARB, Ga. — Commander: ★★
- **Individual Reservist Readiness & Integration Organization** — Buckley SFB, Colo. — Commander: Colonel

PERSONNEL	
Selected Reserve	68,048

AFRC AIRCRAFT BY TYPE			
A-10	55	F-16C	52
B-52H	18	F-16D	2
C-130H	42	HC-130J	6
C-130J	10	HH-60G	16
C-17A	26	KC-135R	62
C-40	4	KC-46A	7
C-5M	16	WC-130J	10

EQUIPMENT (TAI)	
Bomber	18
Fighter/Attack	109
Helicopter	16
ISR/BM/C3	10
Tanker	69
Transport	104

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
94th Airlift Wing (AW)	Dobbins ARB, Ga.	C-130H
301st Fighter Wing (FW)	NAS JRB Fort Worth, Texas	F-16
302nd AW	Peterson SFB, Colo.	C-130H (including Modular Airborne Firefighting System)
307th Bomb Wing	Barksdale AFB, La.	B-52H
310th Space Wing	Schriever SFB, Colo.	Space control/operations/warning, information operations
315th AW (classic associate)	JB Charleston, S.C.	C-17
349th Air Mobility Wing (classic associate)	Travis AFB, Calif.	C-5, C-17, KC-10
403rd Wing	Keesler AFB, Miss.	C-130J, WC-130J
419th FW (classic associate)	Hill AFB, Utah	F-35A
433rd AW	JBSA-Lackland, Texas	C-5M, formal training unit
434th Air Refueling Wing (ARW)	Grissom ARB, Ind.	KC-135R
439th AW	Westover ARB, Mass.	C-5M
442nd FW	Whiteman AFB, Mo.	A-10C
445th AW	Wright-Patterson AFB, Ohio	C-17
446th AW (classic associate)	JB Lewis-McChord, Wash.	C-17
452nd AMW	March ARB, Calif.	C-17, KC-135R
459th ARW	JB Andrews, Md.	KC-135R
482nd FW	Homestead ARB, Fla.	F-16C
507th ARW	Tinker AFB, Okla.	KC-135R
512th AW (classic associate)	Dover AFB, Del.	C-5M, C-17
514th AMW (classic associate)	JB McGuire-Dix-Lakehurst, N.J.	C-17, KC-10
655th ISR Wing	Wright-Patterson AFB, Ohio	Intelligence
908th AW	Maxwell AFB, Ala.	C-130H
910th AW	Youngstown ARS, Ohio	C-130H
911th AW	Pittsburgh ARS, Pa.	C-17
914th ARW	Niagara Falls ARS, N.Y.	KC-135R
916th ARW	Seymour Johnson AFB, N.C.	KC-135R, KC-46A
919th Special Operations Wing (classic associate)	Duke Field, Fla.	AC-130U, C-145A, C-146, C-208, MC-130H, MQ-9, PC-12, U-28
920th Rescue Wing	Patrick SFB, Fla.	HC-130K/J, HH-60G
926th Wing (classic associate)	Nellis AFB, Nev.	F-15C, F-15E, F-16, F-22A, F-35A, MQ-9 (Creech AFB, Nev.), RQ-4 (Beale AFB, Calif.)
927th ARW (classic associate)	MacDill AFB, Fla.	KC-135R
931st ARW (classic associate)	McConnell AFB, Kan.	KC-1355R, KC-46A
932nd AW	Scott AFB, Ill.	C-40C
934th AW	Minneapolis-St. Paul ARS, Minn.	C-130H
940th ARW	Beale AFB, Calif.	KC-135R
944th FW (classic and active associate)	Luke AFB, Ariz.	A-10 (active associate Davis-Monthan AFB, Ariz.) F-15E (Seymour Johnson AFB, N.C.), F-16 (Luke AFB and Holloman AFB, Ariz.), F-35A (Luke AFB and Eglin AFB, Fla.)
960th Cyberspace Wing	JBSA-Lackland, Texas	Cyberspace operations

Source: U.S. Air Force Total Aircraft Inventory TAI as of Sept. 30, 2022

AFSOC

Air Force Special Operations Command

Headquarters: Hurlburt Field, Fla.
Date of current designation: May 22, 1990
Commander: Lt. Gen. Tony D. Bauernfeind ★★★

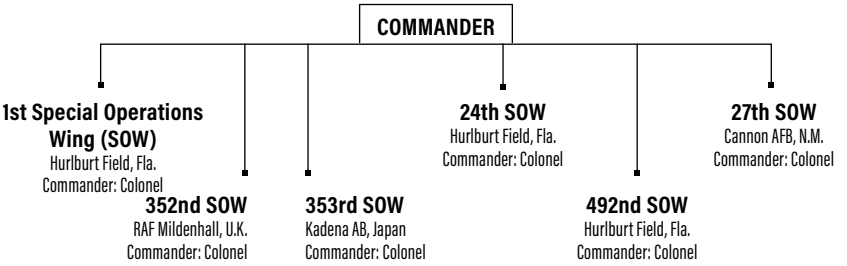

USAF

Primary Mission

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

AFSOC AIRCRAFT BY TYPE	
A-29C	3
AC-130J	29
CV-22B	44
MC-130H	8
MC-130J	47
MQ-9A	49

AFSOC Structure



PERSONNEL	
Active-duty USAF	16,117
Active-duty USSF	4

EQUIPMENT (TAI)	
ISR/BM/C3	49
Special Operations Forces	131

Source: U.S. Air Force Total Aircraft Inventory (TAI) as of Sept. 30, 2022

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


Airman 1st Class Bailey Wyman

A CV-22 Osprey waits for takeoff at Hurlburt Field, Fla., during a joint exercise between U.S. Air Force Special Operations Command and U.S. Naval Special Warfare personnel.

AMC

Air Mobility Command

Headquarters: Scott AFB, Ill.
Date of current designation: June 1, 1992
Commander: Gen. Mike Minihan ★★★★


USAF

Primary Mission

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

AMC Structure

COMMANDER

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

U.S. Air Force Expeditionary Cntr.
JB McGuire-Dix-Lakehurst, N.J.
Commander: ★★

PERSONNEL	
Active-duty USAF	**41,256**
Active-duty USSF	**6**

EQUIPMENT (TAI)	
Tanker	158
Transport	245

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON
6th Air Refueling Wing (ARW)	MacDill AFB, Fla.	C-37, KC-135R
19th Airlift Wing (AW)	Little Rock AFB, Ark.	C-130H/J
22nd ARW	McConnell AFB, Kan.	KC-135R, KC-46A
60th Air Mobility Wing (AMW)	Travis AFB, Calif.	C-5, C-17, KC-10
62nd AW	JB Lewis-McChord, Wash.	C-17
87th Air Base Wing (ABW)	JB McGuire-Dix-Lakehurst, N.J.	Joint base facilities support
89th AW	JB Andrews, Md.	C-20B, C-32A, C-37A/B, C-40B, VC-25A
92nd ARW	Fairchild AFB, Wash.	KC-135R
305th AMW	JB McGuire-Dix-Lakehurst, N.J.	C-17, KC-10
317th AW	Dyess AFB, Texas	C-130J
375th AMW	Scott AFB, Ill.	C-21, C-40 (AA), KC-135R (AA)
436th AW	Dover AFB, Del.	C-5, C-17
437th AW	JB Charleston, S.C.	C-17A
515th Air Mobility Operations Wing (AMOW)	JB Pearl Harbor-Hickam, Hawaii	Contingency airfield operations
521st AMOW	Ramstein AB, Germany	Contingency airfield operations
618th Air Operations Center	Scott AFB, Ill.	Tanker Airlift Control Center operations
621st Contingency Response Wing	JB McGuire-Dix-Lakehurst, N.J.	Rapidly deployable bare-base operations
628th ABW	JB Charleston, S.C.	Joint base facilities support

AMC AIRCRAFT BY TYPE	
C-130J	58
C-17A	120
C-21A	14
C-32A	4
C-37A	4
C-37B	7
C-40B	4
C-5M	36
KC-10A	36
KC-13R	89
KC-135T	11
KC-46A	22
VC-25A	2

Source: U.S. Air Force Total Aircraft Inventory (TAI) as of Sept. 30, 2022


Senior Airman Matt Porter

Air Transportation Specialists with the 305th Aerial Port Squadron prepare an upload for a C-17 Globemaster at Joint Base McGuire-Dix-Lakehurst, N.J.

PACAF

Pacific Air Forces

Headquarters: JB Pearl Harbor-Hickam, Hawaii
Date of current designation: July 1, 1957
Commander: Gen. Kenneth S. Wilsbach* ★★★★


USAF

Primary Mission

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

PACAF Structure

COMMANDER

5th Air Force
Yokota AB, Japan
Commander: ★★★

7th Air Force
Osan AB, South Korea
Commander: ★★★

11th Air Force
JB Elmendorf-Richardson, Alaska
Commander: ★★★

PERSONNEL	
Active-duty USAF	**30,905**
Active-duty USSF	**21**

EQUIPMENT (TAI)	
Fighter/Attack	320
Helicopter	13
ISR/BM/C3	4
Tanker	15
Transport	30

*Nominated to be ACC commander on May 4, 2023.

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

PACAF AIRCRAFT BY TYPE

A-10C	24	E-3B	4	F-35A	54
C-12F	2	F-15C	49	HH-60G	9
C-12J	3	F-15D	4	KC-135R	11
C-130J	14	F-16C	123	KC-135T	4
C-17A	9	F-16D	12	UH-1	4
C-37A	2	F-22A	54		

Source: U.S. Air Force Total Aircraft Inventory (TAI) as of Sept. 30, 2022


Master Sgt. Mysti Bicoy/ANG

A C-17 Globemaster III from Joint Base Pearl Harbor-Hickam, Hawaii, participates in exercise AMALGAM DART 22-04 at Joint Base Elmendorf-Richardson, Alaska.

USAFE-AFA

U.S. Air Forces in Europe - Air Forces Africa

USAF

Headquarters: Ramstein AB, Germany
Date of current designation: April 20, 2012
Commander: Gen. James B. Hecker★★★★

Primary Mission

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

USAFE-AFA Structure

COMMANDER

3rd Air Force
Ramstein AB, Germany
Commander: ★★

Hq. USAFE-AFAFRICA
Ramstein AB, Germany
Commander: ★★★

PERSONNEL	
Active-duty USAF	23,666
Active-duty USSF	20

EQUIPMENT (TAI)	
Fighter/Attack	129
Helicopter	5
Tanker	15
Transport	18

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

USAFE-AFA AIRCRAFT BY TYPE

C-130J	14	F-15D	2	HH-60G	5
C-21A	5	F-15E	55	KC-135R	10
C-37A	3	F-16C	74	KC-135T	5
F-15C	18	F-16D	4		

Source: U.S. Air Force Total Aircraft Inventory (TAI) as of Sept. 30, 2022

An RC-135 Rivet Joint surveillance aircraft is refueled by a KC-135 Stratotanker from the 100th Air Refueling Wing, RAF Mildenhall, U.K., while a Norwegian Air Force F-35 Lightning aircraft flies alongside during a mission in 2022.

Courtesy photo

ANG

Air National Guard

Headquarters: Washington, D.C.
Date of current designation: Sept. 18, 1947
Director: Lt. Gen. Michael A. Loh ★★★


USAF

Primary Mission

Provide combat capability to the Active-duty force and security for the homeland. Support U.S. domestic and foreign humanitarian and disaster relief.

PERSONNEL	
Selected Reserve	104,984

EQUIPMENT (TAI)			
Fighter/Attack	583	Tanker	176
Helicopter	18	Transport	208
ISR/BM/C3	54		

WING (STATE)	SYSTEM/MISSION
101st Air Refueling Wing (Maine)	KC-135R, CC
102nd Intelligence Wing (Mass.)	DCGS, cyber, ISR, EISG, WXF
103rd Airlift Wing (Conn.)	C-130H
104th Fighter Wing (Mass.)	F-15C/D
105th AW (N.Y.)	C-17, EIS, WXF
106th Rescue Wing (N.Y.)	HC-130, HH-60G, GA
107th ATKW (N.Y.)	MQ-9
108th Wing (N.J.)	KC-135R, C-32B, intel, SOS
109th AW (N.Y.)	LC-130
110th Wing (Mich.)	MQ-9, AOG, C2, cyber
111th Attack Wing (Pa.)	MQ-9, cyber, EIS
113th Wing (D.C.)	C-40C, F-16C/D, WXF
114th FW (S.D.)	F-16C/D
115th FW (Wis.)	F-16C/D, RC-26B, WXF
116th Air Control Wing (Ga.)	E-8C, WXF
117th ARW (Ala.)	KC-135R, DCGS
118th Wing (Tenn.)	MQ-9, cyber
119th Wing (N.D.)	MQ-9, ISR, WXF
120th AW (Mont.)	C-130H, WXF
121st ARW (Ohio)	KC-135R, WXF
122nd FW (Ind.)	A-10C
123rd AW (Ky.)	C-130J, CRG, special tactics, WXF, intel
124th FW (Idaho)	A-10C, TACP, cyber
125th FW (Fla.)	F-15C/D, WXF
126th ARW (Ill.)	KC-135R, SCMS
127th Wing (Mich.)	A-10C, KC-135T, WXF
128th ARW (Wis.)	KC-135R
129th RQW (Calif.)	HC-130J, HH-60G, GA
130th AW (W.Va.)	C-130H, RC-26B
131st Bomb Wing (Mo.)	B-2 (CA*)
132nd Wing (Iowa)	MQ-9, cyber, ISR
133rd AW (Minn.)	C-130J, ALCF, WXF
134th ARW (Tenn.)	KC-135R
136th AW (Texas)	C-130H, ALCF, WXF
137th SOW (Okla.)	MC-12, EIS, SOS, TACP
138th FW (Okla.)	F-16C/D, EIS, WXF
139th AW (Mo.)	C-130H, AATTC (ANG/AFRC), ATCS
140th Wing (Colo.)	F-16C/D, CEF, WXF
141st ARW (Wash.)	KC-135R, CC, RC-26B, intel
142nd FW (Ore.)	F-15C/D, special tactics, WXF
143rd AW (R.I.)	C-130J, cyber
144th FW (Calif.)	F-15C/D, WXF
145th AW (N.C.)	C-17, CEF, MAFFS
146th AW (Calif.)	C-130J, ALCF, MAFFS, WXF
147th Attack Wing (Texas)	MQ-9, RC-26, TACP, EIS, WXF

WING (STATE)	SYSTEM/MISSION
148th FW (Minn.)	F-16C/D
149th FW (Texas)	F-16C/D
150th SOW (N.M.)	Special ops training (CA*), RC-26B
151st ARW (Utah)	KC-135R
152nd AW (Nev.)	C-130H, DCGS
153rd AW (Wyo.)	C-130H, MAFFS
154th Wing (Hawaii)	C-17 (CA*), F-22, KC-135R, intel, WXF
155th ARW (Neb.)	KC-135R
156th Wing (Puerto Rico)	WC-130H
157th ARW (N.H.)	KC-135R, KC-46A
158th FW (Vt.)	F-16C, F-35A, WXF
159th FW (La.)	F-15C/D, CC
161st ARW (Ariz.)	KC-135R
162nd Wing (Ariz.)	F-16, RC-26B, WXF
163rd Attack Wing (Calif.)	MQ-9, FTU, WXF
164th AW (Tenn.)	C-17A
165th AW (Ga.)	C-130H, CRTC, AOS
166th AW (Del.)	C-130H, cyber
167th AW (W.Va.)	C-17A
168th Wing (Alaska)	KC-135R
169th FW (S.C.)	F-16C/D, ATCS
171st ARW (Pa.)	KC-135R/T, WXF
172nd AW (Miss.)	C-17, ALCF
173rd FW (Ore.)	F-15C/D, FTU, ATCS
174th Attack Wing (N.Y.)	MQ-9, RC-26B, AOC, FTU,
175th Wing (Md.)	A-10C, CEF, cyber, intel
176th Wing (Alaska)	C-17 (CA*), HC-130J, HH-60G, GA, RAOC
177th FW (N.J.)	F-16C, AOS, WXF
178th Wing (Ohio)	MQ-9, cyber, ISR, MCE
179th AW (Ohio)	C-130H
180th FW (Ohio)	F-16C/D
181st Intelligence Wing (Ind.)	DCGS, ISR, TACP, WXF
182nd AW (Ill.)	C-130H, CC, TACP
183rd Wing (Ill.)	CRF, DCGS
184th Wing (Kan.)	CACS, cyber, DCGS, ISR, NOSS, TACP
185th ARW (Iowa)	KC-135R
186th ARW (Miss.)	KC-135R, RC-26B, AOG, ATCS
187th FW (Ala.)	F-16C/D, RC-26B
188th Wing (Ark.)	MQ-9, MCE, ISR, DCGS
189th AW (Ark.)	C-130H, intel, FTU, WXF
190th ARW (Kan.)	KC-135R, CW
192nd Wing (Va.)	F-22 (CA*), cyber, DCGS
193rd SOW (Pa.)	EC-130J, AOS, CC, cyber, TACP
194th Wing (Wash.)	CC, CW
195th Wing (Calif.)	DCGS, intel

*Classic associate

FOAS, DRUS, & CIVIL AIR PATROL

A FOA Is a Field Operating Agency, an organization that performs a specialized function not performed by any other command, which reports to Headquarters, USAF. A Direct Reporting Unit (DRU) reports directly to the Chief of Staff. The Air Force Auxiliary is the Civil Air Patrol. **Personnel numbers are for Active duty.**

Air Force Agency for Modeling and Simulation (AFAMS)

Headquarters: Orlando, Fla.

Date of Current Designation: June 3, 1996
Type: Field Operating Agency (FOA)
Reports to: Deputy Chief of Staff, Operations
Mission: Support and facilitate integrated, realistic and efficient operational training across warfighter domains to enhance full-spectrum readiness. **Personnel:** 7
www.afams.af.mil

Air Force Audit Agency (AFAA)

Headquarters: Pentagon

Date of Current Designation: Dec. 31, 1971
Type: FOA
Reports to: Secretary of the Air Force
Mission: Provide independent, objective, and quality internal audit service. **Personnel:** 0
www.afaa.af.mil

Air Force Cost Analysis Agency (AFCAA)

Headquarters: Arlington, Va.

Date of Current Designation: Aug. 1, 1991
Reports to: SECAF/Deputy Assistant Secretary for Cost and Economics
Type: FOA
Mission: Develop life-cycle cost estimates and analyses and develop independent cost estimates, assessments and analyses on major space, aircraft, weapons, electronics, and information systems.
Personnel: 12
www.saffm.hq.af.mil

Air Force District of Washington (AFDW)

Headquarters: JB Andrews, Md.

Date of Current Designation: July 7, 2005
Type: Direct Reporting Unit (DRU)
Reports to: Chief of Staff of the Air Force
Mission: Orchestrate support for National Capital Region activities; train, equip, and provide forces for contingency, homeland, and ceremonial support operations worldwide.
Personnel: 112
www.afdw.af.mil

Air Force Flight Standards Agency (AFFSA)

Headquarters: Tinker AFB, Okla.

Date of Current Designation: Oct. 1, 1991
Type: FOA
Reports to: Department of the Air Force, Operations
Mission: Focus on the systems, software, and strategic support given to operational commanders; maintains service-level flying and AO publications, training regulations, and equipment; and provide 24/7 air traffic control and landing systems support. **Personnel:** 120 **Website:** not available

Air Force Historical Research Agency (AFHRA)

Headquarters: Maxwell AFB, Ala.

Date of Current Designation: Sept. 1, 1991
Type: FOA
Reports to: DAF
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. **Personnel:** 0
www.afhra.af.mil

Air Force Inspection Agency (AFIA)

Headquarters: Kirtland AFB, N.M.

Date of Current Designation: Aug. 1, 1991
Type: FOA
Reports to: SECAF, Inspector General
Mission: Provide independent assessments of operations and activities; conduct nuclear surety inspection oversight, training, and certification; serve as primary action arm of the Secretary of the Air Force's inspection system.
Personnel: 87
www.afinspectorgeneral.af.mil

Air Force Legal Operations Agency (AFLOA)

Headquarters: JB Andrews, Md.

Date of Current Designation: Sept. 1, 1991
Type: FOA
Reports to: AF Judge Advocate General
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. **Personnel:** 539
www.afjag.af.mil

Air Force Manpower Analysis Agency (AFMAA)

Headquarters: JBSA-Randolph, Texas

Date of Current Designation: June 1, 2015
Type: FOA
Reports to: Headquarters, USAF
Mission: Shapes Air Force and DOD manpower resourcing decisions through the delivery of timely determinants, data analytics, consultant services, and enterprise tools and training. **Personnel:** 170
www.afmaa.af.mil

Air Force Medical Readiness Agency (AFMRA)

Headquarters: Falls Church, Va.

Date of Current Designation: June 28, 2019
Type: FOA
Reports to: AF Surgeon General
Mission: Provide enterprise-level policy development, management and oversight of medical readiness programs, strategic partnerships, medical capability development, operational medical logistics, dental operations, and programs unique to the deployed environment and to the Air Force. The Air Force activated the agency while simultaneously deactivating the Air Force Medical Operations Agency and Air Force Medical Support Agency.
Personnel: 204
www.airforcemedicine.af.mil

Air Force Mortuary Affairs Operations (AFMAO)

Headquarters: Dover AFB, Del.

Date of Current Designation: Jan. 6, 2009
Type: FOA
Reports to: DCS, Manpower, Personnel, and Services, Hq. USAF
Mission: Ensure respectful handling, dignity, and honor of the fallen; provide care, service, and support to families of the fallen; transfer remains. **Personnel:** 23
www.mortuary.af.mil

Air Force Office of Special Investigations (AFOSI)

Headquarters: Quantico, Va.

Date of Current Designation: Dec. 20, 1971
Type: FOA
Reports to: IG, Office of the SECAF
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. **Personnel:** 141
www.osi.af.mil

Air Force Operational Test and Evaluation Center (AFOTEC)

Headquarters: Kirtland AFB, N.M.

Date of Current Designation: April 4, 1983
Type: DRU
Reports to: Hq, USAF
Mission: Inform warfighters and acquisition professionals through operational testing.
Personnel: 284
www.afotec.af.mil

Air Force Operations Group (AFOG)

Headquarters: Pentagon

Date of Current Designation: April 1, 1995
Type: FOA
Reports to: DAF
Mission: Provide 24-hour watch on current operations; train and staff Crisis Action Team; develop weather data for National Command Authority, Joint Chiefs of Staff, National Military Command Center, Army Operations Center, and other federal agencies. **Personnel:** 41
Website: not available

Air Force Personnel Center (AFPC)

Headquarters: JBSA-Randolph, Texas

Date of Current Designation: Oct. 1, 1995
Type: FOA
Reports to: Office of DCS, Manpower and Personnel, Hq USAF
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.
Personnel: 680
www.afpc.af.mil

Air Force Public Affairs Agency (AFPAA)

Headquarters: JBSA-Lackland, Texas

Date of Current Designation: Oct. 1, 2008
Type: FOA
Reports to: Office of the SECAF for Public Affairs
Mission: Develop and sustain public affairs products; provide combat camera and graphics support; test emerging technologies; manage public affairs personnel deployments.
Personnel: 47
www.publicaffairs.af.mil

Air Force Review Boards Agency (AFRBA)

Headquarters: JB Andrews, Md.

Date of Current Designation: Aug. 1, 1991
Type: FOA
Reports to: Assistant SECAF for Manpower and Reserve Affairs
Mission: Manage military and civilian appellate processes; serve as lead agent for DOD Physical Disability Board of Review.
Personnel: 26
www.afrba-portal.cce.af.mil

Air Force Safety Center (AFSEC)

Headquarters: Kirtland AFB, N.M.

Date of Current Designation: Jan. 1, 1996
Type: FOA
Reports to: DAF
Mission: Manage mishap prevention, risk management, and nuclear surety programs; provide flight, ground, weapons, human factors, and space safety technical assistance; oversee major command mishap investigations and evaluate corrective actions; direct safety education programs.
Personnel: 50
www.safety.af.mil

Air National Guard Readiness Center (ANGRC)

Headquarters: JB Andrews, Md.

Date of Current Designation: June 1, 1992
Type: FOA
Reports to: National Guard Bureau (Pentagon)
Mission: Provide resources, policy oversight, and guidance to ensure ANG wings and geographically separated units are ready, trained, and equipped for homeland and global operations.
Personnel: 36
www.ang.af.mil/about/ANGRC

DOD Cyber Crime Center (DC3)

Headquarters: Linthicum, Md.

Date of Current Designation: Jan. 15, 2021
Type: FOA
Reports to: IG, Office of the SECAF
Mission: Provides digital and multimedia forensics, specialized cyber training, technical solutions development, and cyber analytics for the following DOD mission areas: cybersecurity and critical infrastructure protection; law enforcement and counterintelligence; document and media exploitation, counterterrorism, and safety inquiries.
Personnel: 14
www.dc3.mil

National Air and Space Intelligence Center (NASIC)

Headquarters: Wright-Patterson AFB, Ohio

Date of Current Designation: Feb. 20, 2003
Type: FOA
Reports to: Deputy Chief of Staff for Intelligence, Surveillance, Reconnaissance, and Cyber Effects Operations
Mission: Discover and characterize air, space, missile, and cyber threats to enable full-spectrum multi-domain operations, drive weapon system acquisition, and inform national defense policy. **Personnel:** 117
www.nasic.af.mil

US Air Force Academy (USAFA)

Headquarters: Colorado Springs, Colo.

Date of Current Designation: April 1, 1954
Type: DRU
Reports to: Chief of Staff of the Air Force
Mission: Develop, educate, and inspire young men and women to become USAF officers with knowledge, character, and discipline.
Personnel: 236
Cadets: 4,000+
www.usafa.edu

Civil Air Patrol (CAP)

Headquarters: Maxwell AFB, Ala.

Date of Current Designation: Dec. 1, 1941
Type: Auxiliary
Reports to: CAP Board of Governors/National Commander
Mission: Provide operational capabilities to support search and rescue, disaster relief, a nationwide communications network, and counterdrug and homeland security missions; conduct leadership training, and career and technical education for CAP Cadet Program; promote aerospace education.
Total Volunteers: ~61,000
www.gocivilairpatrol.com

AIR FORCE WINGS

There are 144 Active-duty wings in the U.S. Air Force. There are 37 wings in the Air Reserve (see list on p. 80) and 90 wings in the Air National Guard (see list on p. 85). All of them trace their history to the 1st Pursuit Wing, formed in France by the American Expeditionary Forces of the U.S. Army in July 1918. The term "wing" has remained in use ever since.

Air wings in World War II were administrative and operational organizations that typically controlled multiple combat groups and service organizations. Today's wings are smaller, dating their history to 1948, when the newly independent Air Force established permanent combat wings consisting of a combat group, an air base group, a maintenance and supply group, and a medical group.

In most cases, wings' numerical designator evolved from the combat group that preceded it. For example, today's 14th Flying Training Wing traces its history to the 14th Fighter Wing and, before that, the 14th Fighter Group. Each group within the wing takes on the wing's numerical designator.

Every wing has a distinct mission and scope, whether that is operational, managing an air base, or performing specialized missions such as intelligence or training. Operational wings typically consist of an operations group and provide their own maintenance, supply, munitions, and often base support. Those that are tenant organizations rely on host commands to provide base and related support services.

1st Fighter Wing
JB Langley-Eustis, Va.
ACC
F-22, T-38A

1st Special Operations Wing
Hurlburt Field, Fla.
AFSOC
AC-130J/U, CV-22, MC-130, MQ-9, U-28A

2nd Bomb Wing
Barksdale AFB, La.
AFGSC
B-52H

3rd Wing
JB Elmendorf-Richardson, Alaska
PACAF
C-12, C-17, E-3, F-22

4th Fighter Wing
Seymour Johnson AFB, N.C.
ACC
F-15E

5th Bomb Wing
Minot AFB, N.D.
AFGSC
B-52H

6th Air Refueling Wing
MacDill AFB, Fla.
AMC
C-37, KC-135

7th Bomb Wing
Dyess AFB, Texas
AFGSC
B-1B

8th Fighter Wing
Kunsan Air Base, South Korea
PACAF
F-16C/D

9th Reconnaissance Wing
Beale AFB, Calif.
ACC
RQ-4, T-38A, U-2

10th Air Base Wing
U.S. Air Force Academy, Colo.
USAFA
Education, Medical, Infrastructure

11th Wing
JB Anacostia-Bolling, Washington, D.C.
AFDW, Host Unit, Base Operations and Support, USAF Band, USAF Honor Guard
UH-1N

12th Flying Training Wing
JB San Antonio-Randolph, Texas
AETC
T-1A, T-6A, T-38C

14th Flying Training Wing
Colombus AFB, Miss.
AETC
T-1A, T-6A, T-38C

15th Wing
JB Pearl Harbor-Hickam, Hawaii
PACAF
C-17, C-37, C-40B, F-22, KC-135

17th Training Wing
Goodfellow AFB, Texas
AETC
Technical Training, Crypto/Intelligence Training-All Services

18th Wing
Kadena Air Base, Japan
PACAF
E-3, F-15C/D, HH-60, KC-135

19th Airlift Wing
Little Rock AFB, Ark.
AMC
C-130H/J

20th Fighter Wing
Shaw AFB, S.C.
ACC
F-16CM

22nd Air Refueling Wing
McConnell AFB, Kan.
AMC
KC-46, KC-135

23rd Wing
Moody AFB, Ga.
ACC
A-10, HC-130J, HH-60

24th Operations Wing
Hurlburt Field, Fla.
AFSOC
Special Training and Tactics

27th Special Operations Wing
Cannon AFB, N.M.
AFSOC
AC-130J, C-46, CV-22, MC-130J, MQ-9, U-28A

28th Bomb Wing
Ellsworth AFB, S.D.
AFGSC
B-1B

31st Fighter Wing
Aviano Air Base, Italy
USAFE-AFAFRICA
F-16C/D, HH-60

33rd Fighter Wing
Eglin AFB, Fla.
AETC
F-35

35th Fighter Wing
Misawa Air Base, Japan
PACAF
F-16CM

36th Wing
Andersen AFB, Guam
PACAF
Host Unit, Base Operations

37th Training Wing
JB San Antonio-Lackland, Texas
AETC
Host Unit, Training Operations

39th Air Base Wing
Incirlik Air Base, Turkey
USAFE-AFAFRICA
Host Unit, Base Operations/Support

42nd Air Base Wing
Maxwell-Gunter AFB, Ala.
AETC Host Unit, Air University Support

EXPEDITIONARY WINGS

Expeditionary wings include headquarters staffs, but do not own their own aircraft and personnel. Instead, deployed personnel and equipment are assigned based on mission requirements.

332nd Air Expeditionary Wing
Southwest Asia (Undisclosed Locations)
ACC
A-10C F-15E, F-16C, HC-130P, HH-60G, KC-135R, MQ-9

379th Air Expeditionary Wing
Al Udeid Air Base, Qatar
ACC
B-1, B-52, C-17, C-21, C-130H/J, E-8C, KC-135, RC-135V/W

380th Air Expeditionary Wing
Al Dhafra Air Base, UAE
ACC
E-3, KC-10, RQ-4, U-2

386th Air Expeditionary Wing
Ali Al Salem Air Base, Kuwait
ACC
C-130E/H, EC-130

47th Flying Training Wing
Laughlin AFB, Texas
AETC
T-1A, T-6A, T-38C

48th Fighter Wing
RAF Lakenheath, U.K.
USAFE-AFAFRICA
F-15C/D, F-15E, HH-60

49th Wing
Holloman AFB, N.M.
AETC
MQ-9

51st Fighter Wing
Osan Air Base, South Korea
PACAF
A-10, F-16C/D

52nd Fighter Wing
Spangdahlem Air Base, Germany
USAFE-AFAFRICA
F-16C/D

53rd Wing
Eglin AFB, Fla.
ACC
Testing and Evaluation. A-10, B-1B, B-2, B-52H, BQM-167, E-9A, F-15C/D/E, F-16C/D, F-22, F-35, HC-130J, HH-60, MQ-9, QF-16, RQ-4, U-2

55th Wing
Offutt AFB, Neb.
ACC
EC-130H, OC-135B, RC-135S/U/V/W, TC-135S/W, WC-135

56th Fighter Wing
Luke AFB Ariz.
AETC
Training. F-16, F-35

57th Wing
Nellis AFB, Nev.
ACC
Training and Tactics. A-10, E-3C, E-8C, EC-130, F-15C/C/E, F-16, F-22, F-35, HH-60, MQ-9, RC-135

58th Special Operations Wing
Kirtland AFB, N.M.
AETC
Training, Special Operations. Combat Search and Rescue. CV-22, HC-130J/P/N, HH-60, MC-130H/J/P, TH-1H, UH-1N

59th Medical Wing
JB San Antonio, Texas
AETC
Military Medical Services

60th Air Mobility Wing
Travis AFB, Calif.
AMC
C-5M, C-17, KC-10

62nd Airlift Wing
JB Lewis-McChord, Wash.
AMC
C-17

67th Cyberspace Wing
JB San Antonio-Lackland, Texas
ACC
Cyber Operations

70th Intelligence, Surveillance, and Reconnaissance Wing
Fort George Meade, Md.
AFISRA
ACC
Primary provider of signals intelligence to national leaders and combat commanders

71st Flying Training Wing
Vance AFB, Okla.
AETC
T-1A, T-6A, T-38C

72nd Air Base Wing
Tinker AFB, Okla.
AFMC
Host Unit, Base Operations and Support

75th Air Base Wing
Hill AFB, Utah
AFMC
Host Unit, Base Operations and Support

76th Maintenance Wing
Tinker AFB, Okla.
AFMC
Aircraft Depot Maintenance, Repair, Modifications

78th Air Base Wing
Robins AFB, Ga.
AFMC
Host Unit, Base Operations and Support

80th Flying Training Wing
Sheppard AFB, Texas
AETC
T-6A, T-38C

81st Training Wing
Keesler AFB, Miss.
AETC
Electronics Training for USAF, USN, USA, USMC, CG, Federal/Civilian Personnel

82nd Training Wing
Sheppard AFB, Texas
AETC
Host Unit, Base Operations and Support

86th Airlift Wing
Ramstein Air Base, Germany
USAFE-AFAFRICA
C-21, C-37A, C-40B, C-130J

87th Air Base Wing
JB McGuire-Dix-Lakehurst, N.J.
AMC
Host Unit, Base Operations and Support

88th Air Base Wing
Wright-Patterson AFB, Ohio
AFMC
Host Unit, Base Operations and Support

89th Airlift Wing
JB Andrews, Md.
AMC
C-20B, C-32A, C-37A/B, C-40B, VC-25A

90th Missile Wing
F.E. Warren AFB, Wyo.
AFGSC
Minuteman III, UH-1N

91st Missile Wing
Minot AFB, N.D.
AFGSC
Minuteman III, UH-1N

92nd Air Refueling Wing
Fairchild AFB, Wash.
AMC
C-17, KC-135

93rd Air Ground Operations Wing
Moody AFB, Ga.
ACC
Manage/Provide combat-ready TACAIR personnel, battlefield weather, and force protection assets

94th Airlift Wing
Dobbins ARB, Ga.
AFRC
C-130H

96th Test Wing
Eglin AFB, Fla.
AFMC
Aircraft Test and Evaluation Center. A-10, F-15C/E, F-16CG/CJ, UH-1N

97th Air Mobility Wing
Altus AFB, Okla.
AETC
C-17, KC-46, KC-135

99th Air Base Wing
Nellis AFB, Nev.
ACC
Host Unit, Base Installation and Support, Nevada Test and Training Range

100th Air Refueling Wing
RAF Mildenhall, U.K.
USAFE-AFAFRICA
CV-22, KC-135, MC-130J, RC-135V/W

301st Fighter Wing
Naval Air Station JRB, Fort Worth, Texas
AFRC
F-16C/D

302nd Airlift Wing
Peterson SFB, Colo.
AFRC
C-130H (Modular Airborne Firefighting System)

305th Air Mobility Wing
JB McGuire-Dix-Lakehurst, N.J.
AMC
C17, KC-10

307th Bomb Wing
Barksdale AFB, La.
AFRC
B-52H

310th Space Wing
Schriever SFB, Colo.
AFRC
Space operations, control, warning

314th Airlift Wing
Little Rock AFB, Ark.
AETC
C-130J

315th Airlift Wing
JB Charleston, S.C.
AFRC
C-17

316th Wing
JB Andrews, Md.
AFDW
Host Unit, Base Operations and Support
UH-1N

317th Airlift Wing
Dyess AFB, Texas
AMC
C-130J

319th Reconnaissance Wing
Grand Forks AFB, N.D.
ACC
RQ-4

325th Fighter Wing
Tyndall AFB, Fla.
ACC
F-22

341st Missile Wing
Malmstrom AFB, Mont.
AFGSC
Minuteman III, UH-1N

349th Air Mobility Wing
Travis AFB, Calif.
AFRC
C-5M, C-17, KC-10

350th Spectrum Warfare Wing
Eglin AFB, Fla.
Electronic warfare

352nd Special Operations Wing
RAF Mildenhall, U.K.
AFSOC
MC-130J, CV-22

354th Fighter Wing
Eielson AFB, Alaska
PACAF
F-16C/D

355th Fighter Wing
Davis-Monthan AFB, Ariz.
ACC
A-10, EC-130, F-16, HC-130J, HH-60

363rd Intelligence, Surveillance, and Reconnaissance Wing
JB Langley-Eustis, Va.
ACC
Analysis for air, space and cyber operations, ISR, testing, tactics development

366th Fighter Wing
Mountain Home AFB, Idaho
ACC
F-15E

374th Airlift Wing
Yokota Air Base, Japan
PACAF
C-12J, C-130J, UH-1N

375th Air Mobility Wing
Scott AFB, Ill.
AMC
C-21, C-40, KC-135, NC-21

377th Air Base Wing
Kirtland AFB, N.M.
AFGSC
Base support, nuclear operations, expeditionary force training

388th Fighter Wing
Hill AFB, Utah
ACC
F-35A
F-16C/D

403rd Wing
Keesler AFB, Miss.
AFRC
C-130J, WC-130J

412th Test Wing
Edwards AFB, Calif.
AFTC
Base support, aircraft flying, systems testing, maintenance, engineering, test pilot school

419th Fighter Wing
Hill AFB, Utah
AFRC
F-35A

432nd Wing
Creech AFB, Nev.
ACC
MQ-9, RQ-170

433rd Airlift Wing
JB San Antonio-Lackland (Kelly Field Annex), Texas
AFRC
C-5M

434th Air Refueling Wing
Grissom AFB, Ind.
AFRC
KC-135

435th Air Ground Operations Wing
Ramstein Air Base, Germany
USAFE-AFAFRICA
Expeditionary airfield operations

436th Airlift Wing
Dover AFB, Del.
AMC
C-5M, C-17

437th Airlift Wing
JB Charleston, S.C.
AMC
C-17

439th Airlift Wing
Westover AFB, Mass.
AFRC
C-5M

442nd Fighter Wing
Whiteman AFB, Mo.
AFRC
A-10C

445th Airlift Wing
Wright-Patterson AFB, Ohio
AFRC
C-17

446th Airlift Wing
JB Lewis-McChord (McChord Field), Wash.
AFRC
C-17

448th Supply Chain Maintenance Wing
Tinker AFB, Okla.
AFMC
Supply chain management and global logistics

452nd Air Mobility Wing
March ARB, Calif.
AFRC
C-17, KC-135

459th Air Refueling Wing
JB Andrews, Md.
AFRC
KC-135

461st Air Control Wing
Robins AFB, Ga.
ACC
E-8C

480th ISR Wing
JB Langley-Eustis, Va.
ACC
DCGS, ISR, cyber support/operations for USAF

482nd Fighter Wing
Homestead AFB, Fla.
AFRC
F-16C

501st Combat Support Wing
RAF Alconbury, U.K.
USAFE-AFAFRICA
Administrative support

502nd Air Base Wing
JB San Antonio-Sam Houston, Texas
AETC
Installation support

505th Command & Control Wing
Hurlburt Field, Fla.
ACC
Training, tactics, operations, command/control

507th Air Refueling Wing
Tinker AFB, Okla.
AFRC
KC-135

509th Bomb Wing
Whiteman AFB, Mo.
AFGSC
B-2

512th Airlift Wing
Dover AFB, Del.
AFRC
C-5M, C-17

514th Air Mobility Wing
JB McGuire-Dix-Lakehurst, N.J.
AFRC
C-17, KC-10

515th Air Mobility Operations Wing
JB Pearl Harbor-Hickam, Hawaii
AMC
Contingency airfield operations/logistics

521st Air Mobility Operations Wing
Ramstein Air Base, Germany
AMC
Contingency airfield operations/logistics

552nd Air Control Wing
Tinker AFB, Okla.
ACC
E-3

557th Weather Wing
Offutt AFB, Neb.
ACC
Worldwide weather information for USAF and unified combatant commands

621st Contingency Response Wing
JB McGuire-Dix-Lakehurst, N.J.
AMC
Air mobility operations, training, development

628th Air Base Wing
JB Charleston, S.C.
AMC
Base support, administration, operations

633rd Air Base Wing
JB Langley-Eustis, Va.
ACC
Base support, administration, operations

635th Supply Chain Operations Wing
Scott AFB, Ill.
AFMC
Global supply chain management

655th Intelligence, Surveillance, and Reconnaissance Wing
Wright-Patterson AFB, Ohio
AFRC
Intelligence operations

673rd Air Base Wing
JB Elmendorf-Richardson, Alaska
PACAF
Joint base facilities support

688th Cyberspace Wing
JB San Antonio-Lackland, Texas
ACC
Cyberspace military operations, intelligence, communications

711th Human Performance Wing
Wright-Patterson AFB, Ohio
AFRL
Human performance research in air, space, cyberspace

908th Airlift Wing
Maxwell AFB, Ala.
AFRC
C-130H

910th Airlift Wing
Youngstown-Warren Air Reserve Station, Ohio
AFRC
C-130H

911th Airlift Wing
Pittsburgh Air Reserve Station, Pa.
AFRC
C-17

914th Air Refueling Wing
Niagara Falls Air Reserve Station, N.Y.
AFRC
KC-135

916th Air Refueling Wing
Seymour Johnson AFB, N.C.
AFRC
KC-135

919th Special Operations Wing
Duke Field, Fla.
AFRC
C-130, C-145A, C-146A, MQ-9, U-28

920th Rescue Wing
Patrick SFB, Fla.
AFRC
HC-130N, HH-60

926th Wing
Nellis AFB, Nev.
AFRC
F-16, F-15C/E, F-22, F-35, RQ-4, MQ-9

927th Air Refueling Wing
MacDill AFB, Fla.
AFRC
KC-135

931st Air Refueling Wing
McConnell AFB, Kan.
AFRC
KC-46, KC-135

932nd Airlift Wing
Scott AFB, Ill.
AFRC
C-40

934th Airlift Wing
Minneapolis-St. Paul Joint Air Reserve Station, Minn.
AFRC
C-130

940th Air Refueling Wing
Beale AFB, Calif.
AFRC
KC-135

944th Fighter Wing
Luke AFB, Ariz.
AFRC
A-10, F-15E, F-16C, F-35A

USAF AIRCRAFT TAIL CODES

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

U.S. Air Force Chief of Staff Gen. Charles Brown Jr., speaks with Airmen at an all-call during his stop at Travis Air Force Base, Calif., in 2022. Brown was on his way to visit bases throughout the U.S. Indo-Pacific Command.

Hun Chustine Minoda/USAF

AIR FORCE LEADERS THROUGH THE YEARS

The Nation's Air Arm and Its Early Leaders

DESIGNATION	COMMANDER	DATES OF SERVICE	
AERONAUTICAL DIVISION, US SIGNAL CORPS Aug. 1, 1907 - July 18, 1914			
Chief, Aeronautical Division	Capt. Charles deForest Chandler	Aug. 1, 1907	June 30, 1910
	Capt. Arthur S. Cowan	July 1, 1910	June 19, 1911
	Capt. Charles deForest Chandler	June 20, 1911	Sept. 9, 1913
	Maj. Samuel Reber	Sept. 10, 1913	July 17, 1914
AVIATION SECTION, US SIGNAL CORPS[a] July 18, 1914 - May 20, 1918			
Chief, Aviation Section	Lt. Col. Samuel Reber	July 18, 1914	May 5, 1916
	Lt. Col. George O. Squier	May 20, 1916	Feb. 19, 1917
	Lt. Col. John B. Bennet	Feb. 19, 1917	June 30, 1917
	Maj. Benjamin D. Foulois	June 30, 1917	Nov. 12, 1917
	Brig. Gen. Arthur I. Dade	Nov. 12, 1917	Feb. 27, 1918
	Col. Lawrence Brown	Feb. 27, 1918	May 20, 1918
DIVISION OF MILITARY AERONAUTICS, SECRETARY OF WAR May 20, 1918 - May 24, 1918			
Director of Military Aeronautics	Maj. Gen. William L. Kenly	May 20, 1918	August 1918
	(Kept same title three months into absorption by Air Service)		
AIR SERVICE May 24, 1918 - July 2, 1926			
Director of Air Service	John D. Ryan	Aug. 28, 1918	Nov. 27, 1918
	Maj. Gen. Charles T. Menoher	Jan. 2, 1919	June 4, 1920
Chief of Air Service	Maj. Gen. Charles T. Menoher	June 4, 1920	Oct. 4, 1921
	Maj. Gen. Mason M. Patrick	Oct. 5, 1921	July 2, 1926
AIR CORPS[b] July 2, 1926 - Sept. 18, 1947			
Chief of Air Corps	Maj. Gen. Mason M. Patrick	July 2, 1926	Dec. 13, 1927
	Maj. Gen. James E. Fechet	Dec. 14, 1927	Dec. 19, 1931
	Maj. Gen. Benjamin D. Foulois	Dec. 20, 1931	Dec. 21, 1935
	Maj. Gen. Oscar Westover	Dec. 22, 1935	Sept. 21, 1938
	Maj. Gen. Henry H. Arnold	Sept. 29, 1938	June 20, 1941
ARMY AIR FORCES (AAF) June 20, 1941 - Sept. 18, 1947			
Chief, Army Air Forces	Lt. Gen. Henry H. Arnold	June 20, 1941	March 9, 1942
Commanding General, AAF	Gen. of the Army Henry H. Arnold[c]	March 9, 1942	Feb. 9, 1946
	Gen. Carl A. Spaatz	Feb. 9, 1946	Sept. 26, 1947
UNITED STATES AIR FORCE[d] Sept. 18, 1947			
Chief of Staff	Gen. Carl A. Spaatz	Sept. 26, 1947	April 29, 1948

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

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

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

[d] For U.S. Space Force lineage, see p. 69.

Air Force Leaders

SECRETARY OF THE AIR FORCE

Stuart Symington	Sept. 18, 1947	April 24, 1950
Thomas K. Finletter	April 24, 1950	Jan. 20, 1953
Harold E. Talbott	Feb. 4, 1953	Aug. 13, 1955
Donald A. Quarles	Aug. 15, 1955	April 30, 1957
James H. Douglas Jr.	May 1, 1957	Dec. 10, 1959
Dudley C. Sharp	Dec. 11, 1959	Jan. 20, 1961
Eugene M. Zuckert	Jan. 23, 1961	Sept. 30, 1965
Harold Brown	Oct. 1, 1965	Feb. 14, 1969
Robert C. Seamans Jr.	Feb. 15, 1969	May 14, 1973
John L. McLucas*	May 15, 1973	Nov. 23, 1975
James W. Plummer (acting)	Nov. 23, 1975	Jan. 2, 1976
Thomas C. Reed	Jan. 2, 1976	April 6, 1977
John C. Stetson	April 6, 1977	May 18, 1979
Hans M. Mark*	May 18, 1979	Feb. 9, 1981
Verne Orr	Feb. 9, 1981	Nov. 30, 1985
Russell A. Rourke	Dec. 6, 1985	April 7, 1986
Edward C. Aldridge Jr.*	April 8, 1986	Dec. 16, 1988
James F. McGovern (acting)	Dec. 16, 1988	April 29, 1989
John J. Welch Jr. (acting)	April 29, 1989	May 21, 1989
Donald B. Rice	May 22, 1989	Jan. 20, 1993
Michael B. Donley (acting)	Jan. 20, 1993	July 13, 1993
Gen. Merrill A. McPeak (acting)	July 14, 1993	Aug. 5, 1993
Sheila E. Widnall	Aug. 6, 1993	Oct. 31, 1997
F. Whitten Peters*	Nov. 1, 1997	Jan. 20, 2001
Lawrence J. Delaney (acting)	Jan. 20, 2001	June 1, 2001
James G. Roche	June 1, 2001	Jan. 20, 2005
Peter B. Teets (acting)	Jan. 20, 2005	March 25, 2005
Michael L. Dominguez (acting)	March 25, 2005	July 29, 2005
Preston M. Geren (acting)	July 29, 2005	Nov. 3, 2005
Michael W. Wynne	Nov. 3, 2005	June 20, 2008
Michael B. Donley*	June 21, 2008	June 21, 2013
Eric K. Fanning (acting)	June 21, 2013	Dec. 20, 2013
Deborah Lee James	Dec. 20, 2013	Jan. 19, 2017
Lisa S. Disbrow (acting)	Jan. 20, 2017	May 16, 2017
Heather A. Wilson	May 16, 2017	May 31, 2019
Matthew P. Donovan (acting)	June 1, 2019	Oct. 16, 2019
Barbara M. Barrett	Oct. 16, 2019	Jan. 20, 2021
John P. Roth (acting)	Jan. 20, 2021	July 28, 2021
Frank Kendall III	July 28, 2021	

*Served as acting Secretary: McLucas until July 18, 1973; Mark until July 26, 1979; Aldridge until June 9, 1986; Peters until July 30, 1999; Donley until Oct. 17, 2008.

CHIEF OF STAFF OF THE AIR FORCE

Gen. Carl A. Spaatz	Sept. 26, 1947	April 29, 1948
Gen. Hoyt S. Vandenberg	April 30, 1948	June 29, 1953
Gen. Nathan F. Twining	June 30, 1953	June 30, 1957
Gen. Thomas D. White	July 1, 1957	June 30, 1961
Gen. Curtis E. LeMay	June 30, 1961	Jan. 31, 1965
Gen. John P. McConnell	Feb. 1, 1965	July 31, 1969
Gen. John D. Ryan	Aug. 1, 1969	July 31, 1973
Gen. George S. Brown	Aug. 1, 1973	June 30, 1974
Gen. David C. Jones	July 1, 1974	June 20, 1978
Gen. Lew Allen Jr.	July 1, 1978	June 30, 1982
Gen. Charles A. Gabriel	July 1, 1982	June 30, 1986
Gen. Larry D. Welch	July 1, 1986	June 30, 1990
Gen. Michael J. Dugan	July 1, 1990	Sept. 17, 1990
Gen. John Michael Loh (acting)	Sept. 18, 1990	Oct. 27, 1990
Gen. Merrill A. McPeak	Oct. 27, 1990	Oct. 25, 1994
Gen. Ronald R. Fogleman	Oct. 25, 1994	Sept. 1, 1997
Gen. Ralph E. Eberhart (acting)	Sept. 1, 1997	Oct. 6, 1997
Gen. Michael E. Ryan	Oct. 6, 1997	Sept. 6, 2001
Gen. John P. Jumper	Sept. 6, 2001	Sept. 2, 2005
Gen. T. Michael Moseley	Sept. 2, 2005	July 12, 2008
Gen. Duncan J. McNabb (acting)	July 12, 2008	Aug. 12, 2008
Gen. Norton A. Schwartz	Aug. 12, 2008	Aug. 10, 2012
Gen. Mark A. Welsh III	Aug. 10, 2012	July 1, 2016
Gen. David L. Goldfein*	July 1, 2016	Aug. 6, 2020
Gen. Charles Q. Brown Jr.[1]	Aug. 6, 2020	

*Gen. Charles Q. Brown Jr. was confirmed to be USAF Chief of Staff on June 9, 2020.
[1]Gen. Charles Q. Brown Jr. was nominated to be Chairman, JCS on May 25, 2023.

VICE CHIEF OF STAFF OF THE AIR FORCE

Gen. Hoyt S. Vandenberg	Oct. 10, 1947	April 28, 1948
Gen. Muir S. Fairchild	May 27, 1948	March 17, 1950
Lt. Gen. Lauris Norstad (acting)	May 22, 1950	Oct. 9, 1950
Gen. Nathan F. Twining	Oct. 10, 1950	June 29, 1953
Gen. Thomas D. White	June 30, 1953	June 30, 1957
Gen. Curtis E. LeMay	July 1, 1957	June 30, 1961
Gen. Frederic H. Smith Jr.	July 1, 1961	June 30, 1962
Gen. William F. McKee	July 1, 1962	July 31, 1964
Gen. John P. McConnell	Aug. 1, 1964	Jan. 31, 1965
Gen. William H. Blanchard	Feb. 19, 1965	May 31, 1966
Lt. Gen. Hewitt T. Wheless (acting)	June 13, 1966	July 31, 1966
Gen. Bruce K. Holloway	Aug. 1, 1966	July 31, 1968
Gen. John D. Ryan	Aug. 1, 1968	July 31, 1969
Gen. John C. Meyer	Aug. 1, 1969	April 30, 1972
Gen. Horace M. Wade	May 1, 1972	Oct. 31, 1973
Gen. Richard H. Ellis	Nov. 1, 1973	Aug. 18, 1975
Gen. William V. McBride	Sept. 1, 1975	March 31, 1978
Gen. Lew Allen Jr.	April 1, 1978	June 30, 1978
Gen. James A. Hill	July 1, 1978	Feb. 29, 1980
Gen. Robert C. Mathis	March 1, 1980	May 31, 1982
Gen. Jerome F. O'Malley	June 1, 1982	Oct. 5, 1983
Gen. Lawrence A. Skantze	Oct. 6, 1983	July 31, 1984
Gen. Larry D. Welch	Aug. 1, 1984	July 31, 1985
Gen. John L. Piotrowski	Aug. 1, 1985	Jan. 31, 1987
Gen. Monroe W. Hatch Jr.	Feb. 1, 1987	May 24, 1990
Gen. John Michael Loh	May 25, 1990	March 25, 1991
Gen. Michael P. C. Carns	May 16, 1991	July 28, 1994
Gen. Thomas S. Moorman Jr.	July 29, 1994	July 11, 1997
Gen. Ralph E. Eberhart	July 11, 1997	May 26, 1999
Gen. Lester L. Lyles	May 27, 1999	April 17, 2000
Gen. John W. Handy	April 17, 2000	Nov. 5, 2001
Gen. Robert H. Foglesong	Nov. 5, 2001	Aug. 11, 2003
Gen. T. Michael Moseley	Aug. 12, 2003	Sept. 2, 2005
Gen. John D. W. Corley	Sept. 2, 2005	Sept. 17, 2007
Gen. Duncan J. McNabb	Sept. 17, 2007	Sept. 4, 2008
Gen. William M. Fraser III	Oct. 8, 2008	Aug. 27, 2009
Gen. Carrol H. Chandler	Aug. 27, 2009	Jan. 14, 2011
Gen. Philip M. Breedlove	Jan. 14, 2011	July 27, 2012
Gen. Larry O. Spencer	July 27, 2012	Aug. 6, 2015
Gen. David L. Goldfein	Aug. 6, 2015	July 1, 2016
Gen. Stephen W. Wilson	July 22, 2016	Nov. 16, 2020
Gen. David W. Allvin	Nov. 16, 2020	

CHIEF MASTER SERGEANT OF THE AIR FORCE

CMSAF Paul W. Airey	April 3, 1967	July 31, 1969
CMSAF Donald L. Harlow	Aug. 1, 1969	Sept. 30, 1971
CMSAF Richard D. Kisling	Oct. 1, 1971	Sept. 30, 1973
CMSAF Thomas N. Barnes	Oct. 1, 1973	July 31, 1977
CMSAF Robert D. Gaylor	Aug. 1, 1977	July 31, 1979
CMSAF James M. McCoy	Aug. 1, 1979	July 31, 1981
CMSAF Arthur L. Andrews	Aug. 1, 1981	July 31, 1983
CMSAF Sam E. Parish	Aug. 1, 1983	June 30, 1986
CMSAF James C. Binnicker	July 1, 1986	July 31, 1990
CMSAF Gary R. Pfingston	Aug. 1, 1990	Oct. 25, 1994
CMSAF David J. Campanale	Oct. 26, 1994	Nov. 4, 1996
CMSAF Eric W. Benken	Nov. 5, 1996	July 30, 1999
CMSAF Frederick J. Finch	July 30, 1999	July 1, 2002
CMSAF Gerald R. Murray	July 1, 2002	June 30, 2006
CMSAF Rodney J. McKinley	June 30, 2006	June 30, 2009
CMSAF James A. Roy	June 30, 2009	Jan. 24, 2013
CMSAF James A. Cody	Jan. 24, 2013	Feb. 17, 2017
CMSAF Kaleth O. Wright	Feb. 17, 2017	Aug. 14, 2020
CMSAF JoAnne S. Bass	Aug. 14, 2020	

MAJOR COMMAND AND ANG LEADERS

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

AIR COMBAT COMMAND

Gen. John Michael Loh	June 1, 1992	June 23, 1995
Gen. Joseph W. Ralston	June 23, 1995	Feb. 28, 1996
Lt. Gen. Brett M. Dula (acting)	Feb. 28, 1996	April 5, 1996
Gen. Richard E. Hawley	April 5, 1996	June 11, 1999
Gen. Ralph E. Eberhart	June 11, 1999	Feb. 8, 2000
Gen. John P. Jumper	Feb. 8, 2000	Aug. 25, 2001
Lt. Gen. Donald G. Cook (acting)	Aug. 25, 2001	Nov. 14, 2001
Gen. Hal M. Hornburg	Nov. 14, 2001	Nov. 17, 2004
Lt. Gen. Bruce A. Wright (acting)	Nov. 17, 2004	Feb. 3, 2005
Lt. Gen. William Fraser III (acting)	Feb. 3, 2005	May 27, 2005
Gen. Ronald E. Keys	May 27, 2005	Oct. 2, 2007
Gen. John D. W. Corley	Oct. 2, 2007	Sept. 10, 2009
Gen. William M. Fraser III	Sept. 10, 2009	Sept. 13, 2011
Gen. Gilmary Michael Hostage III	Sept. 13, 2011	Nov. 4, 2014
Gen. Herbert J. Carlisle	Nov. 4, 2014	March 10, 2017
Gen. James M. Holmes	March 10, 2017	Aug. 28, 2020
Gen. Mark D. Kelly*	Aug. 28, 2020	

*Gen. Kenneth S. Wilsbach nominated to become ACC commander on May 4, 2023.
For past leaders, see Tactical Air Command in Historic Major Command Leaders.

AIR EDUCATION AND TRAINING COMMAND

Gen. Henry Viccellio Jr.	July 1, 1993	June 20, 1995
Gen. Billy J. Boles	June 20, 1995	March 17, 1997
Gen. Lloyd W. Newton	March 17, 1997	June 22, 2000
Gen. Hal M. Hornburg	June 22, 2000	Nov. 10, 2001
Lt. Gen. John D. Hopper Jr. (acting)	Nov. 10, 2001	Dec. 15, 2001
Gen. Donald G. Cook	Dec. 15, 2001	June 17, 2005
Gen. William R. Looney III	June 17, 2005	July 2, 2008
Gen. Stephen R. Lorenz	July 2, 2008	Nov. 17, 2010
Gen. Edward A. Rice Jr.	Nov. 17, 2010	Oct. 10, 2013
Gen. Robin Rand	Oct. 10, 2013	July 21, 2015
Lt. Gen. Darryl L. Roberson	July 21, 2015	Nov. 16, 2017
Lt. Gen. Steven L. Kwast	Nov. 16, 2017	July 26, 2019
Lt. Gen. Marshall B. Webb	July 26, 2019	May 20, 2022
Lt. Gen. Brian S. Robinson	May 20, 2022	

For past leaders see Air Training Command in Historic Major Command Leaders.

AIR FORCE GLOBAL STRIKE COMMAND

Lt. Gen. Frank G. Klotz	Aug. 7, 2009	Jan. 6, 2011
Lt. Gen. James M. Kowalski	Jan. 6, 2011	Oct. 23, 2013
Lt. Gen. Stephen W. Wilson	Oct. 23, 2013	July 28, 2015
Gen. Robin Rand	July 28, 2015	Aug. 21, 2018
Gen. Timothy M. Ray	Aug. 21, 2018	Aug. 27, 2021
Gen. Anthony J. Cotton	Aug. 27, 2021	Dec. 7, 2022
Gen. Thomas A. Bussiere	Dec. 7, 2022	

For past leaders, see Strategic Air Command in Historic Major Command leaders.

AIR FORCE MATERIEL COMMAND

Gen. Ronald W. Yates	July 1, 1992	June 30, 1995
Gen. Henry Viccellio Jr.	June 30, 1995	May 9, 1997
Lt. Gen. Kenneth Eickmann (acting)	May 9, 1997	May 29, 1997
Gen. George T. Babbitt Jr.	May 29, 1997	April 20, 2000
Gen. Lester L. Lyles	April 20, 2000	Aug. 22, 2003
Gen. Gregory S. Martin	Aug. 22, 2003	Aug. 19, 2005
Gen. Bruce Carlson	Aug. 19, 2005	Nov. 21, 2008
Gen. Donald J. Hoffman	Nov. 21, 2008	June 5, 2012
Gen. Janet C. Wolfenbarger	June 5, 2012	June 8, 2015
Gen. Ellen M. Pawlikowski	June 8, 2015	Sept. 1, 2018
Lt. Gen. Robert D. McMurry Jr. (interim)	Sept. 1, 2018	May 31, 2019
Gen. Arnold W. Bunch Jr.	May 31, 2019	June 13, 2022
Gen. Duke Z. Richardson	June 13, 2022	

AIR FORCE RESERVE COMMAND

Maj. Gen. Robert A. McIntosh	Feb. 17, 1997	June 9, 1998
Maj. Gen. David R. Smith (acting)	June 9, 1998	Sept. 25, 1998
Lt. Gen. James E. Sherrard III	Sept. 25, 1998	June 1, 2004
Maj. Gen. J. J. Batbie Jr. (acting)	June 1, 2004	June 24, 2004
Lt. Gen. John A. Bradley	June 24, 2004	June 24, 2008
Lt. Gen. Charles E. Stenner Jr.	June 24, 2008	July 30, 2012
Lt. Gen. James F. Jackson	July 30, 2012	July 15, 2016
Lt. Gen. Maryanne Miller	July 15, 2016	Sept. 7, 2018
Lt. Gen. Richard W. Scobee	Sept. 7, 2018	Aug. 3, 2022
Lt. Gen. John P. Healy	Aug. 3, 2022	

For past leaders, see Air Force Reserve in Historic Major Command Leaders.

AIR FORCE SPECIAL OPERATIONS COMMAND

Maj. Gen. Thomas E. Eggers	May 22, 1990	June 30, 1991
Maj. Gen. Bruce L. Fister	June 30, 1991	July 22, 1994
Maj. Gen. James L. Hobson Jr.	July 22, 1994	July 9, 1997
Maj. Gen. Charles R. Holland	July 9, 1997	Aug. 5, 1999
Lt. Gen. Maxwell C. Bailey	Aug. 5, 1999	Jan. 16, 2002
Lt. Gen. Paul V. Hester	Jan. 16, 2002	July 1, 2004
Lt. Gen. Michael W. Wooley	July 1, 2004	Nov. 27, 2007
Lt. Gen. Donald C. Wurster	Nov. 27, 2007	June 24, 2011
Lt. Gen. Eric E. Fiel	June 24, 2011	July 3, 2014
Lt. Gen. Bradley A. Heithold	July 3, 2014	July 19, 2016
Lt. Gen. Marshall B. Webb	July 19, 2016	May 31, 2019
Lt. Gen. James C. Slife	June 1, 2019	Dec. 9, 2022
Lt. Gen. Tony D. Bauernfeind	Dec. 9, 2022	

On Dec. 20, 2019, Air Force Space Command was redesignated U.S. Space Force, and Gen. John W. Raymond became Chief of Space Operations, USSF.

AIR MOBILITY COMMAND

Gen. Hansford T. Johnson	June 1, 1992	Aug. 25, 1992
Gen. Ronald R. Fogleman	Aug. 25, 1992	Oct. 18, 1994
Gen. Robert L. Rutherford	Oct. 18, 1994	July 15, 1996
Gen. Walter Kross	July 15, 1996	Aug. 3, 1998
Gen. Charles T. Robertson Jr.	Aug. 3, 1998	Nov. 5, 2001
Gen. John W. Handy	Nov. 5, 2001	Sept. 7, 2005
Lt. Gen. Christopher Kelly (acting)	Sept. 7, 2005	Oct. 14, 2005
Gen. Duncan J. McNabb	Oct. 14, 2005	Sept. 7, 2007
Gen. Arthur J. Lichte	Sept. 7, 2007	Nov. 20, 2009
Gen. Raymond E. Johns Jr.	Nov. 20, 2009	Nov. 30, 2012
Gen. Paul J. Selva	Nov. 30, 2012	May 5, 2014
Gen. Darren W. McDew	May 5, 2014	Aug. 11, 2015
Gen. Carlton D. Everhart II	Aug. 11, 2015	Sept. 7, 2018
Gen. Maryanne Miller	Sept. 7, 2018	Aug. 20, 2020
Gen. Jacqueline D. Van Ovost	Aug. 20, 2020	Oct. 5, 2021
Gen. Michael A. Minihan	Oct. 5, 2021	

For past leaders, see Military Airlift Command in Historic Major Command Leaders.

AIR NATIONAL GUARD

Col. William A. R. Robertson	Nov. 28, 1945	October 1948
Maj. Gen. George G. Finch	October 1948	Sept. 25, 1950
Maj. Gen. Earl T. Ricks	Oct. 13, 1950	Jan. 4, 1954
Maj. Gen. Winston P. Wilson	Jan. 26, 1954	Aug. 5, 1962
Maj. Gen. I. G. Brown	Aug. 6, 1962	April 19, 1974
Maj. Gen. John J. Pesch	April 20, 1974	Jan. 31, 1977
Maj. Gen. John T. Guice	Feb. 1, 1977	April 1, 1981
Maj. Gen. John B. Conaway	April 1, 1981	Nov. 1, 1988
Maj. Gen. Philip G. Killey	Nov. 1, 1988	Jan. 28, 1994
Maj. Gen. Donald W. Shepperd	Jan. 28, 1994	Jan. 28, 1998
Maj. Gen. Paul A. Weaver Jr.	Jan. 28, 1998	Dec. 3, 2001
Brig. Gen. David Brubaker (acting)	Dec. 3, 2001	June 3, 2002
Lt. Gen. Daniel James III	June 3, 2002	May 20, 2006
Lt. Gen. Craig R. McKinley	May 20, 2006	Nov. 17, 2008
Maj. Gen. Emmett Titshaw (acting)	Nov. 17, 2008	Feb. 2, 2009
Lt. Gen. Harry M. Wyatt III	Feb. 2, 2009	March 22, 2013
Lt. Gen. Stanley E. Clarke III	March 22, 2013	Dec. 18, 2015
Maj. Gen. Brian G. Neal (acting)	Dec. 18, 2015	May 10, 2016

MAJOR COMMAND AND ANG LEADERS (cont.)

Lt. Gen. L. Scott Rice	May 10, 2016	July 28, 2020
Lt. Gen. Michael A. Loh	July 28, 2020	

PACIFIC AIR FORCES

Gen. Laurence S. Kuter	July 1, 1957	Aug. 1, 1959
Gen. Emmett O'Donnell Jr.	Aug. 1, 1959	Aug. 1, 1963
Gen. Jacob E. Smart	Aug. 1, 1963	Aug. 1, 1964
Gen. Hunter Harris Jr.	Aug. 1, 1964	Feb. 1, 1967
Gen. John D. Ryan	Feb. 1, 1967	Aug. 1, 1968
Gen. Joseph J. Nazzaro	Aug. 1, 1968	Aug. 1, 1971
Gen. Lucius D. Clay Jr.	Aug. 1, 1971	Oct. 1, 1973
Gen. John W. Vogt Jr.	Oct. 1, 1973	July 1, 1974
Gen. Louis L. Wilson Jr.	July 1, 1974	June 3, 1977
Lt. Gen. James A. Hill	June 3, 1977	June 15, 1978
Lt. Gen. James D. Hughes	June 15, 1978	June 8, 1981
Lt. Gen. Arnold W. Braswell	June 8, 1981	Oct. 8, 1983
Gen. Jerome F. O'Malley	Oct. 8, 1983	Sept. 25, 1984
Gen. Robert W. Bazley	Sept. 25, 1984	Dec. 16, 1986
Gen. Jack I. Gregory	Dec. 16, 1986	July 22, 1988
Gen. Merrill A. McPeak	July 22, 1988	Nov. 5, 1990
Lt. Gen. James B. Davis	Nov. 5, 1990	Feb. 19, 1991
Gen. Jimmie V. Adams	Feb. 19, 1991	Jan. 22, 1993
Gen. Robert L. Rutherford	Jan. 22, 1993	Oct. 12, 1994
Gen. John G. Lorber	Oct. 12, 1994	July 7, 1997
Gen. Richard B. Myers	July 7, 1997	July 23, 1998
Gen. Patrick K. Gamble	July 23, 1998	April 9, 2001
Lt. Gen. Lansford E. Trapp (acting)	April 9, 2001	May 4, 2001
Gen. William J. Begert	May 4, 2001	July 2, 2004
Gen. Paul V. Hester	July 2, 2004	Nov. 30, 2007
Gen. Carrol H. Chandler	Nov. 30, 2007	Aug. 19, 2009
Gen. Gary L. North	Aug. 19, 2009	Aug. 3, 2012
Gen. Herbert J. Carlisle	Aug. 3, 2012	Oct. 16, 2014
Gen. Lori J. Robinson	Oct. 16, 2014	May 11, 2016
Lt. Gen. Russell J. Handy (acting)	May 11, 2016	July 12, 2016
Gen. Terrence J. O'Shaughnessy	July 12, 2016	May 20, 2018
Lt. Gen. Jerry P. Martinez (acting)	May 20, 2018	July 26, 2018
Gen. Charles Q. Brown Jr.	July 26, 2018	July 8, 2020
Gen. Kenneth S. Wilsbach*	July 8, 2020	

*Gen. (sel.) Kevin B. Schneider nominated to become PACAF commander on April 24, 2023.
For past leaders, see Far East Air Forces in Historic Major Command Leaders.

U.S. AIR FORCES IN EUROPE-AIR FORCES AFRICA

Lt. Gen. John K. Cannon	Aug. 7, 1945	Aug. 14, 1947
Brig. Gen. John F. McBlain (acting)	Aug. 14, 1947	Oct. 20, 1947
Lt. Gen. Curtis E. LeMay	Oct. 20, 1947	Oct. 16, 1948
Lt. Gen. John K. Cannon	Oct. 16, 1948	Jan. 21, 1951
Gen. Lauris Norstad	Jan. 21, 1951	July 27, 1953
Lt. Gen. William H. Tunner	July 27, 1953	July 1, 1957
Gen. Frank F. Everest	July 1, 1957	Aug. 1, 1959
Gen. Frederic H. Smith Jr.	Aug. 1, 1959	July 1, 1961
Gen. Truman H. Landon	July 1, 1961	Aug. 1, 1963
Gen. Gabriel P. Disosway	Aug. 1, 1963	Aug. 1, 1965
Gen. Bruce K. Holloway	Aug. 1, 1965	Aug. 1, 1966
Gen. Maurice A. Preston	Aug. 1, 1966	Aug. 1, 1968
Gen. Horace M. Wade	Aug. 1, 1968	Aug. 1, 1969
Gen. Joseph R. Holzapple	Feb. 1, 1969	Sept. 1, 1971
Gen. David C. Jones	Sept. 1, 1971	July 1, 1974
Gen. John W. Vogt	July 1, 1974	Sept. 1, 1975
Gen. Richard H. Ellis	Sept. 1, 1975	Aug. 1, 1977
Gen. William J. Evans	Aug. 1, 1977	Aug. 1, 1978
Gen. John W. Pauly	Aug. 1, 1978	Aug. 1, 1980
Gen. Charles A. Gabriel	Aug. 1, 1980	June 30, 1982
Gen. Billy M. Minter	July 1, 1982	Nov. 1, 1984
Gen. Charles L. Donnelly Jr.	Nov. 1, 1984	May 1, 1987
Gen. William L. Kirk	May 1, 1987	April 12, 1989
Gen. Michael J. Dugan	April 12, 1989	June 26, 1990
Gen. Robert C. Oaks	June 26, 1990	July 29, 1994
Gen. James L. Jamerson	July 29, 1994	July 17, 1995
Gen. Richard E. Hawley	July 17, 1995	April 4, 1996
Gen. Michael E. Ryan	April 4, 1996	Oct. 6, 1997
Lt. Gen. William J. Begert (acting)	Oct. 6, 1997	Dec. 5, 1997
Gen. John P. Jumper	Dec. 5, 1997	Jan. 13, 2000
Gen. Gregory S. Martin	Jan. 13, 2000	Aug. 12, 2003
Gen. Robert H. Foglesong	Aug. 12, 2003	Dec. 6, 2005
Gen. William T. Hobbins	Dec. 6, 2005	Dec. 10, 2007
Lt. Gen. Robert D. Bishop Jr. (acting)	Dec. 10, 2007	Jan. 9, 2008
Gen. Roger A. Brady	Jan. 9, 2008	Dec. 13, 2010
Gen. Mark A. Welsh III	Dec. 13, 2010	July 31, 2012
Gen. Philip M. Breedlove	July 31, 2012	May 10, 2013
Lt. Gen. Noel T. Jones (acting)	May 10, 2013	Aug. 2, 2013
Gen. Frank Gorenc	Aug. 2, 2013	Aug. 11, 2016
Gen. Tod D. Wolters	Aug. 11, 2016	May 1, 2019
Gen. Jeffrey L. Harrigian	May 1, 2019	June 27, 2022
Gen. James B. Hecker	June 27, 2022	

For past leaders, see U.S. Strategic Air Forces in Europe in Historic Major Command Leaders.

William Lewis/USAF

Gen. Mark Kelly, commander, Air Combat Command, climbs out of his F-15E Strike Eagle after a training mission at Nellis Air Force Base, Nev., in 2022.

Staff Sergeant Danielle Sukhlall

Gen. James Hecker, center, U.S. Air Forces Europe—Air Forces Africa commander, talks with maintainers assigned to the 90th Expeditionary Fighter Squadron at Łask Air Base, Poland, Aug. 5, 2022.

HEADQUARTERS DOD LEADERS

SECRETARY OF DEFENSE

James V. Forrestal	Sept. 17, 1947	March 28, 1949
Louis A. Johnson	March 28, 1949	Sept. 19, 1950
George C. Marshall	Sept. 21, 1950	Sept. 12, 1951
Robert A. Lovett	Sept. 17, 1951	Jan. 20, 1953
Charles E. Wilson	Jan. 28, 1953	Oct. 8, 1957
Neil H. McElroy	Oct. 9, 1957	Dec. 1, 1959
Thomas S. Gates	Dec. 2, 1959	Jan. 20, 1961
Robert S. McNamara	Jan. 21, 1961	Feb. 29, 1968
Clark M. Clifford	March 1, 1968	Jan. 20, 1969
Melvin R. Laird	Jan. 22, 1969	Jan. 29, 1973
Elliot L. Richardson	Jan. 30, 1973	May 24, 1973
James R. Schlesinger	July 2, 1973	Nov. 19, 1975
Donald H. Rumsfeld	Nov. 20, 1975	Jan. 20, 1977
Harold Brown	Jan. 21, 1977	Jan. 20, 1981
Caspar W. Weinberger	Jan. 21, 1981	Nov. 23, 1987
Frank C. Carlucci	Nov. 23, 1987	Jan. 20, 1989
Richard B. Cheney	March 21, 1989	Jan. 20, 1993
Les Aspin	Jan. 21, 1993	Feb. 3, 1994
William J. Perry	Feb. 3, 1994	Jan. 23, 1997
William S. Cohen	Jan. 24, 1997	Jan. 20, 2001
Donald H. Rumsfeld	Jan. 20, 2001	Dec. 18, 2006
Robert M. Gates	Dec. 18, 2006	July 1, 2011
Leon E. Panetta	July 1, 2011	Feb. 27, 2013
Chuck Hagel	Feb. 27, 2013	Feb. 17, 2015
Ashton B. Carter	Feb. 17, 2015	Jan. 19, 2017
James N. Mattis	Jan. 20, 2017	Dec. 31, 2018
Patrick. M. Shanahan (acting)	Jan. 1, 2019	June 24, 2019
Mark T. Esper	July 23, 2019	Nov. 9, 2020
Lloyd J. Austin III	Jan. 22, 2021	

CHAIRMAN OF THE JOINT CHIEFS OF STAFF

Gen. of the Army Omar N. Bradley	Aug. 16, 1949	Aug. 15, 1953
Adm. Arthur W. Radford, USN	Aug. 15, 1953	Aug. 15, 1957
Gen. Nathan F. Twining, USAF	Aug. 15, 1957	Sept. 30, 1960
Gen. Lyman L. Lemnitzer, USA	Oct. 1, 1960	Sept. 30, 1962
Gen. Maxwell D. Taylor, USA	Oct. 1, 1962	July 1, 1964
Gen. Earle G. Wheeler, USA	July 3, 1964	July 2, 1970
Adm. Thomas H. Moorer, USN	July 2, 1970	July 1, 1974
Gen. George S. Brown, USAF	July 1, 1974	June 20, 1978
Gen. David C. Jones, USAF	June 21, 1978	June 18, 1982
Gen. John W. Vessey Jr., USA	June 18, 1982	Sept. 30, 1985
Adm. William J. Crowe Jr., USN	Oct. 1, 1985	Sept. 30, 1989
Gen. Colin L. Powell, USA	Oct. 1, 1989	Sept. 30, 1993
Adm. David Jeremiah, USN (acting)	Oct. 1, 1993	Oct. 24, 1993
Gen. John M. Shalikashvili, USA	Oct. 25, 1993	Sept. 30, 1997
Gen. Henry H. Shelton, USA	Oct. 1, 1997	Oct. 1, 2001
Gen. Richard B. Myers, USAF	Oct. 1, 2001	Sept. 30, 2005
Gen. Peter Pace, USMC	Sept. 30, 2005	Oct. 1, 2007
Adm. Michael G. Mullen, USN	Oct. 1, 2007	Sept. 30, 2011
Gen. Martin E. Dempsey, USA	Sept. 30, 2011	Sept. 25, 2015
Gen. Joseph F. Dunford Jr., USMC	Sept. 25, 2015	Sept. 30, 2019
Gen. Mark A. Milley, USA	Oct. 1, 2019	

VICE CHAIRMAN OF THE JOINT CHIEFS OF STAFF

Gen. Robert T. Herres, USAF	Feb. 6, 1987	Feb. 28, 1990
Adm. David E. Jeremiah, USN	March 1, 1990	Feb. 28, 1994
Adm. William A. Owens, USN	March 1, 1994	Feb. 27, 1996
Gen. Joseph W. Ralston, USAF	March 1, 1996	Feb. 29, 2000
Gen. Richard B. Myers, USAF	March 1, 2000	Oct. 1, 2001
Gen. Peter Pace, USMC	Oct. 1, 2001	Aug. 12, 2005
Adm. Edmund Giambastiani Jr., USN	Aug. 12, 2005	Aug. 3, 2007
Gen. James E. Cartwright, USMC	Aug. 4, 2007	Aug. 4, 2011
Adm. James A. Winnefeld Jr., USN	Aug. 4, 2011	July 31, 2015
Gen. Paul J. Selva, USAF	July 31, 2015	Nov. 21, 2019
Gen. John E. Hyten, USAF	Nov. 21, 2019	Nov. 19, 2021
Adm. Christopher W. Grady, USN	Dec. 20, 2021	

UNIFIED COMMAND, NATIONAL GUARD BUREAU, AND NORAD LEADERS

This section presents the leaders of DOD's Unified Commands, the National Guard Bureau, and NORAD under the current designation.

Leaders of historic DOD commands (and of active commands' previous designations) are listed online.

Courtesy photo via CENTCOM

Gen. Michael Kurilla, U.S. Central Command commander, visits the Al-Hol Refugee Camp in northeastern Syria in 2022. More than 50,000 people, mostly women and children from about 60 countries, are housed at the camp.

U.S. AFRICA COMMAND

Gen. William E. Ward, USA	Oct. 1, 2008	March 9, 2011
Gen. Carter F. Ham, USA	March 9, 2011	April 5, 2013
Gen. David M. Rodriguez, USA	April 5, 2013	July 18, 2016
Gen. Thomas D. Waldhauser, USMC	July 18, 2016	July 26, 2019
Gen. Stephen J. Townsend, USA	July 26, 2019	Aug. 9, 2022
Gen. Michael Langley, USMC	Aug. 9, 2022	

U.S. CENTRAL COMMAND

Gen. Robert C. Kingston, USA	Jan. 1, 1983	Nov. 27, 1985
Gen. George B. Crist, USMC	Nov. 27, 1985	Nov. 23, 1988
Gen. H. Norman Schwarzkopf, USA	Nov. 23, 1988	Aug. 9, 1991
Gen. Joseph P. Hoar, USMC	Aug. 9, 1991	Aug. 5, 1994
Gen. J. H. Binford Peay III, USA	Aug. 5, 1994	Aug. 13, 1997
Gen. Anthony C. Zinni, USMC	Aug. 13, 1997	July 6, 2000
Gen. Tommy R. Franks, USA	July 6, 2000	July 7, 2003
Gen. John P. Abizaid, USA	July 7, 2003	March 16, 2007
Adm. William J. Fallon, USN	March 16, 2007	March 31, 2008
Lt. Gen. Martin Dempsey, USA (acting)	March 31, 2008	Oct. 31, 2008
Gen. David H. Petraeus, USA	Oct. 31, 2008	June 30, 2010
Lt. Gen. John R. Allen, USMC (acting)	June 30, 2010	Aug. 11, 2010
Gen. James N. Mattis, USMC	Aug. 11, 2010	March 22, 2013
Gen. Lloyd J. Austin III, USA	March 22, 2013	March 30, 2016
Gen. Joseph L. Votel, USA	March 30, 2016	March 28, 2019
Gen. Kenneth F. McKenzie Jr., USMC	March 28, 2019	April 1, 2022
Gen. Michael E. Kurilla, USA	April 1, 2022	

U.S. 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

UNIFIED COMMAND, NATIONAL GUARD BUREAU, AND NORAD LEADERS (continued)

Gen. John R. Galvin, USA	June 25, 1987	June 23, 1992
Gen. John M. Shalikashvili, USA	June 23, 1992	Oct. 21, 1993
Gen. George A. Joulwan, USA	Oct. 21, 1993	July 10, 1997
Gen. Wesley K. Clark, USA	July 10, 1997	May 2, 2000
Gen. Joseph W. Ralston, USAF	May 2, 2000	Jan. 16, 2003
Gen. James L. Jones, USMC	Jan. 16, 2003	Dec. 4, 2006
Gen. Bantz J. Craddock, USA	Dec. 4, 2006	June 30, 2009
Adm. James G. Stavridis, USN	June 30, 2009	May 10, 2013
Gen. Philip M. Breedlove, USAF	May 10, 2013	May 3, 2016
Gen. Curtis M. Scaparrotti, USA	May 3, 2016	May 3, 2019
Gen. Tod D. Wolters, USAF	May 3, 2019	July 1, 2022
Gen. Christopher G. Cavoli, USA	July 1, 2022	

U.S. NORTHERN COMMAND

Gen. Ralph E. Eberhart, USAF	Oct. 1, 2002	Nov. 5, 2004
Adm. Timothy J. Keating, USN	Nov. 5, 2004	March 23, 2007
Gen. Victor E. Renuart Jr., USAF	March 23, 2007	May 19, 2010
Adm. James A. Winnefeld Jr., USN	May 19, 2010	Aug. 4, 2011
Gen. Charles H. Jacoby Jr., USA	Aug. 4, 2011	Dec. 5, 2014
Adm. William E. Gortney, USN	Dec. 5, 2014	May 13, 2016
Gen. Lori J. Robinson, USAF	May 13, 2016	May 24, 2018
Gen. Terrence J. O'Shaughnessy	May 24, 2018	Aug. 20, 2020
Gen. Glen D. VanHerck, USAF*	Aug. 20, 2020	

*Gen. (sel.) Gregory M. Guillot was nominated to become commander NORTHCOM on May 31, 2023.

U.S. INDO-PACIFIC COMMAND

Adm. John H. Towers, USN	Jan. 1, 1947	Feb. 28, 1947
Adm. Louis E. Denfeld, USN	Feb. 28, 1947	Dec. 3, 1947
Adm. Dewitt C. Ramsey, USN	Dec. 3, 1947	April 30, 1949
Adm. Arthur W. Radford, USN	April 30, 1949	July 10, 1953
Adm. Felix B. Stump, USN	July 10, 1953	July 31, 1958
Adm. Harry D. Felt, USN	July 31, 1958	June 30, 1964
Adm. U. S. Grant Sharp, USN	June 30, 1964	July 31, 1968
Adm. John S. McCain Jr., USN	July 31, 1968	Sept. 1, 1972
Adm. Noel A. M. Gayler, USN	Sept. 1, 1972	Aug. 30, 1976
Adm. Maurice E. Weisner, USN	Aug. 30, 1976	Oct. 31, 1979
Adm. Robert L. J. Long, USN	Oct. 31, 1979	July 1, 1983
Adm. William J. Crowe Jr., USN	July 1, 1983	Sept. 18, 1985
Adm. Ronald J. Hays Jr., USN	Sept. 18, 1985	Sept. 30, 1988
Adm. Huntington Hardisty, USN	Sept. 30, 1988	March 1, 1991
Adm. Charles R. Larson, USN	March 1, 1991	July 11, 1994
Lt. Gen. Harold Fields, USA (acting)	July 11, 1994	July 19, 1994
Adm. Richard C. Macke, USN	July 19, 1994	Jan. 31, 1996
Adm. Joseph W. Prueher, USN	Jan. 31, 1996	Feb. 20, 1999
Adm. Dennis C. Blair, USN	Feb. 20, 1999	May 2, 2002
Adm. Thomas B. Fargo, USN	May 2, 2002	Feb. 26, 2005
Adm. William J. Fallon, USN	Feb. 26, 2005	March 12, 2007
Lt. Gen. Daniel Leaf, USAF (acting)	March 12, 2007	March 26, 2007
Adm. Timothy J. Keating, USN	March 26, 2007	Oct. 19, 2009
Adm. Robert F. Willard, USN	Oct. 19, 2009	March 9, 2012
Adm. Samuel J. Locklear III, USN	March 9, 2012	May 27, 2015
Adm. Harry B. Harris Jr., USN	May 27, 2015	May 31, 2018
Adm. Philip S. Davidson, USN	May 31, 2018	April 30, 2021
Adm. John C. Aquilino, USN	April 30, 2021	

U.S. SOUTHERN COMMAND

Gen. Andrew P. O'Meara, USA	June 6, 1963	Feb. 22, 1965
Gen. Robert W. Porter Jr., USA	Feb. 22, 1965	Feb. 18, 1969
Gen. George R. Mather, USA	Feb. 18, 1969	Sept. 20, 1971
Gen. George V. Underwood, USA	Sept. 20, 1971	Jan. 17, 1973
Gen. William B. Rosson, USA	Jan. 17, 1973	Aug. 1, 1975
Lt. Gen. Dennis P. McAuliffe, USA	Aug. 1, 1975	Oct. 1, 1979
Lt. Gen. Wallace H. Nutting, USA	Oct. 1, 1979	May 24, 1983
Gen. Paul F. Gorman, USA	May 24, 1983	March 1, 1985
Gen. John R. Galvin, USA	March 1, 1985	June 6, 1987
Gen. Fred F. Woerner, USA	June 6, 1987	Oct. 1, 1989
Gen. Maxwell R. Thurman, USA	Oct. 1, 1989	Nov. 21, 1990
Gen. George A. Joulwan, USA	Nov. 21, 1990	October 1993
Maj. Gen. W. Worthington, USAF (acting)	October 1993	Feb. 17, 1994

Staff Sgt. Brittany Chase

U.S. Northern Command Commander, U.S. Air Force Gen. Glen VanHerck, speaks during a press briefing about the completed Global Information Dominance Experiment (GIDE) 3, at the Pentagon in 2021.

Gen. Barry R. McCaffrey, USA	Feb. 17, 1994	March 1, 1996
RAdm. James Perkins, USN (acting)	March 1, 1996	June 26, 1996
Gen. Wesley K. Clark, USA	June 26, 1996	July 13, 1997
RAdm. Walter F. Doran, USN (acting)	July 13, 1997	Sept. 25, 1997
Gen. Charles E. Wilhelm, USMC	Sept. 25, 1997	Sept. 8, 2000
Gen. Peter Pace, USMC	Sept. 8, 2000	Sept. 30, 2001
Maj. Gen. G. D. Speer, USA (acting)	Sept. 30, 2001	Aug. 18, 2002
Gen. James T. Hill, USA	Aug. 18, 2002	Nov. 9, 2004
Gen. Bantz J. Craddock, USA	Nov. 9, 2004	Oct. 19, 2006
Adm. James G. Stavridis, USN	Oct. 19, 2006	June 25, 2009
Gen. Douglas M. Fraser, USAF	June 25, 2009	Nov. 19, 2012
Gen. John F. Kelly, USMC	Nov. 19, 2012	Jan 14, 2016
Adm. Kurt W. Tidd, USN	Jan. 14, 2016	Nov. 26, 2018
Adm. Craig S. Faller, USN	Nov. 26, 2018	Oct. 29, 2021
Gen. Laura J. Richardson, USA	Oct. 29, 2021	

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

U.S. SPECIAL OPERATIONS COMMAND

Gen. James J. Lindsay, USA	April 16, 1987	June 27, 1990
Gen. Carl W. Stiner, USA	June 27, 1990	May 20, 1993
Gen. Wayne A. Downing, USA	May 20, 1993	Feb. 29, 1996
Gen. Henry H. Shelton, USA	Feb. 29, 1996	Sept. 25, 1997
Gen. Peter J. Schoomaker, USA	Nov. 5, 1997	Oct. 27, 2000
Gen. Charles R. Holland, USAF	Oct. 27, 2000	Sept. 2, 2003
Gen. Bryan D. Brown, USA	Sept. 2, 2003	July 9, 2007
Adm. Eric T. Olson, USN	July 9, 2007	Aug. 15, 2011
Adm. William H. McRaven, USN	Aug. 15, 2011	Aug. 28, 2014
Gen. Joseph L. Votel, USA	Aug. 28, 2014	March 30, 2016
Gen. Raymond A. Thomas, USA	March 30, 2016	March 29, 2019
Gen. Richard D. Clarke, USA	March 29, 2019	Aug. 30, 2022
Gen. Bryan P. Fenton, USA	Aug. 30, 2022	

U.S. STRATEGIC COMMAND

Gen. George L. Butler, USAF	June 1, 1992	Feb. 13, 1994
Adm. Henry G. Chiles Jr., USN	Feb. 14, 1994	Feb. 21, 1996
Gen. Eugene E. Habiger, USAF	Feb. 22, 1996	June 25, 1998
Adm. Richard W. Mies, USN	June 26, 1998	Nov. 30, 2001
Adm. James O. Ellis Jr., USN	Nov. 30, 2001	July 9, 2004
Gen. James E. Cartwright, USMC	July 9, 2004	Aug. 10, 2007
Lt. Gen. Robert Kehler, USAF (acting)	Aug. 10, 2007	Oct. 3, 2007
Gen. Kevin P. Chilton, USAF	Oct. 3, 2007	Jan. 28, 2011
Gen. Robert Kehler, USAF	Jan. 28, 2011	Nov. 15, 2013
Adm. Cecil D. Haney, USN	Nov. 15, 2013	Nov. 3, 2016
Gen. John E. Hyten, USAF	Nov. 3, 2016	No.v 18, 2019
Adm Charles A. Richard, USN	Nov. 18, 2019	Dec. 9, 2022
Gen. Anthony J. Cotton, USAF	Dec. 9, 2022	

The functions of U.S. Space Command were merged into U.S. Strategic Command Oct. 1, 2002.

UNIFIED COMMAND, NATIONAL GUARD BUREAU, AND NORAD LEADERS (continued)

U.S. TRANSPORTATION COMMAND

Gen. Duane H. Cassidy, USAF	July 1, 1987	Sept. 21, 1989
Gen. H. T. Johnson, USAF	Sept. 22, 1989	Aug. 24, 1992
Gen. Ronald R. Fogleman, USAF	Aug. 25, 1992	Oct. 17, 1994
Gen. Robert L. Rutherford, USAF	Oct. 18, 1994	July 14, 1996
Gen. Walter Kross, USAF	July 15, 1996	Aug. 2, 1998
Gen. Charles T. Robertson Jr., USAF	Aug. 3, 1998	Nov. 5, 2001
Gen. John W. Handy, USAF	Nov. 5, 2001	Sept. 7, 2005
Gen. Norton A. Schwartz, USAF	Sept. 7, 2005	Aug. 11, 2008
VAdm. Ann E. Rondeau, USN (acting)	Aug. 12, 2008	Sept. 4, 2008
Gen. Duncan J. McNabb, USAF	Sept. 5, 2008	Oct. 14, 2011
Gen. William M. Fraser III, USAF	Oct. 14, 2011	May 5, 2014
Gen. Paul J. Selva, USAF	May 5, 2014	July 31, 2015
VAdm. William Brown, USN (acting)	July 31, 2015	Aug. 26, 2015
Gen. Darren W. McDew, USAF	Aug. 26, 2015	Aug. 24, 2018
Gen. Stephen R. Lyons, USA	Aug. 24, 2018	Oct. 15, 2021
Gen. Jaqueline D. Van Ovost	Oct. 15, 2021	

NATIONAL GUARD BUREAU

Maj. Gen. Butler B. Miltonberger, USA	Feb. 1, 1946	Sept. 29, 1947
Maj. Gen. Kenneth F. Cramer, USA	Sept. 30, 1947	Sept. 4, 1950
Maj. Gen. Raymond H. Fleming, USA*	Sept. 5, 1950	Feb. 15, 1953
Maj. Gen. Earl T. Ricks, USAF (acting)	Feb. 16, 1953	June 21, 1953
Maj. Gen. Edgar C. Erickson, USA	June 22, 1953	May 31, 1959
Maj. Gen. Winston P. Wilson, USAF (acting)	June 1, 1959	July 19, 1959
Maj. Gen. Donald W. McGowan, USA	July 20, 1959	Aug. 30, 1963
Maj. Gen. Winston P. Wilson, USAF	Aug. 31, 1963	Aug. 31, 1971
Maj. Gen. Francis S. Greenlief, USA	Sept. 1, 1971	June 23, 1974
Lt. Gen. La Vern E. Weber, USA	Aug. 16, 1974	Aug. 15, 1982
Lt. Gen. Emmett H. Walker Jr., USA	Aug. 16, 1982	Aug. 15, 1986
Lt. Gen. Herbert R. Temple Jr., USA	Aug. 16, 1986	Jan. 31, 1990
Lt. Gen. John B. Conaway, USAF	Feb. 1, 1990	Dec. 1, 1993
Maj. Gen. Raymond Rees, USA (acting)	Jan. 1, 1994	July 31, 1994
Lt. Gen. Edward D. Baca, USA	Oct. 1, 1994	July 31, 1998
Lt. Gen. Russell C. Davis, USAF	Aug. 4, 1998	Aug. 3, 2002
Maj. Gen. Raymond Rees, USA (acting)	Aug. 4, 2002	April 10, 2003
Lt. Gen. H. Steven Blum, USA	April 11, 2003	Nov. 16, 2008
Gen. Craig R. McKinley, USAF	Nov. 17, 2008	Sept. 7, 2012
Gen. Frank J. Grass, USA	Sept. 7, 2012	Aug. 3, 2016
Gen. Joseph L. Lengyel, USAF	Aug. 3, 2016	Aug. 3, 2020
Gen. Daniel R. Hokanson, USA	Aug. 3, 2020	

*Fleming served as acting Chief until Aug. 14, 1951.

NORTH AMERICAN AEROSPACE DEFENSE COMMAND

Gen. Earle E. Partridge, USAF	Sept. 12, 1957	July 30, 1959
Gen. Laurence S. Kuter, USAF	Aug. 1, 1959	July 30, 1962
Gen. John K. Gerhart, USAF	Aug. 1, 1962	March 30, 1965
Gen. Dean C. Strother, USAF	April 1, 1965	July 29, 1966
Gen. Raymond J. Reeves, USAF	Aug. 1, 1966	July 31, 1969
Gen. Seth J. McKee, USAF	Aug. 1, 1969	Sept. 30, 1973
Gen. Lucius D. Clay Jr., USAF	Oct. 1, 1973	Aug. 29, 1975
Gen. Daniel James Jr., USAF	Sept. 1, 1975	Dec. 5, 1977
Gen. James E. Hill, USAF	Dec. 6, 1977	Dec. 31, 1979
Gen. James V. Hartinger, USAF	Jan. 1, 1980	July 30, 1984
Gen. Robert T. Herres, USAF	July 30, 1984	Feb. 5, 1987
Gen. John L. Piotrowski, USAF	Feb. 6, 1987	March 30, 1990
Gen. Donald J. Kutyna, USAF	April 1, 1990	June 30, 1992
Gen. Charles A. Horner, USAF	June 30, 1992	Sept. 12, 1994
Gen. Joseph W. Ashy, USAF	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes III, USAF	Aug. 27, 1996	Aug. 13, 1998
Gen. Richard B. Myers, USAF	Aug. 14, 1998	Feb. 22, 2000
Gen. Ralph E. Eberhart, USAF	Feb. 22, 2000	Nov. 5, 2004
Adm. Timothy J. Keating, USN	Nov. 5, 2004	March 23, 2007
Gen. Victor E. Renuart Jr., USAF	March 23, 2007	May 19, 2010
Adm. James A. Winnefeld Jr., USN	May 19, 2010	Aug. 4, 2011
Gen. Charles H. Jacoby Jr., USA	Aug. 4, 2011	Dec. 5, 2014
Adm. William E. Gortney, USN	Dec. 5, 2014	May 13, 2016
Gen. Lori J. Robinson, USAF	May 13, 2016	May 24, 2018
Gen. Terrance J. O'Shaughnessy, USAF	May 24, 2018	Aug. 20, 2020
Gen. Glen D. VanHerck, USAF	Aug. 20, 2020	

Gen. Jacqueline Van Ovost, commander, U.S. Transportation Command, speaks with Maj. Cynthia Lete, 378th Expeditionary Logistics Readiness Squadron commander, at Prince Sultan Air Base, Saudi Arabia.

USAF & USSF INSTALLATIONS

Airman 1st Class J. Michael Peña

A C-130J Super Hercules takes off past an E-3 AWACS at Joint Base Elmendorf-Richardson, Alaska.

Domestic

Listings include installations owned, operated by, or hosting substantial Department of the Air Force activities. For a map, see p. 106. For sources and definitions see p. 117.

Active Reserve Guard Range USSF

ALABAMA

Dannelly Field, Montgomery Regional Airport, Ala. 36108. ***Nearest city:*** Montgomery. ***Phone:*** 334-394-7200. ***Acres***: 70. ***Total Force:*** civilian, 0; military, 1,153. ***Component:*** ANG. ***Unit/mission:*** 187th FW, fighter, ISR operations. ***History:*** Originally named for Ens. Clarence Dannelly, Navy pilot killed in WWII.

Hall ANGS, Dothan Regional Airport, Ala. 36303. ***Nearest city:*** Dothan. ***Phone:*** 334-596-0184. ***Acres:*** 21. ***Total Force:*** civilian, 0; military, 247. ***Component:*** ANG. ***Unit/mission:*** 280th Special Operations Communications Squadron, strategic air defense.

Maxwell AFB, Ala. 36112. ***Nearest city:*** Montgomery. ***Phone:*** 334-953-1110. ***Acres:*** 3,530 (Maxwell), 355 (Gunter annex). ***Total Force:*** civilian, 2,467; military, 3,862. ***Active-duty USAF:*** enlisted, 1,450; officer, 1,481; ***Active-duty USSF:*** enlisted, 9; officer, 93. ***Owning command:*** AETC. ***Unit/mission:*** 42nd ABW (AETC), support; 908th AW (AFRC), air mobility operations; Air Force Historical Research Agency (USAF), historical documentation, research; Air University (AETC); Hq. Civil Air Patrol (USAF), management; Hq. Air Force Judge Advocate General Corps (USAF), management; PEO-Business and Enterprise Systems (AFMC), acquisition. ***History:*** Activated 1918 at the site of the Wright brothers' flight school. Named for 2nd Lt. William C. Maxwell, killed in air accident Aug. 12, 1920. ***Museum:*** Air Park. ***Inn:*** 334-953-3931. (Maxwell); 334-416-2501 (Gunter). ***Golf:*** Cypress Tree.

Sumpter Smith JANGB, Birmingham-Shuttlesworth Intl. Airport, Ala. 35217. ***Nearest city:*** Birmingham. ***Phone:*** 205-714-2855. ***Acres:*** 140. ***Total Force:*** civilian, 0; military, 1,672. ***Component:*** ANG. ***Unit/mission:*** 99th ARS (AMC) (active associate), air mobility operations; 117th ARW, air mobility, intelligence operations. ***History:*** Named for Col. Walter Sumpter Smith, electrical engineer and pilot.

ALASKA

Clear SFS, Alaska 99704. ***Nearest city:*** Fairbanks. ***Phone:*** 907-585-6110. ***Acres:*** 11,438. ***Total Force:*** civilian, 0; military, 141. ***Owning command:*** USSF. ***Unit/mission:*** 13th SWS (USSF), 213th SWS (ANG), missile warning. ***History:*** Dates from 1961.

Eielson AFB, Alaska 99702. ***Nearest city:*** Fairbanks. ***Phone:*** 907-377-1110. ***Acres:*** 24,919. ***Total Force:*** civilian, 673; military, 3,734. ***Active-duty USAF:*** enlisted, 2,900; officer, 290. ***Active-duty USSF:*** enlisted, 7; officer, 5. ***Owning command:*** PACAF. ***Unit/mission:*** 168th Wing (ANG), air mobility operations; 354th FW (PACAF), aggressor force, fighter, Red Flag-Alaska operations, Joint Pacific Alaska Range Complex support; Arctic Survival School (AETC), training. ***History:*** Activated October 1944. Named for Carl Ben Eielson, Arctic aviation pioneer who died in Arctic rescue mission in November 1929. ***Museum:*** Heritage Park. ***Inn:*** 907-377-1844.

JB Elmendorf-Richardson, Alaska 99506. ***Nearest city:*** Anchorage. ***Phone:*** 907-552-1110. ***Acres:*** 13,455 (Elmendorf), 60,027 (Richardson). ***Total Force:*** civilian, 298; military, 13,456. ***Active-duty USAF:*** enlisted, 4,673; officer, 838. ***Active-duty USSF:*** enlisted, 1; officer, 0. ***Owning command:*** PACAF. ***Unit/mission:*** 3rd Wing (PACAF), air mobility, C2, fighter operations; 176th Wing (ANG), air mobility, personnel recovery operations; 477th FG (AFRC), fighter operations; 673rd ABW (PACAF), support; 715th AMOG (AMC), air mobility operations; Alaskan NORAD Region, operational leadership; Hq. 11th Air Force (PACAF), operational leadership; Hq. Alaskan Command (PACOM), management. ***History:*** Activated July 1940. Formed as joint base under

Air Force lead 2010. Elmendorf named for Capt. Hugh M. 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. ***Museum:*** Kulis ANGB Museum. ***Inn:*** 907-552-2454. ***Golf:*** Moose Run.

Joint Pacific Alaska Range Complex, Alaska. ***Nearest city:*** Fairbanks. ***Phone:*** 907-552-2341. ***Owning command:*** ALCOM. ***Available airspace:*** 65,000 square miles. ***Acres of maneuver land:*** 1.5 million. ***Unit/mission:*** Unit training, joint training exercises.

ARIZONA

Barry M. Goldwater Range, Ariz. ***Nearest city:*** Gila Bend. ***Phone:*** 623-856-7216. ***Acres:*** 1,102,325 (BMGR East, Air Force); 692,800 (BMGR West, Marine Corps). ***Owning command:*** AETC ***Unit/mission:*** 56th Range Management Office, range operations. Includes Gila Bend Air Force Auxiliary Field. ***History:*** Training range on the U.S. southern border used by military pilots since 1941 that now hosts more than 68,000 training sorties a year.

Davis-Monthan AFB, Ariz. 85707. ***Nearest city:*** Tucson. ***Phone:*** 520-228-1110. ***Acres:*** 10,529. ***Total Force:*** civilian, 1,801; military, 7,571. ***Active-duty USAF:*** enlisted, 5,407; officer, 861. ***Active-duty USSF:*** enlisted, 1; officer, 3. ***Owning command:*** ACC. ***Unit/mission:*** 55th ECG (ACC), electronic combat operations; 214th RG (ANG), RPA operations; 309th Aerospace Maintenance and Regeneration Group (AFMC), aerospace vehicle storage, regeneration; 355th Wing (ACC), fighter operations; 563rd RQG (ACC), personnel recovery operations; 924th FG (AFRC), fighter operations; 943rd RQG (AFRC), personnel recovery operations; Hq. 12th Air Force (ACC), operational leadership. ***History:*** Activated 1927. Named for two local aviators: 2nd Lt. Samuel H. Davis Jr., killed Dec. 28, 1921, and 2nd Lt. Oscar Monthan, killed March 27, 1924. ***Museum:*** Pima Air and Space Museum. ***Inn:*** 520-228-3309.

Goldwater ANGB, Phoenix Sky Harbor Intl. Airport, Ariz. 85034. ***Nearest city:*** Phoenix. ***Phone:*** 602-302-9004. ***Total Force:*** civilian, 0; military, 851. ***Component:*** ANG. ***Unit/mission:*** 161st ARW, air mobility operations.

Luke AFB, Ariz. 85309. ***Nearest city:*** Phoenix. ***Phone:*** 623-856-1110. ***Acres:*** 4,833. ***Total Force:*** civilian, 1,162; military, 6,570. ***Active-duty USAF:*** enlisted, 4,025; officer, 402. ***Owning command:*** AETC. ***Unit/mission:*** 56th FW (AETC), training, Barry M. Goldwater Range operations; 944th FW (AFRC), training. ***History***: Activated 1941. Named for 2nd Lt. Frank Luke Jr., observation balloon-busting ace of WWI and first aviator to receive MOH, killed in action Sept. 29, 1918. ***Museum:*** Air Park. ***Inn:*** 623-935-2641. ***Golf:*** Falcon Dunes.

Morris ANGB, Tucson Intl. Airport, Ariz. 85706. ***Nearest city:*** Tucson. ***Phone:*** 520-295-6192. ***Total Force:*** civilian, 0; military, 1,466. ***Component:*** ANG. ***Unit/mission***: 162nd Wing, fighter, ISR, RPA (at Davis-Monthan AFB, Ariz.) operations, training.

ARKANSAS

Ebbing ANGB, Fort Smith Regional Airport, Ark. 72903. ***Nearest city:*** Fort Smith. ***Phone:*** 479-573-5100. ***Acres:*** 144. ***Total Force:*** civilian, 0; military, 866. ***Component:*** ANG. ***Unit/mission:*** 188th Wing, RPA, ISR.

Little Rock AFB, Ark. 72099. ***Nearest city:*** Jacksonville. ***Phone:*** 501-987-1110. ***Acres:*** 7,151. ***Total Force:*** civilian, 672; military, 4,902. ***Active-duty USAF:*** enlisted, 3,070; officer, 424. ***Owning command:*** AMC. ***Unit/mission:*** 19th AW (AMC), air mobility operations; 913th AG (AFRC), 189th AW (ANG), air mobility operations, training; 314th AMW (AETC), training. ***History:*** Base opened Oct. 9, 1955. ***Inn:*** 501-988-1141. ***Golf:*** Deer Run.

CALIFORNIA

Beale AFB, Calif. 95903. ***Nearest city:*** Marysville. ***Phone:*** 530-634-3000. ***Acres:*** 22,451. ***Total Force:*** civilian, 844; military, 4,814. ***Active-duty USAF:*** enlisted, 3,003; officer, 474. ***Active-duty USSF:*** enlisted, 24; officer, 28. ***Owning command:*** ACC. ***Unit/mission:*** 7th Space Warning Squadron (Space Delta 4), missile warning; 9th RW (ACC), ISR, RPA operations; 195th Wing (ANG), DCGS, intel; 548th ISRG (ACC), DCGS; 940th Air Refueling Wing (AFRC), KC-135R. ***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. ***Museum:*** Edward F. Beale Museum. ***Inn:*** 530-634-3662. ***Golf:*** Coyote Run.

California ANGB, Fresno Yosemite Intl. Airport, Calif. 93727. ***Nearest city:*** Fresno. ***Phone:*** 559-454-5100. ***Acres:*** 77. ***Total Force:*** civilian, 0; military, 1,675. ***Component:*** ANG. ***Unit/mission:*** 144th FW, fighter, ISR operations.

Channel Islands ANGS, Calif. 93041. ***Nearest city:*** Oxnard. Phone: 805-986-8000. ***Acres:*** 206 ***Total Force:*** civilian, 3,674; military, 1,092. ***Component:*** ANG. ***Unit/mission:*** 146th AW, air mobility, MAFFS operations.

Edwards AFB, Calif. 93524. ***Nearest city:*** Rosamond. ***Phone:*** 661-277-1110. ***Acres:*** 307,517. ***Total Force:*** civilian, 3,865; military, 2,134. ***Active-duty USAF:*** enlisted, 2,088; officer, 627. ***Active-duty USSF:*** enlisted, 4; officer, 13. ***Owning command:*** AFMC. ***Unit/mission:*** 412th TW (AFMC), T&E, base support; Hq. Air Force Test Center (AFMC), T&E management; U.S. 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." ***Museum:*** Air Force Flight Test Museum. ***Inn:*** 661-277-3394/4101. ***Golf:*** Muroc Lake.

Los Angeles AFB, Calif. 90245. ***Nearest city:*** El Segundo. ***Phone:*** 310-653-1110. ***Acres:*** 56. ***Total Force:*** civilian, 1,231; military, 1,440. ***Active-duty USAF:*** enlisted, 279; officer, 343. ***Active-duty USSF:*** enlisted, 35; officer, 595. ***Owning command:*** USSF. ***Unit/mission:*** 61st ABG (USSF), support; Hq. Space Systems Command (USSF), acquisition, R&D. ***History:*** Designated Los Angeles AFS April 30, 1964. Redesignated Los Angeles AFB Sept. 15, 1987. SMC, activated July 1, 1992, dates from Air Research and Development Command's Western Development Division, activated July 1, 1954. ***Museum***. SMC Heritage Center. ***Inn:*** 310-653-8296.

March ARB, Calif. 92518. ***Nearest city:*** Moreno Valley/Riverside. ***Phone:*** 951-655-4138. ***Acres:*** 2,385. ***Total Force:*** civilian, 0; military, 6,203. ***Component:*** AFRC/ANG. ***Unit/mission:*** 452nd AMW (AFRC), air mobility operations; 163rd ATKW (ANG), RPA operations, training; Hq. 4th Air Force (AFRC), operational leadership. ***History:*** Activated March 1, 1918. Named for 2nd Lt. Peyton C. March Jr., who died of injuries sustained in a crash Feb. 18, 1918. ***Inn:*** 951-655-5241. ***Golf:*** General Old.

Moffett Federal Airfield, Calif. 94035. ***Nearest city:*** Mountain View. ***Phone:*** 650-603-9129. ***Acres:*** 112. ***Total Force:*** civilian, 528; military, 974. ***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. Later renamed to Moffett Air National Guard Base.

Pillar Point AFS, Calif. 94019. ***Nearest city:*** Half Moon Bay. ***Phone:*** 650-728-3246. ***Acres:*** 55. ***Total Force:*** civilian, 1; military, 974. ***Owning Command:*** USSF. ***Unit/mission:*** supports space and ballistic missile launches. ***History:*** Opened as an Army observation post in 1940; taken over by the Navy in 1958 as a control site for missile testing; transferred to the Air Force in 1964.

Sepulveda ANGS, Calif. 91406. ***Nearest city:*** Van Nuys. ***Phone:*** 858-276-9351. ***Acres:*** 26. ***Total Force:*** civilian, 0; military, 55. ***Component:*** ANG. ***Unit/mission:*** 261st Cyberspace Operations Squadron, mission assurance and threat mitigation support.

Travis AFB, Calif. 94535. ***Nearest city:*** Fairfield. ***Phone:*** 707-424-1110. ***Acres:*** 6,446. ***Total Force:*** civilian, 1,552; military, 9,454. ***Active-duty USAF:*** enlisted, 5,480; officer, 1,353. ***Active-duty USSF:*** enlisted, 0; officer, 6. ***Owning command:*** AMC. ***Unit/mission:*** 60th AMW (AMC), 349th AMW (AFRC), air mobility operations; David Grant USAF Medical Center. ***History:*** Activated May 17, 1943. Named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950. ***Museum:*** Heritage Center. ***Inn:*** 707-424-8000. ***Golf:*** Cypress Lakes.

Vandenberg SFB, Calif. 93437. ***Nearest city:*** Lompoc. ***Phone:*** 805-606-1110. ***Acres:*** 118,312. ***Total Force:*** civilian, 1,196; military, 2,696. ***Active-duty USAF:*** enlisted, 1,523; officer, 327. ***Active-duty USSF:*** enlisted, 433; officer, 324. ***Owning command:*** USSF. ***Unit/mission:*** Space Launch Delta 30 (USSF), space and launch range operations, host unit; 381st TRG (AETC), training; 576th FLTS (AFGSC), test; 21st SOPS (USSF), space operations; Hq. Space Operations Command (USSF), operational leadership; Joint Space Operations Center (STRATCOM), space C2 operations. ***History:*** Originally Army's Camp Cooke; activated October 1941. Reassigned to USAF June 7, 1957. Renamed for Gen. Hoyt S. Vandenberg, USAF's second Chief of Staff. ***Museum:*** Space and Missile Heritage Center. ***Inn:*** 805-606-1844.

COLORADO

Buckley SFB, Colo. 80011. ***Nearest city:*** Aurora. ***Phone:*** 720-847-9431. ***Acres:*** 4,234. ***Total Force:*** civilian: 1,111; military, 6,350. ***Active-duty USAF:*** enlisted, 922; officer, 207. ***Active-duty USSF:*** enlisted, 504; officer, 206. ***Owning com-***

mand: USSF. ***Unit/mission:*** 140th Wing (ANG), air mobility, fighter operations, mobile missile warning; Buckley Garrison (USSF); 566th IS (ACC), intelligence; Air Reserve Personnel Center, Guard and Reserve personnel support. ***History:*** Activated April 1, 1942, as gunnery training facility. ANG assumed control from Navy 1959. Became Active-duty Air Force facility Oct. 1, 2000. Renamed Buckley Space Force Base on June 4, 2021. Named for 1st Lt. John H. Buckley, WWI flier, killed Sept. 17, 1918. ***Inn:*** 720-847-5899.

Cheyenne Mountain SFS, Colo. 80914. ***Nearest city:*** Colorado Springs. ***Phone:*** 719-556-7321 (Peterson SFB). **Acres:** 567. ***Total Force:*** part of Peterson SFB. ***Owning command:*** USSF. **Unit/mission:** 721st MSG (USSF), support; NORAD/NORTHCOM Alternate Command Center, Integrated Tactical Warning and Attack Assessment operations, training. ***History:*** operational April 20, 1966.

Greeley ANGS, Colo. 80631. ***Nearest city:*** Greeley. ***Phone:*** 303-929-7768. ***Acres:*** 17. ***Total Force:*** civilian, 87; military, 286. ***Component:*** ANG. ***Unit/mission:*** 233rd Space Group, missile warning and space launch detection. ***History:*** Activated January 1996.

Peterson SFB, Colo. 80914. ***Nearest city:*** Colorado Springs. ***Phone:*** 719-556-7321. ***Acres:*** 1,442. ***Total Force:*** civilian, 3,521; military,6,088. ***Active-duty USAF:*** enlisted, 2,070; officer, 539. ***Active-duty USSF:*** enlisted, 770; officer, 537. ***Owning command:*** USSF. ***Unit/mission:*** Space Delta 2, space domain awareness; Space Delta 3, space electromagnetic warfare; Space Delta 4, strategic and theater missile warning; Space Delta 7, ISR; Space Base Delta 1, base operations; 52nd AS (AMC) (active associate), 200th AS (ANG), air mobility operations; 302nd AW (AFRC), air mobility, MAFFS operations; Hq. NORAD, Hq. NORTHCOM, operational leadership. ***History:*** Activated 1942. Named for 1st Lt. Edward J. Peterson, killed Aug. 8, 1942. ***Museum:*** Peterson Air and Space Museum. ***Inn:*** 719-556-7851. **Golf:** Silver Spruce.

Schriever SFB, Colo. 80912. ***Nearest city:*** Colorado Springs. ***Phone:*** 719-567-1110. ***Acres:*** 5,634. **Total Force:** civilian, 0; military, 3,130. ***Active-duty USAF:*** enlisted, 422; officer, 148. ***Active-duty USSF:*** enlisted, 910; officer, 606. ***Owning command:*** USSF. ***Unit/mission:*** Space Base Delta 1, base operations (USSF); 310th SW (AFRC), space operations; Detachment 1, USAF Warfare Center (ACC/USSF), R&D. ***History:*** Activated as Falcon AFS Sept. 26, 1985. Redesignated AFB June 13, 1988. Renamed for Gen. Bernard A. Schriever June 5, 1998.

U.S. Air Force Academy, Colo. 80840. ***Nearest city:*** Colorado Springs. ***Phone:*** 719-333-1110. ***Acres:*** 52,266. ***Total Force:*** civilian, 1,483; military, 2,286. ***Active-duty USAF***: enlisted, 1,327; officer, 886. ***Active-duty USSF***: enlisted, 10; officer, 59. ***Next higher echelon of command:*** HQ Air Force. ***Unit/mission:*** U.S. Air Force Academy (USAFA), education/training; Preparatory School, education/training; 10th ABW (Air Force Academy), support; 306th FTG (AETC), training. ***History:*** established April 1, 1954; headquartered at Lowry AFB until August 1958. Moved to permanent location in Colorado Springs August 1958. ***Museum:*** Visitor Center. ***Inn:*** 719-472-1940. ***Golf:*** Eisenhower.

CONNECTICUT

Bradley ANGB, Conn. 06026. ***Nearest cities:*** Hartford, Conn., and Springfield, Mass. ***Phone***: 860-292-2460. ***Acres:*** 148. ***Total Force:*** civilian, 207; military, 0. ***Component:*** ANG. ***Unit/mission:*** 103rd AW, air mobility operations. ***History:*** Named for Lt. Eugene M. Bradley, killed in P-40 crash August 1941.

DELAWARE

Dover AFB, Del. 19902. ***Nearest city:*** Dover. ***Phone:*** 302-677-3000. ***Acres:*** 3,824. ***Total Force***: civilian, 0; military, 4,901. ***Active-duty USAF:*** enlisted, 3,037; officer, 388. ***Owning command:*** AMC. ***Unit/mission:*** 436th AW (AMC), 512th AW (AFRC), air mobility operations; Air Force Mortuary Affairs Operations (USAF). ***History:*** Activated December 1941. Inactivated 1946. Reactivated February 1951. ***Museum:*** Air Mobility Command Museum. ***Inn:*** 302-677-2840. ***Golf:*** Eagle Creek.

New Castle ANGB, New Castle Airport, Del. 19720. ***Nearest city:*** Wilmington. ***Phone:*** 302-323-3408. ***Acres:*** 78. ***Total Force:*** civilian, 398; military, 1,502. ***Component:*** ANG. ***Unit/mission:*** 166th AW, air mobility, cyber operations.

DISTRICT OF COLUMBIA

JB Anacostia-Bolling, D.C. 20032. ***Nearest city:*** Washington, D.C. ***Phone:*** 703-545-6700. ***Acres:*** 1,027. ***Total Force:*** civilian, 1,620; military, 3,346. ***Active-duty USAF:*** enlisted, 1,727; officer, 967. ***Bolling owning command:*** AFDW. ***Unit/mission:*** 11th Operations Group (AFDW), support; 579th MDG (AFDW), clinic operations; Hq. Surgeon General (USAF). ***History:*** 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. ***Inn:*** Navy Gateway: 202-664-8587.

FLORIDA

Avon Park AFR, Fla. ***Nearest city:*** Avon Park. ***Phone:*** 863-452-4120. ***Acres:*** 100,929. ***Total Force:*** civilian, 62; military, 52. ***Owning command:*** ACC. ***Unit/mission:*** 598th Range Squadron, training.

Cape Canaveral SFS, Fla. 32920. ***Nearest city:*** Cocoa Beach. ***Phone:*** 321-494-5933. ***Acres:*** 16,239. ***Total Force:*** civilian, 517; military, 372. ***Active-duty USAF and USSF:*** (Part of Patrick SFB). ***Owning command:*** USSF. ***Unit/mission:*** Space Launch Delta 45th (USSF), 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 in 1974. ***Museums:*** Air Force Space and Missile Museum, Sands Space History Center.

Duke Field, Fla. 32542. ***Nearest city:*** Crestview. ***Phone:*** 850-883-6347. ***Acres:*** 1,946. ***Total Force:*** part of Eglin AFB. ***Component:*** AFRC. ***Unit/mission:*** 919th SOW (classic associate), special operations. ***History:*** named for Lt. Robert L. Duke, pilot killed Dec. 29, 1943, in test flight. Also known as Eglin AFB Auxiliary Field 3.

Eglin AFB, Fla. 32542. ***Nearest city:*** Niceville-Valparaiso. ***Phone:*** 850-882-1110. ***Acres:*** 449,421. ***Total Force:*** civilian, 5,781; military, 10,628. ***Active-duty USAF:*** enlisted, 5,063; officer, 1,397. ***Active-duty USSF:*** enlisted, 32; officer, 35. ***Owning command:*** AFMC. ***Unit/mission:*** 20th SPSS (USSF), space surveillance; 33rd FW (AETC), training; 53rd Wing (ACC), OT&E; 96th TW (AFMC), T&E, base support; 350th Spectrum Warfare Wing (AFMC), electronic warfare; AFRL Munitions Directorate (AFMC), R&D; PEO-Weapons/Air Force Life Cycle Management Center Armament Directorate (AFMC), acquisition. ***History:*** Activated 1935. Named for Lt. Col. Frederick I. Eglin, WWI flier killed in aircraft accident Jan. 1, 1937. ***Museum:*** Air Force Armament Museum. ***Inn:*** 850-389-4943/8761. ***Golf:*** Eglin.

Homestead ARB, Fla. 33039. ***Nearest city:*** Homestead. ***Phone:*** 786-415-7000. ***Acres:*** 2,465. ***Total Force:*** civilian, 485; military, 2,152. ***Component:*** AFRC. ***Unit/mission:*** 367th FS (active associate), 125th FW Det. 1 (ANG), 482nd FW (AFRC), fighter operations. ***Inn:*** 786-415-7198.

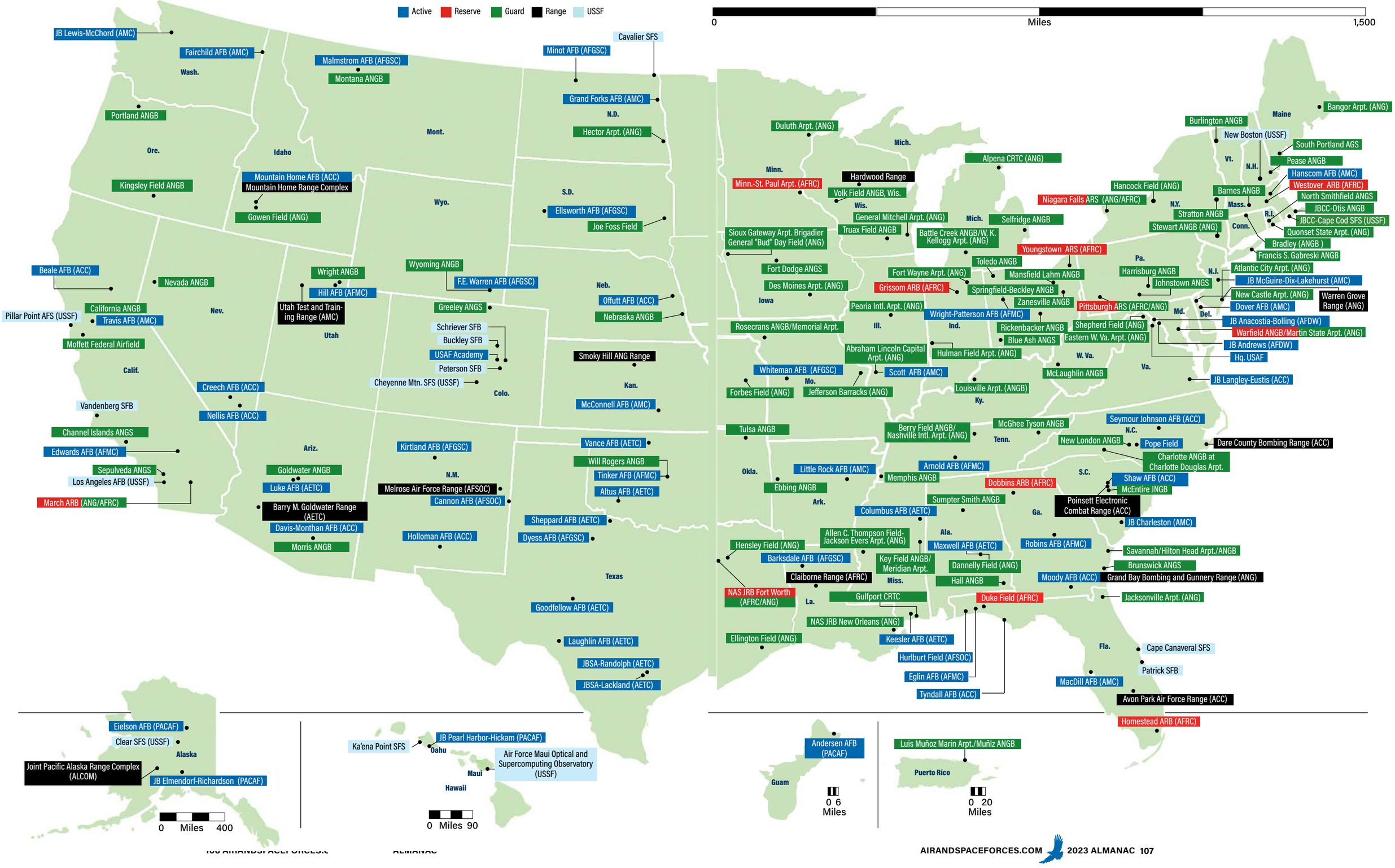
Hurlburt Field, Fla. 32544. ***Nearest city:*** Fort Walton Beach. ***Phone:*** 850-884-1110. ***Acres:*** 6,341. ***Total Force:*** civilian, 1,656; military, 9,277. ***Active-duty USAF:*** enlisted, 6,898; officer, 2,193. ***Active-duty USSF:*** enlisted, 14; officer, 8. ***Owning command:*** AFSOC. ***Unit/mission:*** 1st SOW (AFSOC), special operations; 24th SOW (AFSOC), special tactics operations; 39th IOS (ACC), training; 361st ISRG (ACC), ISR operations; 492nd SOW (AFSOC) training; 505th CCW (ACC), C2, ISR TTP development, test; 556th RED HORSE (AFRC), 823rd RED HORSE (ACC), bare base operations; 2nd Combat Weather Systems Squadron (ACC), OT&E, training; Hq. AFSOC, management. ***History:*** Activated 1943. Named for Lt. Donald W. Hurlburt, WWII pilot killed Oct. 1, 1943. ***Museum:*** Memorial Air Park. ***Inn:*** 850-884-7115. ***Golf:*** Gator Lakes.

Jacksonville ANGB, Jacksonville Intl. Airport, Fla. 32218. ***Nearest city:*** Jacksonville. ***Phone:*** 904-741-7030. ***Acres:*** 342. **Total Force:** civilian, 0; military, 1,090. ***Component***: ANG. ***Unit/mission:*** 125th FW, fighter, ISR operations.

MacDill AFB, Fla. 33621. ***Nearest city:*** Tampa. ***Phone:*** 813-828-1110. ***Acres:*** 5,866. ***Total Force:*** civilian, 0; military, 8,322. ***Active-duty USAF:*** enlisted, 2,971; officer, 699. ***Active-duty USSF:*** enlisted, 6; officer, 15. ***Owning command:*** AMC. ***Unit/mission:*** 6th ARW (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. ***Inn:*** 813-828-4259. ***Golf:*** Bay Palms.

Patrick SFB, Fla. 32925. ***Nearest city:*** Cocoa Beach. ***Phone:*** 321-494-1110. ***Acres:*** 2,324. ***Total Force:*** civilian, 1,678; military, 2,989. ***Active-duty USAF:*** enlisted, 1,302; officer, 383. ***Active-duty USSF:*** enlisted, 39; officer, 101. **Owning command:** USSF. ***Unit/mission:*** 45th SW (USSF), space launch operations; 114th SPCS (ANG), launch range support; 920th RQW (AFRC), personnel recovery operations; Air Force Technical Applications Center (ACC), nuclear monitoring. **History:** Activated 1940. Named for Maj. Gen. Mason M. Patrick, Chief of American Expeditionary Forces' Air Service in WWI and Chief of Air Service/Air Corps, 1921-27. **Museum:** Khobar Tower Memorial. ***Inn:*** 321-494-5428. ***Golf:*** Manatee Cove.

USAF & USSF BASES IN THE U.S.



Staff Sgt. Mercedee Wilds/ANG

Thirty-seven A-10 Thunderbolt II's sit on the flight line at Gowen Field, in Boise, Idaho.

Tyndall AFB, Fla. 32403. ***Nearest city***: Panama City. ***Phone:*** 850-282-1110. ***Acres:*** 28,891. ***Total Force:*** civilian, 2,709; military, 2,723. **Active-duty USAF:** enlisted, 1,738; officer, 415. **Active-duty USSF:** enlisted, 0; officer, 2. **Owning command:** ACC. ***Unit/mission:*** 53rd WEG (ACC), T&E; 101st AOG (ANG), C2 operations; 325th FW (ACC), 325th FW associate unit (ANG), training; 601st AOC (ACC/ANG), plan/direct air operations; Air Force Rescue Coordination Center (ACC), plan/direct inland rescue operations; Hq. Continental U.S. 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. ***Inn:*** 850-283-4210. ***Golf:*** Pelican Point.

GEORGIA

Brunswick ANGS, Brunswick Golden Isles Airport, Ga. 31525. ***Nearest city:*** Brunswick. ***Phone:*** 912-261-5604. ***Acres:*** 14. ***Total Force:*** civilian, 0; military, 184. ***Component:*** ANG. ***Unit/mission:*** 224th Joint Communications Support Squadron, combat communications.

Dobbins ARB, Ga. 30069. ***Nearest city:*** Marietta. ***Phone:*** 678-655-5000. ***Acres:*** 1,913. ***Total Force:*** civilian, 0; military, 1,645. ***Component:*** AFRC. ***Unit/mission:*** 94th AW, aeromedical evacuation, air mobility operations; Hq. 22nd Air Force, operational leadership. ***History:*** Activated 1943. Named for Capt. Charles Dobbins, pilot killed in WWII. ***Inn:*** 678-655-4745.

Grand Bay Bombing and Gunnery Range, Ala. ***Phone:*** 229-257-3510/2765. ***Nearest city:*** Lakeland. ***Acres***: 5,874. ***Owning command:*** ACC. ***Unit/mission:*** tactical air and ground maneuvers, weapons training.

Moody AFB, Ga. 31699. ***Nearest city:*** Valdosta. ***Phone:*** 229-257-1110. ***Acres:*** 5,521. ***Total Force:*** civilian, 0; military, 4,568. ***Active-duty USAF:*** enlisted, 4,164; officer, 453. ***Owning command:*** ACC. ***Unit/mission:*** 23rd Wing (ACC), fighter, personnel recovery operations; 81st FS (AETC); 93rd AGOW (ACC), battlefield airmen operations, expeditionary force protection, support; 476th FG (AFRC), fighter operations. ***History:*** Activated June 1941. Named for Maj. George P. Moody, killed May 5, 1941. ***Inn:*** 229-257-3893. ***Golf:*** Quiet Pines.

Robins AFB, Ga. 31098. ***Nearest city:*** Warner Robins. ***Phone:*** 478-926-1110. ***Acres:*** 6,935. ***Total Force***: civilian, 14,586; military, 5,525. ***Active-duty USAF:*** enlisted, 2,490; officer, 722. ***Active-duty USSF:*** enlisted, 2; officer, 9. ***Owning command:*** AFMC. ***Unit/mission:*** 78th ABW (AFMC), support; 94th APS (AFRC), aerial port operations; 116th ACW (ANG), 461st ACW (ACC), C2 operations; 638th SCMG (AFMC), systems life-cycle support; 5th CCG (ACC), combat communications operations; Hq. AFRC, management; Warner Robins ALC (AFMC), weapons maintenance, repair. ***History:*** Activated March 1942. Named for Brig. Gen. Augustine Warner Robins, an early chief of the Air Corps' Materiel Division, who died June 16, 1940. ***Museum:*** Museum of Aviation. ***Inn:*** 478-926-2100. ***Golf:*** Pine Oaks.

Savannah ANGB, Savannah/Hilton Head Intl. Airport, Ga. 31408. ***Nearest city:*** Garden City. ***Phone:*** 912-966-8290. ***Acres:*** 207. ***Total Force:*** civilian, 4; military, 962. ***Component:*** ANG. ***Unit/mission:*** 165th AW, air mobility, tactical communications, TACP operations, Air Dominance Center.

GUAM

Andersen AFB, Guam APO AP 96543. ***Nearest city:*** Yigo. ***Phone:*** 671-366-1110. ***Acres:*** 16,117. ***Total Force:*** civilian 0; military, 3,316. ***Active-duty USAF:*** enlisted, 2,060; officer, 18. ***Active-duty USSF:*** enlisted, 1; officer, 0. ***Owning command:*** PACAF. ***Unit/mission:*** 9th Operations Group Det. 4 (ACC), RPA operations; 22nd SOPS Det. 5 (USSF), 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. ***Inn:*** Navy Gateway: 671-979-5501. ***Golf:*** Palm Tree.

HAWAII

Air Force Maui Optical and Supercomputing Observatory, Hawaii, 96790. ***Nearest city:*** Kahului. **Phone:** 719-556-7321 (Peterson SFB operator). **Owning command:** USSF. ***Unit/mission:*** On the island of Maui, Detachment 15 of the Air Force Research Laboratory operates the observatory as part of Space Base Delta 1, Colo., providing space domain awareness.

JB Pearl Harbor-Hickam, Hawaii 96853. ***Nearest city:*** Honolulu. ***Phone:*** 808-449-7110. ***Acres:*** 6,129. ***Total Force***: civilian, 6,390; military, 12,612. ***Active-duty USAF:*** enlisted, 4,421; officer, 1,091. ***Active-duty USSF:*** enlisted, 67; officer, 47. ***Hickam owning command:*** PACAF. ***Unit/mission:*** 15th Wing (PACAF), 154th Wing (ANG), air mobility, fighter operations; 515th AMOW (AMC); 613th AOC (PACAF), C2 operations; 624th RSG (AFRC), bare base operations; 647th ABG (PACAF), support; Hq. PACAF, management, operational leadership. ***History:*** Pearl Harbor established 1908. Hickam dedicated 1935. Activated 1938. Formed as joint base under Navy lead 2010. Hickam named for Lt. Col. Horace M. Hickam, aviation pioneer killed in crash in Texas Nov. 5, 1934. ***Museums:*** USS Arizona Memorial, Bowfin Memorial and Museum. ***Inn:*** Navy Gateway: 808-800-2337. ***Golf:*** Mamala Bay.

Ka'ena Point SFS, Hawaii, 96791. ***Nearest city:*** Honolulu. ***Phone***: 719-556-7321 (Peterson SFB operator). ***Total Force:*** civilian, 14; military, 0. **Owning command:** USSF. **Unit/mission:** On the island of Oahu, Detachment 3 of the 21st Space Operations Squadron operates the remote tracking station of the Satellite Control Network as part of Space Base Delta 1, Colo. Personnel are responsible for tracking satellites in orbit, receiving and processing data, and enabling control of satellites by relaying commands. **History:** The station opened in 1959 to support the Corona reconnaissance program.

IDAHO

Gowen Field, Boise Air Terminal, Idaho 83705. ***Nearest city:*** Boise. ***Phone:*** 208-422-5333. ***Acres:*** 354. ***Total Force:*** civilian, 0; military, 2,041. ***Component:*** ANG. ***Unit/mission:*** 124th FW, fighter, cyber, TACP operations. ***History:*** Named for Lt. Paul R. Gowen, killed in B-10 crash in Panama July 11, 1938.

Mountain Home AFB, Idaho 83648. ***Nearest city:*** Mountain Home. ***Phone:*** 208-828-2111. ***Acres:*** 6,858. ***Total Force***: civilian, 438; military, 3,605. ***Active-duty USAF***: enlisted, 3,094; officer, 350. ***Owning command:*** ACC. ***Unit/mission:*** 366th FW (ACC), fighter operations, range management. ***History:*** Activated August 1943 as B-24 training base. Inactivated October 1945. Reactivated December 1948. Inactivated April 1950. Reactivated 1951. ***Inn:*** 208-828-5200. ***Golf:*** Silver Sage.

Mountain Home Range Complex, Idaho. ***Nearest city:*** Bruneau. ***Phone:*** 208-828-0154. ***Acres:*** 12,141 (Juniper Butte); 109,466 (Saylor Creek). ***Owning command:*** ACC (366th FW, Mountain Home AFB). ***Unit/mission:*** 266th Range Squadron (squadron is based at Mountain

Home AFB), unit-level and composite force training with air-to-ground training ranges, no-drop target complexes, and electronic combat sites.

ILLINOIS

Capital Airport ANGS, Abraham Lincoln Capital Airport, Ill. 62707. ***Nearest city:*** Springfield. ***Phone:*** 217-757-1267. ***Acres:*** 78. ***Total Force:*** civilian, 0; military, 857. ***Component:*** ANG. ***Unit/mission:*** 183rd Wing, 183rd Centralized Repair Facility (CRF), 183rd Air Operations Group (AOG).

Peoria ANGB, Gen. Wayne A. Downing Peoria Intl. Airport, Ill. 62707. ***Nearest city:*** Peoria. ***Acres:*** 720. ***Phone:*** 800-942-3771. ***Total Force:*** civilian, 19; military, 1,840. ***Component:*** ANG. ***Unit/mission:*** 182nd AW, air mobility, combat communications, TACP operations. Group (AOG).

Scott AFB, Ill. 62225. ***Nearest city:*** Belleville. ***Phone:*** 618-256-1110. ***Acres:*** 3,648. ***Total Force:*** civilian, 3,539; military, 6,964. ***Active-duty USAF:*** enlisted, 3,639; officer, 1,154. ***Active-duty USSF:*** enlisted, 2; officer, 2. ***Owning command:*** AMC. ***Unit/mission:*** 126th ARW (ANG), 375th AMW (AMC), air mobility operations; 618th AOC (TACC) (AMC), planning/directing worldwide air mobility operations; 635th SCOW (AFMC), global logistics support; 932nd AW (AFRC), air mobility operations; Cyberspace Capabilities Center (ACC), network integration, engineering, simulation; Hq. 18th Air Force (AMC), operational leadership; Hq. AMC, management; Hq. TRANSCOM, operational leadership. ***History:*** Activated June 14, 1917. Named for Cpl. Frank S. Scott, first enlisted man to die in an aircraft accident, Sept. 28, 1912. ***Museum***: Heritage Air Park. **Inn:** 618-256-1844. ***Golf:*** Cardinal Creek.

INDIANA

Fort Wayne ANGB, Fort Wayne Int. Airport, Ind. 46809. ***Nearest city:*** Fort Wayne. ***Phone:*** 260-478-3700. ***Acres:*** 69. ***Total Force:*** civilian, 0; military, 1,263. ***Component:*** ANG. ***Unit/mission:*** 122nd FW, fighter operations.

Grissom ARB, Ind. 46971. ***Nearest city:*** Kokomo. ***Phone:*** 765-688-5211. ***Acres:*** 1,719. ***Total Force:*** civilian, 466; military, 1,629. ***Component:*** AFRC. ***Unit/mission***: 434th ARW, air refueling operations. ***History:*** Activated 1942 as NAS Bunker Hill. Reactivated June 1954 as Bunker Hill AFB. Renamed May 1968 for Lt. Col. Virgil I. "Gus" Grissom, killed Jan. 27, 1967, in Apollo capsule fire. Realigned as AFRC base Oct. 1, 1994. Home to Air Force Reserve, Army Reserve, and Marine Corps Reserve units. ***Inn:*** 765-681-5082. ***Golf:*** Grissom.

Airman 1st Class Madeline Baisey

Staff Sgt. John Eckoff inspects a C-130J at Scott Air Force Base, Ill.

Hulman Field ANGB, Ind. 47803. ***Nearest city:*** Terre Haute. ***Phone:*** 812-877-5210. ***Acres:*** 121. ***Total Force:*** civilian, 0; military, 951. ***Component:*** ANG. ***Unit/mission:*** 181st IW, DCGS, TACP operations.

IOWA

Des Moines ANGB, Des Moines Intl. Airport, Iowa 50321. ***Nearest city:*** Des Moines. ***Phone:*** 515-261-8290. ***Acres:*** 172. ***Total Force:*** civilian, 0; military, 932. ***Component:*** ANG. ***Unit/mission:*** 132nd Wing, DTOC and RPA, cyber, and ISR operations.

Fort Dodge ANGS, Iowa 50501. ***Nearest city:*** Fort Dodge. ***Phone:*** (515) 574-3208. ***Acres:*** 13. ***Total Force***: civilian, 33; military, 237. ***Component:*** ANG. ***Unit/mission:*** 133rd Test Squadron, command and control.

Sioux Gateway Airport Brigadier General "Bud" Day Field, Iowa 51111. ***Nearest city:*** Sioux City. ***Phone:*** 712-233-0732/0809. ***Acres:*** 269. ***Total Force:*** civilian, 0; military, 1,108. ***Component:*** ANG. ***Unit/mission:*** 185th ARW, air mobility operations. ***History:*** Activated as Sioux City AAB in July 1942. Closed in December 1945. Reopened in September 1946 as Sioux City ARB. Returned to joint civil-military use. Named in 2002 for retired Col. George E. "Bud" Day, Vietnam POW and MOH recipient, and renamed in 2018 following Day's posthumous promotion to brigadier general.

KANSAS

Forbes Field ANGB, Kan. 66619. ***Nearest city:*** Topeka. ***Phone:*** 785-862-1234. ***Acres:*** 215. ***Total Force:*** civilian, 272; military, 1,737. Component: ANG. ***Unit/mission:*** 190th ARW, air mobility, combat weather operations. ***History:*** Named for Maj. Daniel H. Forbes Jr., pilot killed June 5, 1948, test-flying Northrop YB-49 "Flying Wing."

McConnell AFB, Kan. 67221. ***Nearest city:*** Wichita. ***Phone:*** 316-759-6100. ***Acres:*** 3,577. ***Total Force:*** civilian, 0; military, 4,641. ***Active-duty USAF:*** enlisted, 2,504; officer, 360. ***Active-duty USSF:*** enlisted, 0; officer, 1. ***Owning command:*** AMC. ***Unit/mission:*** 22nd ARW (AMC), air mobility operations; 184th Wing (ANG), cyber, DCGS, ISR operations, space C2, TACP operations; 931st ARW (AFRC), air mobility operations. ***History:*** Activated June 5, 1951. Named for three Wichita natives, the McConnell brothers—Lt. Col. Edwin M. (died Sept. 1, 1997), Capt. Fred J. (died in a private airplane crash Oct. 22, 1945), and 2nd Lt. Thomas L. (killed July 10, 1943)—all WWII B-24 pilots. ***Inn:*** 316-759-6999.

Smoky Hill Weapons Range, Kan. 67401. ***Nearest city:*** Salina. ***Acres***: 33,878. ***Component***: ANG. ***Unit/mission:*** 284th Air Support Operations Squadron; bombing range, combined arms training.

KENTUCKY

Louisville ANGB, Louisville Intl. Airport, Ky. 40213. ***Nearest city:*** Louisville. ***Phone:*** 502-413-4400. ***Total Force:*** civilian, 0; military, 1,168. ***Component:*** ANG. ***Unit/mission***: 123rd AW, air mobility, bare base, special tactics operations.

LOUISIANA

Barksdale AFB, La. 71110. ***Nearest city:*** Bossier City. ***Phone:*** 318-456-1110. ***Acres:*** 22,504. ***Total Force:*** civilian, 1,394; military, 6,346. ***Active-duty USAF:*** enlisted, 4,214; officer, 987. ***Owning command:*** AFGSC. ***Unit/mission:*** 2nd BW (AFGSC), bomber operations; 307th BW (AFRC), bomber operations, training; Hq. AFGSC, management; Hq. 8th Air Force (AFGSC), operational leadership. ***History:*** Activated Feb. 2, 1933. Named for Lt. Eugene H. Barksdale, WWI airman killed in August 1926 crash. ***Museum:*** Barksdale Global Power Museum. ***Inn:*** 318-456-3091. ***Golf:*** Bomber Bayou.

Claiborne Range, La. ***Nearest city:*** Alexandria. ***Phone:*** 318-487-0378. Acres: 7,800. ***Owning command:*** AFRC. ***Unit/mission:*** 307th Operations Support Squadron; bombing, exercise and target training, and electronic countermeasure training.

NAS JRB New Orleans, La. 70143. ***Nearest city:*** New Orleans. ***Phone:*** 504-678-7569. ***Acres:*** 5,299 (ANG: 89). ***Total Force:*** civilian, 0; military, 2,673. ***Component:*** ANG. ***Unit/mission:*** 122nd ASOS (Pineville, La.), TACP; 159th FW, fighter operations; 214th EIS, cyber operations; 236th CBCS (Hammond, La.), combat communications.

MAINE

Bangor ANGB, Bangor Intl. Airport, Maine 04401. ***Nearest city:*** Bangor. Phone: 207-404-7700 ***Acres:*** 281. ***Total Force***: civilian, 634; military, 1,422. ***Component:*** ANG. ***Unit/mission:*** 101st ARW, air mobility, combat communications.

South Portland AGS, Maine 04106. ***Nearest city:*** South Portland. ***Phone:*** 207-756-7904 Acres: 12. ***Total Force***: civilian, 0; military, 8. ***Component***: ANG. ***Unit/mission:*** 265th Combat Communications Squadron, 243rd Engineering Installation Squadron.

MARYLAND

JB Andrews, Md. 20762. ***Nearest city:*** Washington, D.C. ***Phone***: 301-981-1110. ***Acres***: 4,903. ***Total Force:*** civilian, 0; military, 10,229. ***Active-duty USAF:*** enlisted, 4,094; officer, 1,912. ***Active-duty USSF:*** enlisted, 100; officer, 121. ***Owning command:*** AFDW. ***Unit/mission:*** 11th Wing (AFDW), helicopter operations, support; 89th AW (AMC), air mobility operations; 113th Wing (ANG), air mobility, fighter operations; 459th ARW (AFRC), air mobility operations; 844th CG (AFDW), cyber operations; Air Force Legal Operations Agency (USAF); Air Force Review Boards Agency (USAF); ANG Readiness Center (ANG), support. ***History:*** Activated May 1943. NAF Washington dates from 1919 at Anacostia; moved to Andrews 1958. Formed JB Andrews-NAF Washington under Air Force lead 2010. Andrews named for Lt. Gen. Frank M. Andrews, military air pioneer and WWII commander of the European theater, killed in aircraft accident May 3, 1943, in Iceland. ***Inn:*** 301-981-4614. ***Golf:*** The Courses at Andrews.

Warfield ANGB, Martin State Airport, Md. 21220. ***Nearest city***: Baltimore. ***Phone:*** 410-918-6001. ***Acres:*** 175. ***Total Force***: civilian, 189; military, 1,213. ***Component:*** ANG. ***Unit/mission:*** 175th Wing, cyber, fighter operations.

MASSACHUSETTS

Barnes ANGB, Westfield-Barnes Regional Airport, Mass. 01085. ***Nearest city:*** Westfield. ***Phone***: 413-568-9151. ***Total Force:*** civilian, 339; military, 1,023. ***Component:*** ANG. ***Unit/mission:*** 104th FW, fighter operations.

Hanscom AFB, Mass. 01731. ***Nearest city:*** Boston. ***Phone:*** 781-225-1110. ***Acres:*** 846. ***Total Force:*** civilian, 2,734; military, 1,400. ***Active-duty USAF:*** enlisted, 684; officer, 717. ***Active-duty USSF:*** enlisted, 12; officer, 68. ***Owning command:*** AFMC. ***Unit/mission:*** 66th ABG (AFMC), support; PEO-Battle Management, PEO-C3I and Networks (AFMC), PEO-Nuclear Command, Control, and Communications (NC3) (AFMC) acquisition. ***History:*** Activated 1941. Named for Laurence G. Hanscom, a pre-WWII advocate of private aviation, killed in light plane accident 1941. ***Inn:*** 781-225-4444. ***Golf:*** Patriot.

Joint Base Cape Cod, Mass., 02542. ***Nearest city:*** Buzzards Bay. ***Phone:*** 508-968-4000. ***Total Force:*** civilian, 302; military, 2,177. ***Major components:*** Camp Edwards, Massachusetts Army National Guard; Otis ANGB; Cape Cod AFS; Coast Guard Air Station Cape Cod.

JBCC-Cape Cod SFS, Mass. 02561. ***Nearest city:*** Sandwich. ***Phone:*** 508-968-3277. ***Acres:*** 101. ***Total Force:*** civilian, 2; military, 86. ***Owning command:*** USSF. ***Unit/mission:*** 6th SWS (USSF), missile warning. ***History:*** Established April 4, 1980, as Cape Cod Missile Early Warning Station. Renamed Jan. 5, 1982.

JBCC-Otis ANGB, Mass. 02542. ***Nearest city:*** Falmouth. ***Phone:*** 508-968-4003. ***Acres:*** 4,026. ***Total Force:*** civilian, 302; military, 2,177. ***Component:*** ANG. ***Unit/mission:*** 102nd IW, C2, DCGS operations, EIG, WXF; 202nd ISRG, cyber intelligence; 253rd CEIG, combat communications, cyber. ***History:*** Named for 1st Lt. Frank J. Otis, Massachusetts ANG flight surgeon and pilot, killed in 1937 crash.

Westover ARB, Mass. 01022. ***Nearest city:*** Chicopee. ***Phone:*** 413-557-1110. ***Acres:*** 2,181. ***Total Force:*** civilian, 603; military, 2,817. Component: AFRC. ***Unit/mission:*** 439th AW, C-5M air mobility operations. ***History:*** Dedicated April 6, 1940. Named for Maj. Gen. Oscar Westover, Chief of the Air Corps, killed Sept. 21, 1938. ***Inn:*** 413-593-5421.

MICHIGAN

Alpena CRTC, Alpena County Regional Airport, Mich. 49707. ***Nearest city:*** Alpena. ***Phone:*** 989-354-6583. ***Acres:*** 657. ***Total Force:*** civilian, 8; military, 123. ***Component:*** ANG. ***Unit/mission:*** training support and facilities.

Battle Creek ANGB, W. K. Kellogg Airport, Mich. 49037. ***Nearest city:*** Battle Creek. ***Phone:*** 269-969-3234. ***Total Force:*** civilian, 0; military, 1,239. ***Component:*** ANG. ***Unit/mission:*** 110th Wing, MQ-9 Reaper, C2, cyber, agile combat support.

Selfridge ANGB, Mich. 48045. ***Nearest city:*** Mount Clemens. ***Phone:*** 586-239-4011. ***Acres:*** 3,603. ***Total Force:*** civilian, 1,007; military, 2,260. ***Component:*** ANG. ***Unit/mission:*** 127th Wing, air mobility, fighter 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. ***Museum:*** Selfridge Military Air Museum. ***Golf:*** Selfridge.

MINNESOTA

Duluth ANGB, Duluth Intl. Airport, Minn. 55811. ***Nearest city:*** Duluth. ***Phone:*** 218-788-7210. ***Acres:*** 174. ***Total Force:*** civilian, 0; military, 1,314. ***Component:*** ANG. ***Unit/mission:*** 148th FW, EOD, fighter operations.

Minneapolis-St. Paul ARS, Minneapolis-St. Paul Intl. Airport, Minn. 55450. ***Nearest city:*** Minneapolis. ***Phone:*** 612-713-1000. ***Acres:*** 246. ***Total Force:*** civilian, 0; military, 783. Component: ANG/AFRC. ***Unit/mission:*** 133rd AW (ANG), air mobility operations; 934th AW (AFRC), air mobility, cyber operations.

MISSISSIPPI

Allen C. Thompson Field ANGB, Jackson-Medgar Wiley Evers Intl. Airport, Miss. 39232. ***Nearest city:*** Jackson. ***Phone:*** 601-405-8300. ***Acres:*** 311. ***Total Force:*** civilian, 1,139; military, 1,205. ***Component:*** ANG. ***Unit/mission:*** 172nd AW, 183rd AS, 183rd Aeromedical Evacuation Squadron, air mobility operations.

Columbus AFB, Miss. 39710. ***Nearest city:*** Columbus. ***Phone:*** 662-434-1110. ***Acres:*** 4,919. ***Total Force:*** civilian, 588; military, 1,436. ***Active-duty USAF:*** enlisted, 518; officer, 951. ***Owning command:*** AETC. ***Unit/mission:*** 14th FTW (AETC), pilot training. ***History:*** Activated 1942 for pilot training. ***Inn:*** 662-434-2548.

Gulfport CRTC, Gulfport-Biloxi Intl. Airport, Miss. 39507. ***Nearest city:*** Gulfport. ***Phone:*** 228-214-6047. ***Acres:*** 277. ***Total Force:*** civilian, 756; military, 2,987. ***Component:*** ANG. ***Unit/mission:*** 209th Special Operations Civil Engineering Squadron, 255th Air Control Squadron; cross-domain training.

Keesler AFB, Miss. 39534. ***Nearest city:*** Biloxi. ***Phone:*** 228-377-1110. ***Acres:*** 1,670. ***Total Force:*** civilian, 1,569; military, 6,142. ***Active-duty USAF:*** enlisted, 3,638, officer, 721. ***Active-duty USSF:*** enlisted, 73, officer, 24. ***Owning command:*** AETC. ***Unit/mission:*** 81st TRW (AETC), training; 403rd Wing (AFRC), air mobility operations, weather reconnaissance; Hq. 2nd Air Force (AETC), operational leadership. ***History:*** Activated June 12, 1941. Named for 2nd Lt. Samuel R. Keesler Jr., a native of Mississippi and WWI aerial observer killed in action Oct. 9, 1918. ***Inn:*** 228-374-0088. ***Golf:*** Bay Breeze.

Key Field ANGB, Meridian Regional Airport, Miss. 39307. ***Nearest city:*** Meridian. ***Phone:*** 601-484-9000. ***Acres:*** 126. ***Total Force:*** civilian, 0; military, 1,262. ***Component:*** ANG. ***Unit/mission:*** 186th ARW, air mobility, C2, ISR, TACP operations. ***History:*** Named after Fred and Al Key, air-to-air refueling pioneers and 1935 flight-endurance record holders for 27 days aloft in their aircraft Ole Miss, on permanent display at the National Air and Space Museum.

MISSOURI

Jefferson Barracks ANGB, Mo. 63125. ***Nearest city:*** St. Louis. ***Phone:*** 314-527-8000. ***Acres:*** 135. ***Total Force:*** civilian, 105; military, 1,245. ***Component:*** ANG. ***Unit/mission:*** 131st MSG, support; 157th AOG, C2 operations; 239th CBCS, combat communications.

Rosecrans ANGB, Rosecrans Memorial Airport, Mo. 64503. ***Nearest city:*** St. Joseph. ***Phone:*** 816-236-3300. ***Acres:*** 90. ***Total Force:*** civilian, 0; military, 1,004. ***Component:*** ANG. ***Unit/mission***: 139th AW (ANG), air mobility operations; Advanced Airlift Tactics Training Center (ANG/AFRC).

Whiteman AFB, Mo. 65305. ***Nearest city:*** Knob Noster. ***Phone:*** 660-687-1110. ***Acres:*** 5,566. ***Total Force:*** civilian, 938; military, 5,697. ***Active-duty USAF:*** enlisted, 3,361; officer, 544. ***Active-duty USSF:*** enlisted, 0; officer, 9. ***Owning command:*** AFGSC. ***Unit/mission:*** 72nd Test and Evaluation Squadron (AFGSC), T&E; 131st BW (ANG), bomber operations; 325th WPS (ACC), tactics training; 442nd FW (AFRC), fighter operations; 509th BW (AFGSC), bomber operations. ***History:*** Activated 1942. Named for 2nd Lt. George A. Whiteman, first pilot to die in aerial combat during the attack on Pearl Harbor. ***Inn:*** 660-687-1844. ***Golf:*** Royal Oaks.

MONTANA

Malmstrom AFB, Mont. 59402. ***Nearest city:*** Great Falls. ***Phone:*** 406-731-1110. ***Acres:*** 3,628. ***Total Force:*** civilian, 599; military, 3,258. ***Active-duty USAF:*** enlisted, 2,712; officer, 446. ***Active-duty USSF:*** enlisted, 7; officer, 1. ***Owning command:*** AFGSC. ***Unit/mission:*** 341st MW

Airman 1st Class Bryson Britt

B-2 Spirit stealth bombers during exercise Spirit Vigilance at Whiteman Air Force Base, Mo.

Paul Honnick/USSF

Dawn at New Boston Space Force Station, N.H. The 23rd Space Operations Squadron provides satellite command and control.

(AFGSC), ICBM operations; 819th RED HORSE (ACC/ANG), bare base operations. ***History:*** Activated Dec. 15, 1942. Named for Col. Einar A. Malmstrom, WWII fighter commander killed in air accident Aug. 21, 1954. ***Inn:*** 406-727-8600.

Montana ANGB, Great Falls Intl. Airport, Mont. 59404. ***Nearest city:*** Great Falls. ***Phone:*** 406-791-0159. ***Acres:*** 139. ***Total Force:*** civilian, 0; military, 777. ***Component***: ANG. ***Unit/mission:*** 120th AW, air mobility operations, RED HORSE.

NEBRASKA

Nebraska ANGB, Lincoln Airport, Neb. 68524. **Nearest city:** Lincoln. ***Phone:*** 402-309-1219. ***Acres:*** 129. ***Total Force:*** civilian, 0; military, 1,734. ***Component:*** ANG. ***Unit/mission:*** 155th ARW, air mobility operations.

Offutt AFB, Neb. 68113. ***Nearest city:*** Bellevue. ***Phone***: 402-294-1110. ***Acres:*** 1,923. ***Total Force:*** civilian, 2,500; military, 7,004. ***Active-duty USAF:*** enlisted, 4,817; officer, 1,263. ***Active-duty USSF:*** enlisted, 7; officer, 7. ***Owning command:*** ACC. ***Unit/mission:*** 55th Wing (ACC), ISR, electronic attack; Hq. STRATCOM, operational leadership; 557th Weather Wing (ACC), management; 595th C2 Group (AFGSC), operations (NC2); 170th Group (ANG), support, training. ***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 on Jan. 13, 1948, transferred to USAF. ***Museum:*** Zorinsky Memorial Air Park. ***Inn:*** 402-294-3671. ***Golf:*** Willow Lakes.

NEVADA

Creech AFB, Nev. 89018. ***Nearest city:*** Indian Springs. ***Phone:*** 702-652-1110. ***Acres:*** 2,318. ***Total Force:*** civilian, 101; military, 3,437. ***Active-duty USAF:*** enlisted, 2,184; officer, 998. ***Active-duty USSF:*** enlisted, 5; officer, 1. ***Owning command:*** ACC. ***Unit/mission:*** 432nd WG (ACC), 726th OG (AFRC), 556th Test and Evaluation Sq. (ACC), 232nd Operations Sq. (ANG), RPA operations; 799th ABG (ACC), support. ***History:*** Built in 1943 as auxiliary landing field to support air-to-air gunnery and other AAF training. Called Indian Springs Airport. Closed in 1947. Reopened in 1949. Became Indian Springs AFB in 1950. Transferred to Air Research and Development Command in 1952. Redesignated Indian Springs Air Force Auxiliary Field and assigned to Nellis AFB in 1964. In 2005, renamed Creech AFB for Gen. Wilbur L. "Bill" Creech, commander, Tactical Air Command, 1978 to 1984.

Nellis AFB, Nev. 89191. ***Nearest city:*** Las Vegas. ***Phone:*** 702-652-1110. ***Acres:*** 14,160. ***Total Force:*** civilian, 1,628; military, 8,746. ***Active-duty USAF:*** enlisted, 6,449; officer, 1,293. ***Active-duty USAF:*** enlisted, 7; officer, 22. ***Owning command:*** ACC. ***Unit/mission:*** 57th Wing (ACC), combat training; 99th ABW (ACC), support; 820th RED HORSE (ACC), bare base operations; 926th Wing (AFRC), associate missions at Beale, Creech, Eglin, Hurlburt, Nellis, Schriever; USAF Warfare Center (ACC), operational testing, tactics development, training; Nevada Test and Training Range (ACC), range management, operations. ***History:*** Activated July 1941 as Las Vegas AAF with Army Air Corps Flexible Gunnery School. Closed 1947. Reopened 1948. Named for 1st Lt. William H. Nellis, WWII P-47 fighter pilot, killed Dec. 27, 1944. ***Museum:*** The Thunderbirds Museum. ***Inn:*** 702-652-2711. ***Golf:*** Sunrise Vista.

Nevada ANGB, Reno-Tahoe Intl. Airport, Nev. 89502. ***Nearest city:*** Reno. ***Phone:*** 775-788-4515. ***Acres:*** 60. ***Total Force:*** civilian, 0; military, 1,131. ***Component:*** ANG. ***Unit/mission***: 152nd AW, air mobility, DCGS operations. ***History:*** Named for Maj. Gen. James A. May, Nevada adjutant general, 1947 to 1967.

NEW HAMPSHIRE

New Boston SFS, N.H. 03070. ***Phone:*** 719-567-5040 (Space Delta 6). ***Acres:*** 2,873. ***Total Force:*** civilian, 38; military, 5. ***Component:*** USSF. ***Unit/mission:*** 23rd Space Operations Squadron, satellite command and control. ***History:*** Began as a research-and-development facility in 1960 with van-mounted equipment, becoming part of the operational Air Force in 1987.

Pease ANGB, Portsmouth Intl. Airport at Pease, N.H. 03803. ***Nearest city:*** Portsmouth. ***Phone:*** 603-430-3577. ***Acres:*** 216. ***Total Force:*** civilian, 0; military, 1,101. ***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. Air Force base closed March 31, 1991.

NEW JERSEY

Atlantic City ANGB, Atlantic City Intl. Airport., N.J. 08234. ***Nearest city:*** Egg Harbor Township. ***Phone:*** 609-761-6000. ***Acres:*** 307. ***Total Force:*** civilian, 0; military, 1,390. ***Component:*** ANG. ***Unit/mission:*** 177th FW, fighter, TACP operations.

JB McGuire-Dix-Lakehurst, N.J. 08641. ***Nearest city:*** Wrightstown. ***Phone:*** 609-754-1100. ***Acres:*** 3,620 (McGuire AFB); 30,720 (Fort Dix). ***Total Force:*** civilian, 2,620; military, 13,337. ***Active-duty USAF:*** enlisted, 4,462; officer, 666. ***Active-duty USSF:*** enlisted, 2; officer, 1. ***Owning command:*** AMC. ***Unit/mission:*** 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; U.S. Air Force Expeditionary Center (AMC), training. ***History:*** McGuire activated 1941 as Fort Dix AAB. Closed after WWII. Reopened as McGuire 1948. Dix activated 1917. Navy purchased Army's Camp Kendrick in 1921 for airship station, renamed Lakehurst for city of Lakehurst, N.J. Formed as joint base under Air Force lead 2009. McGuire named for Maj. Thomas B. McGuire Jr., P-38 pilot, second leading U.S. 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 U.S senator. ***Museum:*** Fort Dix Military Heritage Hall, Army Reserve Mobilization Museum. ***Inn:*** 609-754-4667; 732-323-2266 (Lakehurst). ***Golf:*** Fountain Green, Pine Ridge.

Warren Grove Range, N.J. ***Nearest city:*** Warren Grove. ***Phone:*** 609-754-1100. (108th Wing at JB McGuire-Dix-Lakehurst). ***Acres:*** 9,416. ***Component:*** ANG. ***Unit/mission:*** air and ground combat training. ***History:*** Began as a World War II weapons research location and became part of the New Jersey Air National Guard in the early 1960s.

NEW MEXICO

Cannon AFB, N.M. 88103. ***Nearest city:*** Clovis. ***Phone:*** 575-784-4131. ***Acres:*** 4,522. ***Total Force:*** civilian, 0; military, 5,125. ***Active-duty USAF:*** enlisted, 4,252; officer, 950. ***Active-duty USSF:*** enlisted, 1; officer, 0. ***Owning command:*** AFSOC. ***Unit/mission:*** 27th SOW (AFSOC), special oper-

Senior Airman Cameron Schultz

A T-38 Talon and T-1 Jayhawk training aircraft painted in heritage colors from Vance Air Force Base, Okla., fly in a dissimilar formation.

ations. ***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. ***Inn:*** 575-784-2918/2919. ***Golf:*** Whispering Winds.

Holloman AFB, N.M. 88330. ***Nearest city:*** Alamogordo. ***Phone:*** 575-572-7381. ***Acres:*** 57,152. ***Total Force:*** civilian, 809; military, 4,590. ***Active-duty USAF:*** enlisted, 4,415; officer, 600. ***Active-duty USSF:*** enlisted, 1; officer, 5. ***Owning command:*** AETC. ***Unit/mission:*** 49th Wing (AETC), RPA training; 54th FG (AETC), fighter operations; 704th TG (AFMC), test; 429th ACTS (AFRC), RPA training. ***History:*** Activated 1941. Named for Col. George Holloman, guided-missile pioneer. ***Inn:*** 505-595-1905. ***Golf:*** Apache Mesa.

Kirtland AFB, N.M. 87117. ***Nearest city:*** Albuquerque. ***Phone:*** 505-846-0011. ***Acres:*** 43,842. ***Total Force:*** civilian, 2,695; military, 4,942. ***Active-duty USAF:*** enlisted, 2,414; officer, 690. ***Active-duty USSF:*** enlisted, 23; officer, 134. ***Owning command:*** AFGSC. ***Unit/mission:*** 58th SOW (AETC), 150th SOW (ANG), special operations, CSAR training; 377th ABW (AFGSC), executive agent for installation, support, nuclear operations; AFNWC (AFMC), acquisition, sustainment; Air Force Safety Center (USAF), management; AFRL Directed Energy Directorate (AFMC), R&D; PEO-Strategic Systems (AFMC), acquisition; Space Development and Test Directorate (AFSPC), test; AFRL Space Vehicles Directorate (AFMC), R&D. ***History:*** Activated January 1941. Named for aviation pioneer Col. Roy C. Kirtland. ***Inn:*** 505-846-9653. ***Golf:*** Tijeras Arroyo.

Melrose AF Range, N.M. ***Nearest city:*** Floyd. ***Acres:*** 79,973. ***Owning command:*** AFSOC. ***Unit/mission:*** part of 27th Special Operations Wing. ***History:*** Established as a bombing range in 1952.

NEW YORK

Francis S. Gabreski ANGB, Francis S. Gabreski Airport, N.Y. 11978. ***Nearest city:*** Westhampton Beach. ***Phone:*** 631-723-7470. ***Acres:*** 80. ***Total Force:*** civilian, 154; military, 1,116. ***Component:*** ANG. ***Unit/mission:*** 106th RQW, personnel recovery operations. ***History:*** Named for Col. Francis S. Gabreski, WWII and Korean War ace.

Hancock Field ANGB, N.Y. 13211. ***Nearest city:*** Syracuse. ***Phone:*** 800-982-3696. ***Acres:*** 322. ***Total Force:*** civilian, 16; military, 2,249. ***Component:*** ANG. ***Unit/mission:*** 174th ATKW, ISR, RPA, space C2, TACP operations; ISR, RPA training.

Niagara Falls ARS, Niagara Falls Intl. Airport, N.Y. 14304. ***Nearest city:*** Niagara Falls. ***Phone:*** 716-236-2000. ***Acres:*** 986. ***Total Force:*** civilian, 0; military, 2,095. ***Component:*** ANG/AFRC. ***Unit/mission:*** 107th ATKW (ANG), RPA operations; 914th ARW (AFRC), air mobility operations.

Stewart ANGB, Stewart Intl. Airport, N.Y. 12550. ***Nearest city:*** Newburgh. ***Phone:*** 845-563-2031. ***Acres:*** 267. ***Total Force:*** civilian, 276; military, 1,933. ***Component:*** ANG. ***Unit/mission:*** 105th AW, air mobility, EIS. ***History:*** Stewart AFB until 1969. Acquired by state of New York 1970.

Stratton ANGB, Schenectady County Airport, N.Y. 12302. ***Nearest city:*** Scotia. ***Phone:*** 518-344-2000. ***Acres:*** 129. ***Total Force:*** civilian, 207; military, 1,349. ***Component:*** ANG. ***Unit/mission:*** 109th AW, air mobility operations, Antarctic support.

NORTH CAROLINA

Charlotte ANGB, Charlotte Douglas Intl. Airport, N.C. 28208. ***Nearest city:*** Charlotte. ***Phone***: 704-391-4100. ***Acres:*** 110. ***Total Force:*** civilian, 0; military, 1,558. ***Component:*** ANG. ***Unit/mission:*** 145th AW, aeromedical evacuation, air mobility, combat communications, TACP operations.

Dare County Bombing Range, N.C. ***Nearest city:*** Goldsboro. ***Phone:*** 919-722-1110 (Seymour Johnson AFB operator). ***Acres:*** 46,604. ***Owning command:*** ACC. ***Unit/mission:*** air-to-surface target training.

New London ANGB, Stanly County Airport, N.C. 28127. ***Phone:*** 704-391-4141 (145th AW public affairs). ***Acres:*** 114. ***Total Force:*** civilian, 28; military, 291. ***Component:*** ANG. ***Unit/mission:*** 263rd CCS, strategic emergency communications; 118th ASOS, terminal attack control of joint close air support missions; 235th ATS, air traffic control.

Pope Field, N.C. 28308. ***Nearest city:*** Fayetteville. ***Phone:*** 910-394-1110. ***Acres:*** N/A. ***Total Force:*** civilian, 215; military, 1,414. ***Active-duty USAF:*** enlisted, 1,848; officer, 472. ***Active-duty USSF:*** enlisted, 1; officer, 1. ***Unit/mission:*** 18th ASOG (ACC), combat weather, TACP operations; 21st STS, 24th STS (AFSOC), special tactics operations; 43rd AG (AMC), air mobility operations; USAF Combat Control School (AF SOC), training. ***History:*** Activated 1919. 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. ***Museum:*** Air Park. ***Inn:*** IHG Army Hotels, 910-396-7700.

Seymour Johnson AFB, N.C. 27531. ***Nearest city:*** Goldsboro. ***Phone:*** 919-722-1110. ***Acres:*** 4,129. ***Total Force:*** civilian, 0; military, 5,953. ***Active-duty USAF:*** enlisted, 4,270; officer, 565. ***Owning command:*** ACC. ***Unit/mission:*** 4th FW (ACC), 414th FG (AFRC), fighter operations; 567th RED HORSE (ACC), bare base operations; 916th ARW (AFRC), air mobility operations. ***History:*** Activated Sept. 12, 1942, and named for Navy Lt. Seymour A. Johnson, Goldsboro native, killed March 5, 1941. ***Inn:*** 919-722-0385.

NORTH DAKOTA

Cavalier SFS, N.D. 58220. ***Nearest city:*** Cavalier. ***Phone:*** 701-993-3292. ***Acres:*** 295. ***Total Force:*** civilian, 6; military, 47. ***Owning command:*** USSF. ***Unit/mission:*** 10th SWS (USSF), missile warning. ***History:*** Established 1975 as Army's Mickelsen Complex, an anti-ballistic missile facility. All but perimeter acquisition radar inactivated 1976. USAF took radar operational control 1977 and site control 2007.

Grand Forks AFB, N.D. 58205. ***Nearest city:*** Grand Forks. ***Phone:*** 701-747-3000. ***Acres:*** 5,420. ***Total Force:*** civilian, 0; military, 1,679. ***Active-duty USAF:*** enlisted, 1,517; officer, 229. ***Active-duty USSF:*** enlisted, 10; officer, 25. ***Owning command:*** ACC. ***Unit/mission:*** 319th RW (ACC), support. ***History:*** Activated 1956. Named after town of Grand Forks, whose citizens bought the property for the Air Force. ***Inn:*** 701-747-7200. ***Golf:*** Plainsview.

Hector Field, Hector Intl. Airport, N.D. 58102. ***Nearest city:*** Fargo. ***Phone:*** 701-451-2259. ***Acres:*** 255. ***Total Force:*** civilian, 320; military, 1,739. ***Component:*** ANG. ***Unit/mission:*** 119th Wing, 178th ATKS (MQ-9 operations), 119th ISRG (targeting).

Minot AFB, N.D. 58705. ***Nearest city:*** Minot. ***Phone:*** 701-723-7979. ***Acres:*** 5,615. ***Total Force:*** civilian, 0; military, 5,637. ***Active-duty USAF:*** enlisted, 4,780; officer, 690. ***Owning command:*** AFGSC. ***Unit/mission:*** 5th BW (AFGSC), bomber operations; 91st MW (AFGSC), ICBM operations. ***History:*** Activated January 1957. Named after city of Minot, whose citizens donated $50,000 toward purchase of the land. ***Inn:*** 701-723-6161. ***Golf:*** Rough Rider.

OHIO

Blue Ash ANGS, Ohio 45242. ***Nearest city:*** Cincinnati. ***Phone:*** 513-936-2982. ***Acres:*** 12. ***Total Force:*** civilian, 0; military, 189 (unit deployed overseas in November 2020). ***Component:*** ANG. ***Unit/mission:*** 123rd ACS, command and control.

Mansfield Lahm ANGB, Ohio 44903. ***Nearest city:*** Mansfield. ***Phone:*** 419-520-6420. ***Acres:*** 2,987. ***Total Force:*** civilian, 0; military, 1,297. ***Component:*** ANG. ***Unit/mission:*** 179th AW, air mobility operations. ***History:*** Named in 1948 for nearby city and aviation pioneer Brig. Gen. Frank P. Lahm.

Rickenbacker ANGB, Rickenbacker Intl. Airport, Ohio 43217. ***Nearest city:*** Columbus. ***Phone:*** 614-492-3269. ***Acres:*** 169. ***Total Force:*** civilian, 329; military, 2,842. ***Component:*** ANG. ***Unit/mission:*** 121st ARW, air mobility operations. ***History:*** Activated 1942. Formerly Lockbourne AFB. Renamed May 7, 1974, for Capt. Edward V. Rickenbacker. Base transferred from Strategic Air Command to ANG April 1, 1980.

Springfield-Beckley ANGB, Springfield-Beckley Intl. Airport, Ohio 45502. ***Nearest city:*** Springfield. ***Phone:*** 800-851-4503. ***Acres:*** 180. ***Total Force:*** civilian, 0; military, 599. ***Component:*** ANG. ***Unit/***

Staff Sgt. Cameron Lewis/ANG

F-35 Lightning II aircraft assigned to the 115th Fighter Wing, Truax Field, Wis., receive fuel from a KC-135 Stratotanker.

mission: 178th Wing, cyber, ISR, space, RPA operations.

Toledo ANGB, Toledo Express Airport, Ohio 43558. ***Nearest city:*** Swanton. ***Phone:*** 419-868-4250. ***Acres:*** 135. ***Total Force:*** civilian, 0; military, 999. ***Component:*** ANG. ***Unit/mission:*** 180th FW, fighter operations.

Wright-Patterson AFB, Ohio 45433. ***Nearest city:*** Dayton. ***Phone:*** 937-257-1110. ***Acres:*** 7,947. ***Total Force:*** civilian, 15,075; military, 7,486. ***Active-duty USAF:*** enlisted, 2,824; officer, 2,648. ***Active-duty USSF:*** enlisted, 71; officer, 148. ***Owning command:*** AFMC. ***Unit/mission:*** 88th ABW (AFMC), support; 445th AW (AFRC), air mobility operations; 591st SCMG (AFMC), systems life cycle support; 655th ISR Wing (AFRC), intelligence; 711th HPW (AFRL) Airmen performance; Air Force Installation Contracting Agency (AFMC) operational acquisition; Air Force Institute of Technology (AETC), education; PEO-Agile Combat Support, PEO-Fighters and Bombers, PEO-ISR and SOF, PEO-Mobility, PEO-Tanker (AFMC), acquisition; Hq. Air Force Life Cycle Management Center (AFMC), acquisition and development; Hq. AFMC, management; Hq. AFRL (AFMC), R&D; National Air and Space Intelligence Center (USAF), foreign aerospace analysis; National Museum of the U.S. Air Force (AFMC). ***History:*** Originally separate, Wright Field and Patterson Field were merged and redesignated Wright-Patterson AFB on Jan. 13, 1948. Named for aviation pioneers Orville and Wilbur Wright and for 1st Lt. Frank S. Patterson, killed June 19, 1918. ***Museum:*** National Museum of the U.S. Air Force. ***Inn:*** 937-257-3451. ***Golf:*** Prairie Trace, Twin Base.

Youngstown ARS, Ohio 44473. ***Nearest city:*** Youngstown. ***Phone:*** 330-609-1000. ***Acres:*** 659. ***Total Force:*** civilian, 2; military, 1,421. ***Component:*** AFRC. ***Unit/mission:*** 910th AW, air mobility operations.

Zanesville ANGB, Zanesville Municipal Airport, Ohio 43701. ***Nearest city:*** Zanesville. ***Phone:*** 740-450-4748. ***Acres:*** 13. ***Total Force:*** civilian, 28; military, 109. ***Component:*** ANG. ***Unit/mission:*** 220th Engineering Installation Squadron.

OKLAHOMA

Altus AFB, Okla. 73523. ***Nearest city:*** Altus. ***Phone:*** 580-482-8100. ***Acres:*** 6,823. ***Total Force:*** civilian, 1,236; military, 1,363. ***Active-duty USAF:*** enlisted, 1,044, officer, 229. ***Owning command:*** AETC. ***Unit/mission:*** 97th AMW (AETC), training. ***History:*** Activated January 1943. Inactivated May 1945. Reactivated August 1953. ***Inn:*** 580-481-7356. ***Golf:*** Windy Trails.

Tinker AFB, Okla. 73145. ***Nearest city:*** Oklahoma City. ***Phone:*** 405-739-2026. ***Acres:*** 4,858. ***Total Force:*** civilian, 0; military, 7,801. ***Active-duty USAF:*** enlisted, 3,565; officer, 1,188. ***Owning command:*** AFMC. ***Unit/mission:*** 72nd ABW (AFMC), support; 1448th SCMW (AFMC), supply chain management; 507th ARW (AFRC), air mobility operations; 513th ACG (AFRC), 552nd ACW (ACC), C2 operations; Hq. Air Force Sustainment Center (AFMC), weapon systems sustainment; Oklahoma City ALC (AFMC), weapon systems maintenance, repair, overhaul. ***History:*** Activated March 1942. Named for Maj. Gen. Clarence L. Tinker, who went down at sea June 7, 1942, leading a group of LB-30 bombers against Japan. ***Museum:*** Tinker AFB Museum, Charles B. Hall Air Park. ***Inn:*** 405-734-5095. ***Golf:*** Tinker.

Tulsa ANGB, Tulsa Intl. Airport, Okla. 74115. ***Nearest city:*** Tulsa. ***Phone:*** 918-833-7000. ***Acres:*** 145. ***Total Force:*** civilian, 0; military, 1,054. ***Component:*** ANG. ***Unit/mission:*** 138th FW, fighter, cyber operations, TACP training.

Vance AFB, Okla. 73705. ***Nearest city:*** Enid. ***Phone:*** 580-213-5000. ***Acres:*** 3,738. ***Total Force:*** civilian, 0; military, 1,543. ***Active-duty USAF:*** enlisted, 335; officer, 896. ***Active-duty USSF:*** enlisted, 0; officer, 1. ***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. ***Museum:*** Air Park. ***Inn:*** 580-213-7358.

Will Rogers ANGB, Will Rogers World Airport, Okla. 73179. ***Nearest city:*** Oklahoma City. ***Phone:*** 405-686-5227. ***Acres:*** 135. ***Total Force:*** civilian, 0; military, 1,150. ***Component:*** ANG/AFSOC. ***Unit/mission:*** 137th SOW, ISR operations; 146th ASOS, TACP operations; 205th EIS, cyber operations.

OREGON

Kingsley Field, Crater Lake-Klamath Regional Airport, Ore. 97603. ***Nearest city:*** Klamath Falls. ***Phone:*** 541-885-6350. ***Acres:*** 776. ***Total Force:*** civilian, 0; military, 878. ***Component:*** ANG. ***Unit/mission:*** 173rd FW (active associate), training. ***History:*** Named for 2nd Lt. David R. Kingsley, MOH recipient, killed June 23, 1944, on Ploesti, Romania, oil field bombing mission.

Portland ANGB, Portland Intl. Airport, Ore. 97218. ***Nearest city:*** Portland. ***Phone:*** 503-335-4104. ***Acres:*** 222. ***Total Force:*** civilian, 0; military, 1,434. ***Component:*** ANG/AFRC. ***Unit/mission:*** 123rd WF (ANG), combat weather operations; 125th STS (ANG), special tactics operations; 142nd FW (ANG), fighter operations; 304th RQS (AFRC), personnel recovery operations.

PENNSYLVANIA

Harrisburg ANGB, Harrisburg Intl. Airport, Pa. 17057. ***Nearest city:*** Middletown. ***Phone:*** 717-948-2311. ***Acres:*** 42. ***Total Force:*** civilian, 178; military, 1,036. ***Component:*** ANG. ***Unit/mission:*** 193rd SOW, C2, combat communications, cyber, special, TACP operations.

Johnstown ANGS, John Murtha Johnstown-Cambria County Airport, Okla. 15904. ***Nearest city:*** Johnstown. ***Phone:*** 814-532-5901 ***Acres:*** 10. ***Total Force:*** civilian, 0; military, 443. ***Component:*** ANG. ***Unit/mission:*** 258th ATCS, air traffic control.

Pittsburgh ARS, Pittsburgh Intl. Airport, Pa. 15108. ***Nearest city:*** Coraopolis. ***AFRC phone:*** 412-474-8511. ***ANG phone:*** 412-776-8010. ***Acres:*** 205. ***Total Force:*** civilian, 190; military, 1,073. ***Components:*** ANG/AFRC. ***Unit/mission:*** 171st ARW (ANG), air mobility operations; 911th AW (AFRC), aeromedical evacuation, air mobility operations.

PUERTO RICO

Muñiz ANGB, Luis Muñoz Marin Intl. Airport, Puerto Rico 00979. ***Nearest city:*** San Juan. ***Phone:*** 787-253-5100. ***Acres:*** 95. ***Total Force:*** civilian, 0; military, 855. ***Component:*** ANG. ***Unit/mission:*** 156th Wing, air mobility operations, weather reconnaissance.

RHODE ISLAND

North Smithfield ANGS, R.I. 02986. ***Nearest city:*** Johnston. ***Phone:*** 401-762-8600. ***Acres:*** 34. ***Total Force:*** civilian, 0; military, 176. ***Component:*** ANG. ***Unit/mission:*** 282nd CCS, combat communications.

Quonset ANGB, Quonset State Airport, R.I. 02852. ***Nearest city:*** North Kingstown. ***Phone:*** 401-267-3229. ***Acres:*** 104. ***Total Force:*** civilian, 272; military, 1,144. ***Component:*** ANG. ***Unit/mission:*** 143rd AW, air mobility operations, cyber.

SOUTH CAROLINA

JB Charleston, S.C. 29404. ***Nearest city:*** Charleston. ***Phone:*** 843-963-1110. ***Acres***: 3,877 (Charleston AFB). ***Total Force:*** civilian, 1,375; military, 15,148. ***Active-duty USAF:*** enlisted, 3,071; officer, 485. ***Owning command:*** AMC. ***Unit/mission:*** 315th AW (AFRC), 437th AW (AMC), air mobility operations; 628th ABW (AMC), support. ***History:*** Activated 1942. Inactivated March 1946. Reactivated August 1953. Formed joint base with Naval Weapons Station Charleston under Air Force lead 2010. Named for city of Charleston. ***Museum:*** Air Park. ***Inn:*** 843-963-8000. ***Golf:*** Wrenwoods.

McEntire JNGB, S.C. 29044. ***Nearest city:*** Columbia. ***Phone:*** 803-647-8200. ***Acres:*** 2,421. ***Total Force:*** civilian, 659; military, 3,257. ***Component:*** ANG. ***Unit/mission:*** 169th FW, 316th Fighter Squadron (active associate), fighter operations. ***History:*** Named for ANG Brig. Gen. B. B. McEntire Jr., killed in F-104 accident 1961.

Poinsett Electronic Combat Range, S.C. ***Nearest city:*** Wedgefield. ***Phone:*** 803-895-1110 (Shaw AFB operator); 803-895-2019 (20th FW public affairs). ***Acres:*** 12,521. ***Owning command:*** ACC. ***Unit/mission:*** air and ground training such as close air support controls and roadside bombing training in field conditions.

Shaw AFB, S.C. 29152. ***Nearest city:*** Sumter. ***Phone:*** 803-895-1110. ***Acres:*** 3,479. ***Total Force:*** civilian, 813; military, 5,866. ***Active-duty USAF:*** enlisted, 6,089; officer, 1,018. ***Active-duty USSF:*** enlisted, 2; officer, 5. ***Owning command:*** ACC. ***Unit/mission:*** 20th FW (ACC), fighter operations; Hq. 9th Air Force (ACC), management (Hq. Air Forces Central in Southwest Asia, operational leadership); 15th Air Force (ACC), operational readiness. ***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. ***Inn:*** 803-895-3803. ***Golf:*** Carolina Lakes.

SOUTH DAKOTA

Ellsworth AFB, S.D. 57706. ***Nearest city:*** Rapid City. ***Phone:*** 605-385-5056. ***Acres:*** 6,034. ***Total Force:*** civilian, 602; military, 3,349. ***Active-duty USAF:*** enlisted, 2,965; officer, 340. ***Active-duty USSF:*** enlisted, 1; officer, 0. ***Owning command:*** AFGSC. ***Unit/mission:*** 28th BW (AFGSC), bomber operations; Air Force Financial Services Center (AFMC). ***History:*** Activated January 1942 as Rapid City AAB. Renamed June 13, 1953, for Brig. Gen. Richard E. Ellsworth, killed March 18, 1953, in RB-36 crash. ***Museum:*** South Dakota Air and Space Museum. ***Inn:*** 605-593-0415. ***Golf:*** Prairie Ridge.

Joe Foss Field, S.D. 57104. ***Nearest city:*** Sioux Falls. ***Phone:*** 605-988-5700. ***Acres***: 215. ***Total Force:*** civilian, 0; military, 475. ***Component:*** ANG. ***Unit/mission:*** 114th FW, fighter operations. ***History:*** Named for ANG Brig. Gen. Joseph J. Foss, WWII USMC ace and MOH recipient, former governor, former Air Force Association national president and board chairman, and founder of the South Dakota ANG.

TENNESSEE

Arnold AFB, Tenn. 37389. ***Nearest city:*** Manchester. ***Phone:*** 931-454-3000. ***Acres:*** 38,866. ***Total Force:*** civilian, 446; military, 58. ***Owning command:*** AFMC. ***Unit/mission:*** Arnold Engineering Development Complex (AFTC/AFMC), flight, space, and missile ground testing. ***History:*** Dedicated June 25, 1951. Named for General of the Air Force Henry H. "Hap" Arnold, legendary air power advocate and co-founder of the Air Force Association (now Air & Space Forces Association). ***Inn:*** 931-454-3051. ***Golf:*** Arnold.

Berry Field ANGB, Nashville Intl. Airport, Tenn. 37217. ***Nearest city:*** Nashville. ***Phone:*** 615-660-8062. ***Acres:*** 88. ***Total Force:*** civilian, 0; military, 1,378. ***Component:*** ANG. ***Unit/mission:*** 118th Wing, cyber, intel, RPA operations.

McGhee Tyson ANGB, McGhee Tyson Airport, Tenn. 37777. ***Nearest city:*** Knoxville. ***Phone:*** 865-336-3205. ***Acres:*** 346. ***Total Force:*** civilian, 96; military, 1,446. ***Component:*** ANG. ***Unit/mission:*** 134th ARW, air mobility operations; 119th CACS, space C2 operations; 228th CBCS, combat communications; I. G. Brown ANG Training and Education Center. ***History:*** Named for Naval aviator Lt. j.g. Charles McGhee Tyson, killed in WWI.

Memphis ANGB, Memphis Intl. Airport, Tenn. 38118. N***earest city:*** Memphis. ***Phone:*** 901-291-7435. ***Acres:*** 119. ***Total Force:*** civilian, 0; military, 1,194. ***Component:*** ANG. ***Unit/mission:*** 164th AW, air mobility operations.

TEXAS

Dyess AFB, Texas 79607. ***Nearest city:*** Abilene. ***Phone:*** 325-696-2863. ***Acres:*** 6,320. ***Total Force:*** civilian, 487; military, 4,866. ***Active-duty USAF:*** enlisted, 4,170, officer, 491. ***Owning command:*** AFGSC. ***Unit/mission:*** 7th BW (AFGSC), bomber operations; 317th AW (AMC), air mobility operations. ***History:*** Abilene AAB opened Dec. 18, 1942. Inactivated Jan. 31, 1946. Reopened and renamed Dec. 1, 1956, for Lt. Col. William E. Dyess, WWII pilot who escaped from a Japanese prison camp, killed in P-38 crash in December 1943. ***Museum:*** Dyess AFB Memorial Museum and Linear Air Park. ***Inn:*** 325-696-2681/1874. ***Golf:*** Mesquite Grove.

Ellington Field, Ellington Airport, Texas 77034. ***Nearest city:*** Houston. ***Phone:*** 281-929-2662. ***Acres:*** 213. ***Total Force:*** civilian, 0; military, 3,624. ***Component:*** ANG. ***Unit/mission:*** 147th Attack Wing, ISR, RPA, TACP operations. ***History:*** Named for Lt. Eric L. Ellington, pilot killed November 1913.

Goodfellow AFB, Texas 76908. ***Nearest city:*** San Angelo. ***Phone:*** 325-654-1110. ***Acres:*** 1,083. ***Total Force:*** civilian, 655; military, 2,473. ***Active-duty USAF:*** enlisted, 2,849; officer, 446. ***Active-duty USSF:*** enlisted, 57; officer, 13. ***Owning command:*** AETC. ***Unit/mission:*** 17th TRW (AETC), training. ***History:*** Established August 1940. Officially activated January 1941. Named for 1st Lt. John J. Goodfellow Jr., WWI observation airplane pilot killed in combat Sept. 14, 1918. ***Inn:*** 325-654-5870.

Hensley Field AGS, Grand Prairie Armed Forces Reserve Complex, Texas 75211. ***Nearest city:*** Dallas. ***Phone:*** 972-619-4444. ***Acres:*** 23. ***Total Force:*** civilian, 0; military, 7. ***Component:*** ANG. ***Unit/mission:*** 254th CCG, combat communications.

JB San Antonio, Texas 78234 (Fort Sam Houston). ***Nearest city:*** San Antonio. ***Phone:*** 210-221-1211 (Fort Sam Houston operator). ***Acres:*** 2,808 (Fort Sam Houston). ***Total Force:*** civilian, 8,519; military, 13,888 (JBSA-Fort Sam Houston only). ***Major components:*** JBSA-Fort Sam Houston, JBSA-Lackland, JBSA-Randolph, JBSA-Camp Bullis. ***Unit/mission:*** 502nd ABW (AETC), located at Fort Sam Houston, support. ***History:*** Established 2009 to consolidate the installation management and support functions for the military facilities in San Antonio as part of 2005 base realignment and closure actions. ***Museum:*** Fort Sam Houston. ***Inn:*** IHG Army Hotel at JBSA-Fort Sam Houston, 210-357-2705. ***Golf:*** Fort Sam Houston.

JBSA-Lackland, Texas 78236. ***Nearest city:*** San Antonio. ***Phone:*** 210-671-1110. ***Acres:*** 2,723. ***Medina Annex acres:*** 4,028. ***Total Force:*** civilian, 5,852; military, 18,994. ***Active-duty USAF:*** enlisted, 13,971; officer, 2,727. ***Active-duty USSF:*** enlisted, 107; officer, 14. ***Owning command:*** AETC. ***Unit/mission:*** 37th TRW (AETC), training; 59th MDW (AETC), ambulatory surgical, management, training; 67th CW (ACC), network defense operations; 149th FW (ANG), cyber, fighter operations; 433rd AW (AFRC), air mobility operations; 616th Operations Center (ACC), cyberspace operations; 688th Cyberspace Wing (ACC), information operations, engineering infrastructure services; 960th Cyberspace Wing (AFRC), cyberspace operations; Air Force Civil Engineer Center (AFMC), engineering services; Air Force Installation and Mission Support Center (AFMC), resourcing and combat support; Air Force Services Center (AFMC) support; Hq. 16th Air Force (ACC), Air Forces Cyber, information warfare; Hq. Air Force Security Forces Center (AFMC), management. ***History:*** Activated 1941 as part of Kelly Field, designated an independent installation July 1942 as San Antonio Aviation Cadet Center. Placed under Joint Base San Antonio installation management umbrella 2009. (See JBSA entry.) Named 1947 for Brig. Gen. Frank D. Lackland, early commandant of Kelly Field flying school, who died 1943. (Note: Several USAF agencies reside within Port San Antonio, the business development area created from the former Kelly AFB, but maintain JBSA-Lackland mailing addresses.) ***Museum:*** Airman Heritage Museum. ***Inn:*** 210-673-6930. ***Golf:*** Gateway Hills.

JBSA-Randolph, Texas 78150. ***Nearest city:*** San Antonio. ***Phone:*** 210-652-1110. ***Acres:*** 3,180. ***Total Force:*** civilian, 1; military, 3,216. ***Active-duty USAF:*** enlisted, 1,751; officer, 1,081. ***Active-duty USSF:*** enlisted, 15; officer, 24. ***Owning command:*** AETC. ***Unit/mission:*** 12th FTW (AETC), training; 340th FTG (AFRC), training; 502nd ABW (AETC), support; Air Force Personnel Center (USAF), management; Air Force Recruiting Service (AETC), management; 19th Air Force, Hq. (AETC), training. ***History:*** Dedicated June 20, 1930. Placed under Joint Base San Antonio installation management umbrella 2009. (See JBSA.) Named for Capt. William M. Randolph, died Feb. 17, 1928, on a training mission. ***Inn:*** 210-652-1844. ***Golf:*** Randolph Oaks.

Laughlin AFB, Texas 78843. ***Nearest city:*** Del Rio. ***Phone:*** 830-298-3511. ***Acres:*** 4,695. ***Total Force:*** civilian, 0; military, 1,362. ***Active-duty USAF:*** enlisted, 445; officer, 838. ***Owning command:*** AETC. ***Unit/mission:*** 47th FTW (AETC), training. ***History:*** Activated July 1942. Named for 1st Lt. Jack Thomas Laughlin, Del Rio native, B-17 pilot, killed Jan. 29, 1942. ***Museum:*** Laughlin Heritage Foundation. ***Inn:*** 830-298-5741. ***Golf:*** Leaning Pine.

NAS JRB Fort Worth, Texas 76127. ***Nearest city:*** Fort Worth. Navy-hosted switchboard: 817-782-5000. ANG Phone: 817-852-3136. ***Acres:*** 2,342. ***Total Force:*** civilian, 139; military, 7,423. ***Component:*** ANG/AFRC. ***Unit/mission:*** 136th AW (ANG), air mobility, combat communications operations; 301st FW (AFRC), fighter operations; Hq. 10th Air Force (AFRC), operational leadership. ***Inn:*** Navy Gateway, 817-782-5393.

Sheppard AFB, Texas 76311. ***Nearest city:*** Wichita Falls. ***Phone:*** 940-676-2511. ***Acres:*** 5,296. ***Total Force:*** civilian, 1,050; military, 5,389. ***Active-duty USAF:*** enlisted, 5,112; officer, 586. ***Active-duty USSF:*** enlisted, 0; officer, 1. ***Owning command:*** AETC. ***Unit/mission:*** 80th FTW (AETC), Euro-NATO Joint Jet Pilot Training Program; 82nd TRW (AETC), training. ***History:*** Activated June 14, 1941. Named for U.S. Sen. Morris Sheppard, who died April 9, 1941. ***Museum:*** Heritage Center. ***Inn:*** 940-676-2707/2970.

UTAH

Hill AFB, Utah 84056. ***Nearest city:*** Salt Lake City. ***Phone:*** 801-777-1110. ***Acres:*** 6,683. ***Total Force:***

civilian, 13,256; military, 5,406. ***Active-duty USAF:*** enlisted, 3,648; officer, 642. ***Active-duty USSF:*** enlisted, 0; officer, 12. ***Owning command:*** AFMC. ***Unit/mission:*** 75th ABW (AFMC), support; 388th FW (ACC), fighter, Utah Test and Training Range operations; 419th FW (AFRC), fighter operations; 748th SCMG (AFMC), systems life cycle support; AFNWC ICBM Systems Directorate (AFMC), ICBM acquisition, support; Ogden ALC (AFMC), weapons maintenance, repair. ***History:*** Activated 1940. Named for Maj. Ployer P. Hill, killed Oct. 30, 1935, test-flying first B-17. ***Museum:*** Hill Aerospace Museum. ***Inn:*** 801-777-1844, ***Golf:*** Hubbard Memorial.

■ **Utah Test and Training Range,** Utah. ***Acres:*** 572,656 (South); 366,877 (North). ***Total Force:*** part of Hill AFB. ***Owning command:*** ACC. ***Unit/mission:*** training for air-to-air combat, air-to-ground inert and live practice bombing, gunnery training by aircrews, large force training exercises and large footprint weapons testing. ***History:*** First parcel activated in 1942 as Wendover Army Air Base; consolidated ranges redesignated UTTR in 1979.

■ **Wright ANGB**, Salt Lake City Intl. Airport, Utah 84116. ***Nearest city:*** Salt Lake City. ***Phone:*** 801-245-2200. ***Acres:*** 135. Total Force: civilian, 0; military, 1,478. ***Component:*** ANG. ***Unit/mission:*** 151st ARW, air mobility operations; 101st IOF, 130th EIS, cyber operations; 169th IS, intelligence operations.

VERMONT

■ **Burlington ANGB,** Burlington Intl. Airport., Vt. 05403. ***Nearest city:*** South Burlington. ***Phone***: 802-660-5379 (Public Affairs). ***Acres:*** 248. ***Total Force:*** civilian, 0; military, 1,138. ***Component:*** ANG. ***Unit/mission:*** 158th FW, fighter operations; 229th COS, cyber training.

VIRGINIA

■ **JB Langley-Eustis,** Va. 23665. ***Nearest city:*** Hampton. ***Phone:*** 757-764-1110. ***Acres:*** 3,727 (Langley), 8,275 (Eustis). ***Total Force***: civilian, 2,298; military, 5,500. ***Active-duty USAF***: enlisted, 6,419; officer, 1,363. ***Active-duty USSF:*** enlisted, 1; officer, 9. ***Langley owning command:*** ACC. ***Unit/mission:*** 1st FW (ACC), 192nd Wing (ANG), cyber, fighter operations; 480th ISRW (ACC), ISR operations; 633rd ABW (ACC), support; 363rd ISRW (ACC), ISR operations; Hq. ACC, management. ***History:*** Activated Dec. 30, 1916. Formed as joint base under Air Force lead 2010. Langley is first military base in U.S. 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. ***Inn:*** 757-764-4667. ***Golf:*** Eaglewood.

WASHINGTON

■ **Fairchild AFB,** Wash. 99011. ***Nearest city:*** Spokane. ***Phone:*** 509-247-1212. ***Acres:*** 6,102. ***Total Force:*** civilian, 820; military, 5,106. ***Active-duty USAF:*** enlisted, 3,085; officer, 468. ***Owning command:*** AMC. ***Unit/mission:*** 92nd ARW (AMC), 141st ARW (ANG), air mobility operations; USAF SERE School (AETC), training. ***History:*** Activated January 1942. Named for Gen. Muir S. Fairchild, USAF Vice Chief of Staff at his death in 1950. ***Museum:*** Heritage Museum and Air Park. ***Inn:*** 509-247-5519.

■ **JB Lewis-McChord,** Wash. 98438. ***Nearest city:*** Tacoma. ***Phone:*** 253-967-1110. ***Acres:*** 86,213. ***Total Force:*** civilian, 641; military, 4,844. ***Active-duty USAF:*** enlisted, 2,681; officer, 500. ***Active-duty USSF:*** enlisted, 2; officer, 1. ***McChord Field owning command:*** AMC. ***Unit/mission:*** 375 AW (AMC), 446th AW (AFRC), air mobility operations; 627th ABG (AMC), support; Western Air Defense Sector (NORAD/ANG), warning and control. ***History:*** Fort Lewis established 1917; McChord Field activated July 3, 1940. Formed as joint base under Army lead in 2010. Lewis named for Capt. Meriwether Lewis of Lewis and Clark Expedition (1804-05). McChord named for Col. William C. McChord, died in aircraft crash, Aug. 18, 1937. ***Museums:*** Heritage Air Park, Lewis Army Museum, McChord AFB Museum. ***Inn:*** IHG Army Hotels, 253-982-5613. ***Golf:*** Eagle's Pride, Whispering Firs.

WEST VIRGINIA

■ **McLaughlin ANGB,** Yeager Airport, W.Va. 25311. ***Nearest city:*** Charleston. ***Phone:*** 304-341-6249. ***Acres:*** 283. ***Total Force:*** civilian, 0; military, 1,279. ***Component:*** ANG. ***Unit/mission:*** 130th AW, air mobility, ISR operations. ***History:*** Named for Brig. Gen. Charles E. "Chuck" Yeager; and Brig. Gen. James K. McLaughlin, West Virginia ANG's first commanding officer.

■ **Shepherd Field ANGB, Eastern West Virginia Regional Airport,** W.Va. 25401. ***Nearest city:*** Martinsburg. ***Phone:*** 304-616-5100. ***Acres:*** 339. ***Total Force:*** civilian, 0; military, 144. ***Component:*** ANG. ***Unit/mission***: 167th AW, air mobility operations.

WISCONSIN

■ **General Mitchell Field,** Milwaukee Mitchell Intl. Airport, Wis. 53207. ***Nearest city:*** Milwaukee. ***Phone:*** 414-944-8715. ***Acres:*** 67. ***Total Force:*** civilian, 0; military, 1,197. ***Component:*** ANG. ***Unit/mission:*** 128th ARW, air mobility operations. ***History:*** Named for Brig. Gen. William "Billy" Mitchell.

■ **Hardwood Range**, Wis. 54646 ***Nearest city:*** Necedah. ***Acres:*** 7,865. ***Component:*** ANG. ***Unit/mission:*** air-to-ground weapons delivery and threat awareness training for combat aircrews.

■ **Truax Field ANGB,** Dane County Regional Airport, Wis. 53704. ***Nearest city:*** Madison. ***Phone:*** 608-245-4395. ***Acres:*** 152. ***Total Force:*** civilian, 0; military, 2,925. ***Component:*** ANG. ***Unit/mission:*** 115th FW, fighter, ISR operations (active associate), WFX. ***History:*** Activated June 1942 as AAF base. Taken over by Wisconsin ANG April 1968. Named for Lt. T. L. Truax, killed in P-40 training accident 1941.

■ **Volk Field ANGB,** Wis. 54618. ***Nearest city:*** Madison. ***Phone:*** 608-427-1204. ***Acres:*** 2,385. ***Total Force:*** civilian, 147; military, 588. ***Component:*** ANG. ***Unit/mission:*** Combat Readiness Training Center; 128th ACS, C2 operations. ***History:*** Named for Lt. Jerome A. Volk, first Wisconsin ANG pilot to be killed in the Korean War.

WYOMING

■ **F.E. Warren AFB,** Wyo. 82005. ***Nearest city:*** Cheyenne. ***Phone:*** 307-773-3381. ***Acres:*** 6,834. ***Total Force:*** civilian, 0; military, 3,637. ***Active-duty USAF:*** enlisted, 2,636; officer, 489. ***Active-duty USSF:*** enlisted, 1; officer, 1. ***Owning command:*** AFGSC. ***Unit/mission:*** 90th MW (AFGSC), ICBM operations; 153rd CACS (ANG), space C2 operations; Hq. 20th Air Force (AFGSC), operational leadership. ***History:*** Activated as Fort D. A. Russell July 4, 1867. Renamed in 1930 for Francis Emory Warren, Wyoming senator and first state governor. Reassigned to USAF in 1947 and received current designation in 1949. ***Museum:*** Warren ICBM and Heritage Museum. ***Inn:*** 307-773-1844. ***Golf:*** Warren.

■ **Wyoming ANGB,** Cheyenne Regional Airport, Wyo. 82001. ***Nearest city:*** Cheyenne. ***Phone:*** 307-772-6424. ***Acres:*** 719. ***Total Force:*** civilian, 970; military, 1,017. ***Component:*** ANG. ***Unit/mission:*** 153rd AW, air mobility, MAFFS operations.

Overseas

Overseas installations owned, operated by, or housing substantial U.S. Air Force or U.S. Space Force activities. Individual listings may not include all units or agencies at every location.

BELGIUM

■ **Kleine Brogel AB,** Belgium APO AE 09719. ***Nearest city:*** Peer. ***Phone:*** 011-003-211-51-9412. ***Total Force:*** 168. ***Owning command:*** USAFE-AFAFRICA. ***Unit/mission:*** 701st Munitions Support Squadron, receive, store and maintain U.S. munitions for Belgium's F-16 aircraft in support of NATO. ***History:*** Established as an Allied airfield in 1944, expanded by the Belgian Air Force in 1951, and first joined by U.S. support personnel in 1962. ***Museum:*** Kleine-Brogel Air Museum.

GERMANY

■ **Buechel AB,** Germany APO AE 09719. ***Nearest city:*** Cochem. ***Phone:*** 49-2678-94011162. ***Total Force:*** 157. ***Owning command:*** USAFE-AFAFRICA. ***Unit/mission:*** 702nd Munitions Support Squadron, receive, store and maintain U.S. munitions for Germany's PA-200 Tornado aircraft in support of NATO.

■ **Ramstein AB,** Germany APO AE 09094. ***Nearest city:*** Landstuhl. ***Phone:*** 011-49-6371-47-1110. ***Acres:*** 3,094. ***Total Force:*** 8,299. ***Active-duty USAF:*** enlisted, 8,122; officer, 1,381. ***Active-duty USSF:*** enlisted, 93; officer, 34. ***Owning command:*** USAFE-AFAFRICA. ***Unit/mission:*** 86th AW (USAFE-AFAFRICA), air mobility operations, support (including Kaiserslautern Military Community); 435th AGOW (USAFE-AFAFRICA), bare base, combat communications, combat weather, TACP operations; 521st AMOW (AMC), air transportation services; 603rd AOC (USAFE), C2 operations; Hq. 3rd Air Force (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. ***Inn:*** 011-49-6371-47-4920. ***Golf:*** Woodlawn.

■ **Spangdahlem AB,** Germany APO AE 09126. ***Nearest city:*** Bitburg. ***Phone:*** 011-49-6565-61-1110. ***Acres:*** 1,617. ***Total Force:*** 2,733. ***Active-duty USAF:*** enlisted, 3,435; officer, 526. ***Owning command:*** USAFE-AFAFRICA. ***Unit/mission:*** 52nd FW (USAFE), fighter operations, 726th AMS (AMC), air transport services. ***History:*** Built by French 1951 and turned over to U.S. 1952. ***Museum:*** Air Park. ***Inn:*** 011-49-06565-0500. ***Golf:*** Eifel Mountain.

GREENLAND

■ **Pituffik SB,** Greenland APO AE 09704.

MAJOR OVERSEAS AIR FORCE OPERATING LOCATIONS

Locations on this map include principal bases and many forward operating locations. While not intended to be fully comprehensive, the map provides a sense of the Air Force's global presence.

Main Operating Bases | Forward Operating Locations | Countries where U.S. forces do not operate | Range | USSF

Nearest city: Qaanaaq. **Phone:** (through Peterson AFB operator) 719-556-7321. **Acres:** 233,034. **Total Force:** 135. **Owning command:** USSF. **Unit/mission:** 12th SWS (USSF), missile warning; 821st SBG (USSF), support. **History:** Dates from 1946 as a Danish-American radio and weather station. USAF Ballistic Missile Early Warning System radar began operations 1961. **Inn:** 719-474-3840, ext. 3276. **Golf:** Mount Dundas.

ITALY

■**Aviano AB,** Italy APO AE 09604. **Nearest city:** Aviano. **Phone:** 011-39-0434-30-5407. **Acres:** 1,226. **Total Force:** 4,204. **Active-duty USAF:** enlisted, 4,116; officer, 457. **Active-duty USSF:** enlisted, 1; officer, 1. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 31st FW (USAFE-AFAFRICA), fighter operations; 724th AMS (AMC), air transportation services. **History:** Dates from 1911 as Italian air base. USAF began operations 1954. **Inn:** 011-39-0434-94-7111. **Golf:** Alpine.

JAPAN

■**Draughon Range,** Japan. **Phone**: 011-81-176-77-4713 (35th Operations Group, Misawa AB). **Acres:** 1,889. **Owning command:** PACAF. **Unit/mission:** training for US, Japanese, and multilateral forces.

■**Idesuna Jima Range,** Japan (uninhabited island). **Acres:** 61. **Owning command:** PACAF. **Unit/mission:** managed by 18th Wing, live-fire exercises from the air onto the island.

■**Kadena AB,** Japan APO AP 96368. **Nearest city:** Naha. **Phone:** 011-81-98-961-1110. **Acres:** 4,906. **Total Force:** 6,750. **Active-duty USAF:** enlisted, 5,947; officer, 735. **Active-duty USSF:** enlisted, 45; officer, 2. **Owning command:** PACAF. **Unit/mission:** 18th Wing (PACAF), air mobility, fighter, ISR, personnel recovery operations; 82nd RS (ACC), reconnaissance; 353rd SOW (AFSOC), special operations; 733rd AMS (AMC), air transportation services. **History:** Occupied by U.S. forces April 1945. Named for city of Kadena on island of Okinawa. **Inn:** 01-81-98-962-1100. **Golf:** Banyan Tree.

■**Misawa AB,** Japan APO AP 96319. **Nearest city:** Misawa. **Phone:** 011-81-176-53-5181. **Acres:** 3,864. **Total Force:** 3,050. **Active-duty USAF:** enlisted, 2,460, officer, 27. **Active-duty USSF:** enlisted, 3; officer, 0. **Owning command:** PACAF. **Unit/mission:** 35th FW (PACAF), fighter operations. **History:** Occupied by U.S. forces September 1945. **Inn:** 011-81-176-66-1290. **Golf:** Gosser Memorial.

■**Tori Shima Range,** Japan (uninhabited island). **Acres:** 10. **Owning command:** PACAF. **Unit/mission:** managed by 18th Wing.

■**Yokota AB,** Japan APO AP 96328. **Nearest city:** Tokyo. **Phone:** 011-81-425-52-2510-5-1110. **Acres:** 1,750. **Total Force:** 3,519. **Active-duty USAF:** enlisted, 2,931; officer, 444. **Active-duty USSF:** enlisted, 7; officer, 6. **Owning command:** PACAF. **Unit/mission:** 374th AW (PACAF), air mobility, personnel recovery operations; 515th AMOG (AMC), air transportation services; Hq. 5th Air Force (PACAF), Hq. US Forces Japan (PACOM), operational leadership. **History:** Opened as Tama AAF by Japan 1939. Turned over to U.S. forces and renamed Yokota AB on Sept. 6, 1945. **Inn:** 011-81-42-507-6533. **Golf:** Yokota Golf Center, Tama Hills.

NETHERLANDS

■**Volkel AB,** Netherlands APO AE 09717. **Nearest city:** Uden. **Phone:** 011-003-1413-33-5835. **Total Force:** 159. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 703rd Munitions Support Squadron, receive, store and maintain U.S. munitions for the Netherlands' F-16 aircraft in support of NATO.

PORTUGAL

■**Lajes Field,** Azores, Portugal APO AE 09720. **Nearest city:** Praia de Vitoria. Phone: 011- 351-295-57-4138. **Acres:** 973. **Active-duty Air Force:** 175. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 65th ABG, support. **History:** U.S. operations began 1943. **Inn:** 011-351-295-545100.

SAINT HELENA

■**Ascension Island Auxiliary Airfield,** Saint Helena (UK island territory in the South Atlantic). **Phone:** 321-494-1110 (Space Launch Delta 45 operator at Patrick SFB). **Acres:** 3,463. **Owning command:** USSF. **Unit/mission:** 45th Mission Support Squadron, Det. 2, airfield maintenance, radar and telemetry tracking of space launches.

SOUTH KOREA

■**Kunsan AB**, South Korea APO AP 96264. **Nearest city:** Gunsan City. **Phone:** 011-82-63-470-1110. **Acres:** 2,549. **Total Force:** 2,472. **Active-duty USAF:** enlisted, 2,278; officer, 197. **Active-duty USSF:** enlisted, 1; officer, 0. **Owning command:** PACAF. **Unit/mission:** 8th FW (PACAF), fighter operations. **History:** Built by the Japanese in 1938. U.S. operations began in April 1951. **Inn:** 011-82-63-470-1844. **Golf:** West Winds.

■**Osan AB,** South Korea APO AP 96278. **Nearest city:** Pyeongtaek. **Phone:** 011-82-784-1110. **Acres:** 1,523. **Total Force:** 4,984. **Active-duty USAF:** enlisted, 4,743; officer, 645. **Active-duty USSF:** enlisted, 34; officer, 10. **Owning command:** PACAF. **Unit/mission:** 5th RS (ACC), reconnaissance operations; 51st FW (PACAF), fighter operations; 694th ISRG (ACC), DCGS operations; 731st AMS (AMC), air transportation services; Hq. 7th Air Force (PACAF), operational leadership. **History:** Originally designated K-55. Runway opened December 1952. Renamed Osan AB in 1956 for nearby town that was the scene of first fighting in July 1950 between U.S. and North Korean forces. **Inn:** 011-82-31-661-1844. **Golf:** The Lakes at Osan.

SPAIN

■**Moron AB,** Spain, APO AE 09643. **Nearest city:** Moron de la Frontera. **Phone:** 011-34-955-84-1110. **Acres:** 2,808. **Total Force:** 154. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 496th ABS, base support; 725th AMS, air mobility. **Inn:** 011-34-584-8686.

TURKEY

■**Incirlik AB,** Turkey APO AE 09824. **Nearest city:** Adana. **Phone:** 011-90-322-316-6060. **Acres:** 3,336. **Total Force:** 1,471. **Active-duty USAF:** enlisted, 1,394; officer, 144. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 39th ABW (USAFE-AFAFRICA), support; 728th AMS (AMC), air transportation services. **History:** Activated 1954. Named Adana AB Feb. 21, 1955. Renamed Incirlik AB on Feb. 28, 1958. **Inn:** 011-90-322-316-9357. **Golf:** Hodja Lakes.

■**Izmir AS,** Turkey APO AE 09821. **Nearest city:** Izmir. **Phone:** 011-90-232-455-6694. **Total Force:** 101. **Unit/mission:** 425th ABS, support.

UNITED KINGDOM

■**RAF Alconbury,** UK APO AE 09470. **Nearest city:** Huntingdon. **Phone:** 011-44-1480-84-3557 (Alconbury/Molesworth). **Acres:** 218. **Total Force:** 352 (includes RAF Molesworth). **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 423rd ABG, including munitions, civil engineer, communications, medical, and Security Forces squadrons. **History:** Began in WWII. The U.S. 93rd Bombardment Group arrived in 1942 flying B-24 Liberators. **Inn:** 011-44-01480-82-6000.

■**RAF Croughton,** UK APO AE 09494. **Nearest City:** Brackley. **Phone:** 011-44-1280-70-8716 (RAF Croughton/Fairford/Welford). **Acres:** 694. **Total Force:** 386. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 422nd ABG, civil engineer, communications, medical and Security Forces squadrons. **History:** Built in 1938 and originally known as Brackley Landing Ground, in use by U.S. since 1950. **Inn:** 011-44-1280-70-8394.

■**RAF Fairford,** UK APO AE 09456. **Nearest city:** Fairford. **Phone:** 011-44-1280-70-8716 (RAF Croughton/Fairford/Welford). **Acres:** 1,170. **Total Force:** 56. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 420th ABS, mission support. **History:** Built in 1944 to support D-Day operations, in use by U.S. since 1950.

■**RAF Lakenheath,** UK APO AE 09461. **Nearest city:** Cambridge. **Phone:** 011-44-1638-52-1110. **Acres:** 1,879. **Total Force:** 4,908. **Active-duty USAF:** enlisted, 4,385; officer, 535. **Active-duty USSF:** enlisted, 19; officer, 2. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 48th FW (USAFE-AFAFRICA), 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. **Inn:** 011-44-1638-52-6713. **Golf:** Breckland Pines.

■**RAF Menwith Hill,** UK APO AE 09468. **Nearest city:** Harrogate. **Phone:** 011-44-01423-777886. **Acres:** 545. **Total Force:** 22. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 421st Air Base Squadron, communications and intelligence support services. **History:** Became operational in 1959.

■**RAF Mildenhall,** UK APO AE 09459. **Nearest city:** Cambridge. **Phone:** 011-44-1638-54-1110. **Acres:** 1,163. **Total Force:** 3,405. **Active-duty USAF:** enlisted, 3,806; officer, 501. **Active-duty USSF:** enlisted, 8; officer, 5. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 95th RS (ACC), reconnaissance operations; 100th ARW (USAFE), air mobility operations; 352nd SOW (AFSOC), special operations; 488th IS (ACC), intelligence operations; 727th AMS (AMC), air transportation services. **History:** Activated as RAF bomber base October 1934. Named after nearby town. U.S. bomber operations began July 1950. Strategic Air Command had control from October 1951 to September 1959, when USAFE took over. **Inn:** 011-44-1638-71-1236.

■**RAF Molesworth,** UK APO AE 09470. **Nearest city:** Huntingdon. **Phone:** 011-44-1480-84-3557 (Alconbury/Molesworth). **Acres:** 659. **Total Force:** 352 (includes RAF Alconbury). **Owning command:** USAFE-AFAFRICA. **Unit/mission:** Joint Intelligence Operations Center Europe Analytic Center. **History:** Started as a WWI airfield.

■**RAF Welford,** UK APO AE 09494. **Nearest city:** Welford. **Phone:** 011-44-1280-70-8716 (RAF Croughton/Fairford/Welford). **Acres:** 806. **Total Force:** 386. **Owning command:** USAFE-AFAFRICA. **Unit/mission:** 420th Munitions Squadron; munitions storage area. **History:** First used by U.S. Army Air Forces in 1943.

Sources and definitions

Addresses, phone numbers, and the names of museums and golf courses are from official installation websites, the Air National Guard's recruiting website goang.com, the Defense Department's Military OneSource listings, and the official online directories of Air Force Inns and other DOD lodging. Acres are the total acres reported in the DOD's Base Structure Report—Fiscal Year 2018 Baseline, the most recent available in which installations are listed by name. Acres may not include storage annexes or other associated sites. Total Force combines all Active, Reserve, and appropriated fund civilian personnel, regardless of military service branch, derived from ZIP code data provided by the Defense Manpower Data Center.

USAF & USSF ALMANAC 2023

WEAPONS & PLATFORMS

By Aaron M. U. Church

Master Sgt. Charles Vaughn

Tech. Sgt. Chris Hibben

B-1B LANCER

Long-range conventional bomber

Brief: The B-1B is a conventional, long-range, supersonic, penetrating strike aircraft derived from the canceled B-1A. The B-1A first flew on Dec. 23, 1974, and four prototypes were developed and tested before program cancellation in 1977. The Reagan administration revived the program as the B-1B in 1981, adding 74,000 lb of usable payload, improved radar, and reduced radar cross section, but reducing speed to Mach 1.2. Its three internal weapons bays can carry the largest payload of guided/unguided weapons in the Air Force inventory, and its blended wing/body and variable-geometry wing permit long-range/loiter time. Offensive avionics include terrain-following SAR and a fully integrated Sniper ATP to track and target moving vehicles. B-1B made its combat debut over Iraq during Desert Fox in 1998. The fleet completed its most comprehensive upgrade to date in September 2020. The three-part Integrated Battle Station (IBS) program added an all-digital glass cockpit, Fully Integrated Data Link (FIDL) to enhance targeting/ LOS/ BLOS C2, and Central Integrated Test System (CITS) for real-time simplified troubleshooting. The fleet is also undergoing Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS) mods to improve situational awareness and retargeting abilities, and updated BLOS cryptography to sustain the aircraft's connectivity. The B-1B is USAF's sole Long-Range Anti-Ship Missile (LRASM) carrier and its range, speed, and payload make it a key power-projection asset in USAF's Indo-Asia Pacific strategy. USAF is expanding the B-1B's capacity to carry future weapons such as the AGM-183 ARRW hypersonic missile or 5,000 lb-class guided bombs. Recent demonstrations reconfigured the bomb bay to expand internal capacity, as well as use of the bomber's previously deactivated external pylons to carry JDAM. AFGSC retired 17 of the least serviceable airframes in FY21 and will divest, rather than repair, the aircraft damaged in a 2022 ground fire at Dyess. Recent retirements increased the fleet's mission capable rate and USAF plans to keep enough B-1Bs to maintain capacity until the fleet is fully replaced by the B-21, targeted for 2032.

Contractor: Boeing (formerly Rockwell International).
First Flight: Oct. 18, 1984 (B-1B).
Delivered: June 1985-May 1988.
IOC: Oct. 1, 1986, Dyess AFB, Texas.
Production: 104.
Inventory: 45.
Operator: AFGSC, AFMC.
Aircraft Location: Dyess AFB, Texas; Edwards AFB, Calif.; Eglin AFB, Fla.; Ellsworth AFB, S.D.
Active Variant:
▪B-1B. Upgraded production version of the B-1A.
Dimensions: Span 137 ft (forward sweep) to 79 ft (aft sweep), length 146 ft, height 34 ft.
Weight: Max T-O 477,000 lb.
Power Plant: Four GE Aviation F101-GE-102 augmented turbofans, each 30,780 lb thrust.
Performance: Speed 900+ mph at S-L, range approx. 7,455 miles (further with air refueling).
Ceiling: 30,000+ ft.
Armament: 84 Mk 82 (500-lb) or 24 Mk 84 (2,000-lb) general-purpose bombs; 84 Mk 62 (500-lb) or eight Mk 65 (2,000-lb) Quickstrike naval mines; 30 CBU-87/89 cluster bombs or 30 CBU-103/104/105 WCMDs; 24 GBU-31 or 15 GBU-38 JDAMs/GBU-54 JDAM; 24 AGM-158A JASSM, JASSM-ER, or LRASM.
Accommodation: Pilot, copilot, and two WSOs (offensive/defensive) on ACES II zero/zero ejection seats.

B-2 SPIRIT

Long-range heavy bomber

Brief: The B-2 is a stealthy, long-range, penetrating nuclear and conventional strike bomber. It is based on a flying wing design combining Low Observability (LO) with high aerodynamic efficiency. The aircraft's blended fuselage/wing holds two weapons bays capable of carrying nearly 60,000 lb in various combinations. Spirit entered combat during Allied Force on March 24, 1999, striking Serbian targets. Production was completed in three blocks, and all aircraft were upgraded to Block 30 standard with AESA radar. Construction was limited to 21 aircraft due to cost and political considerations and a single B-2 was subsequently lost in a crash at Andersen on Feb. 23, 2008. Modernization is focused on safeguarding the B-2A's penetrating strike capability in high-end threat environments and integrating advanced weapons. The B-2 achieved a major milestone in 2022 with the integration of a Radar Aided Targeting System (RATS), enabling delivery of the modernized B61-12 precision-guided thermonuclear freefall weapon. RATS uses the aircraft's radar to guide the weapon in GPS-denied conditions, while additional Flex Strike upgrades feed GPS data to weapons

Heide Couch/USAF

prerelease to thwart jamming. A B-2A successfully dropped an inert B61-12 using RATS on June 14, 2022, and successfully employed the longer-range JASSM-ER cruise missile in a test launch last December. Ongoing upgrades include replacing the primary cockpit displays, the Adaptable Communications Suite (ACS) to provide Link 16-based jam-resistant in-flight retasking, advanced IFF, crash-survivable data recorders, and weapons integration. USAF is also working to enhance the fleet's maintainability with LO signature improvements to coatings, materials, and radar-absorptive structures such as the radome and engine inlets/exhausts. Two B-2s were damaged in separate landing accidents at Whiteman on Sept. 14, 2021, and Dec. 10, 2022, the latter prompting an indefinite fleetwide stand-down until May 18, 2023. USAF plans to retire the fleet once the B-21 Raider enters service in sufficient numbers around 2032.

Contractors: Northrop Grumman; Boeing; Vought; Sierra Nevada (ACS).
First Flight: July 17, 1989.
Delivered: December 1993-December 1997.
IOC: April 1997, Whiteman AFB, Mo.
Production: 21.
Inventory: 20.
Operator: AFGSC, AFMC, ANG (associate).
Aircraft Location: Edwards AFB, Calif.; Whiteman AFB, Mo.
Active Variant:
▪B-2A. Production aircraft upgraded to Block 30 standards.
Dimensions: Span 172 ft, length 69 ft, height 17 ft.
Weight: Max T-O 336,500 lb.
Power Plant: Four GE Aviation F118-GE-100 turbofans, each 17,300 lb thrust.
Performance: Speed high subsonic, range 6,900 miles (farther with air refueling).
Ceiling: 50,000 ft.
Armament: Nuclear: 16 B61-7, B61-12, B83, or eight B61-11 bombs (on rotary launchers). Conventional: 80 Mk 62 (500-lb) sea mines, 80 Mk 82 (500-lb) bombs, 80 GBU-38 JDAMs, or 34 CBU-87/89 munitions (on rack assemblies); or 16 GBU-31 JDAMs, 16 Mk 84 (2,000-lb) bombs, 16 AGM-154 JSOWs, 16 AGM-158 JASSM/JASSM-ERs, or eight GBU-28 LGBs.
Accommodation: Two pilots on ACES II zero/zero ejection seats.

U.S. Air Force

B-21 RAIDER

Long-range heavy bomber

Brief: The B-21 Raider is a developmental, penetrating strike bomber planned to deliver both conventional and nuclear munitions. The low-observable flying-wing design was christened "Raider" in honor of the WWII Doolittle Raiders, who mounted the surprise attack on Japan in April 1942. Though similar in shape to the B-2, the B-21 features more deeply recessed engine inlets, dual-wheel main-landing gear, unique trapezoidal windscreens, and more advanced low-observable designs. The Air Force awarded Northrop Grumman the Long-Range Strike Bomber contract in 2015, aimed at developing an affordable, next-generation stealth bomber utilizing modern systems and materials. The type is the Air Force's first new bomber design since the B-2 Spirit, introduced in 1988, and is planned to become the mainstay of the strategic fleet alongside the modernized B-52J. USAF is developing the B-21 as part of a "family of systems" encompassing complementary ISR, C2, and electronic warfare platforms and capabilities designed for survivability in high-end threat environments. Northrop Grumman is using digital design techniques to quickly incorporate changes and speed fielding, as well as an open-system architecture to easily enable future upgrades and modernization. Notional nuclear armament includes the planned Long-Range Standoff (LRSO) missile and B61-12 guided free-fall weapons, as well as a range of advanced conventional weapons. AFGSC plans to acquire a fleet of at least 100 B-21s which would be delivered starting in the mid-2020s. Concurrent development and low-rate initial production aim to accelerate fielding, starting with the first lot in FY23. LRIP will include 21 aircraft over five lots, followed by full-rate production as soon as FY25. At least six airframes are in production at Northrop Grumman's Palmdale, Calif., facility where the initial aircraft was unveiled in a public ceremony Dec. 2, 2022. The first aircraft is completing ground testing and taxi trials at Palmdale, before making the type's first flight. USAF slipped the first-flight timeline to ensure design maturity but still plans to deliver the aircraft to Edwards in 2023, to continue development and conduct flight-testing. Initial operational aircraft will be delivered to AFGSC's formal training and operational units at Ellsworth, followed by Whiteman and Dyess.

Contractors: Northrop Grumman (aircraft); Pratt & Whitney (engines); Collins Aerospace; GKN Aerospace; BAE Systems; Spirit Aerosystems; Janicki Industries (advanced structures).
Unveiled: Dec. 2, 2022.
First Flight: 2023 (projected).
Delivered: N/A.
IOC: Unknown
Production: ≥100 (projected).
Inventory: 1.
Operator: AFMC. Planned: AFGSC.
Aircraft Location: Air Force Plant 42, Calif. Planned: Edwards AFB, Calif. (planned test location); Ellsworth AFB, N.D.; Whiteman AFB, Mo.; Dyess AFB, Texas.
Active Variant:
▪B-21. Developmental Long-Range Strike Bomber.
Dimensions: Span 150 ft (estimated), height 18 ft (estimated).
Weight: Max T-O unknown.
Power Plant: Pratt & Whitney turbofans.
Performance: Speed high-subsonic (estimated), range intercontinental.
Ceiling: Unknown.
Armament: Nuclear and conventional (planned).
Accommodation: Crewed/Optionally Uncrewed.

Airman 1st Class William Pugh

B-52 STRATOFORTRESS

Long-range heavy bomber

Brief: The B-52H is a long-range nuclear/conventional bomber and USAF's primary standoff cruise missile carrier. The YB-52 prototype first flew on April 15, 1952, and Strategic Air Command declared IOC with the B-52A on June 19, 1955. Boeing produced a total of 744 B-52s culminating in the last Stratofortress variant still in service, the B-52H. Multimission capabilities include long-range precision strike, CAS, air interdiction, defense suppression, and maritime surveillance utilizing both Litening and Sniper targeting pods. The B-52 is undergoing major upgrades to replace key obsolescent systems including engines, radar, comms, and weapons interface to extend the fleet through the 2050s. Combat Network Communications Technology (CONECT) recently replaced cockpit displays and comms and added integrated mission-management, including Link 16 and machine-to-machine tasking/retargeting. It forms the digital backbone of the Internal Weapons Bay Upgrade transitioning the Conventional Rotary Launchers designed for CALCM to carry the modern AGM-158B JASSM-ER. This nearly doubles the B-52's payload of JASSM, JDAM, and MALD, while reducing drag and increasing range. CONECT also enables associated mods including Tactical Data Link to add low-latency, jam-resistant C2/comms, and GPS updates. USAF is pursuing both the Radar Modernization Program to replace the B-52s AN/APQ-166 with an AESA radar and the Commercial Engine Replacement Program (CERP) to re-engine the fleet. CERP will replace the B-52's TF-33 engines with the modern, efficient and reliable Rolls-Royce F130-200 turbofans in a modified pylon-mounted eight-engine arrangement. Re-engined aircraft will be redesignated B-52J and fleetwide retrofits are expected to be completed by 2038. AESA radar is planned for introduction in 2026, and future upgrades include VLF/LF receiver modernization, ATP color MFDs to enhance targeting and situational awareness, and AEHF SATCOM installation. Integration of the future Long-Range Standoff (LRSO) nuclear cruise missile will cement the B-52's nuclear role, complementing the B-21 Raider after retirement of the B-1 and B-2, potentially continuing to serve through the 2050s.

Contractors: Boeing (airframe/CONECT); Rolls-Royce (CERP)/Collins Aerospace (nacelles); Raytheon (RMP).
First Flight: July 20, 1960 (B-52H).
Delivered: May 9, 1961-Oct. 26, 1962 (B-52H).
IOC: May 1961 (B-52H).
Production: 102 (B-52H).
Inventory: 76.
Operator: AFGSC, AFMC, AFRC.
Aircraft Location: Barksdale AFB, La.; Edwards AFB, Calif.; Minot AFB, N.D.
Active Variants:
▪B-52H. Longer-range development of the original B-52A with more efficient turbofan engines.
▪B-52J. Future modernized B-52H retrofit with ultra-efficient Rolls-Royce F130-200 turbofans.
Dimensions: Span 185 ft, length 159.3 ft, height 40.7 ft.
Weight: Max T-O 488,000 lb.
Power Plant: Eight Pratt & Whitney TF33-P-3 turbofans, each 17,000 lb thrust.
Performance: Speed 650 mph, range 8,800 miles (further with air refueling).
Ceiling: 50,000 ft.
Armament: Nuclear: 12 AGM-86B ALCMs externally, and eight ALCMs or gravity weapons internally. Conventional: 12 AGM-158 JASSM externally, and eight JASSM-ER/MALD/ MALD-J internally (upgraded aircraft), as well as Mk 62 sea mines, Mk 82/84 bombs, CBU-87/89 cluster bombs, CBU-103/104/105 WCMDs, GBU-31/38 JDAMs, AGM-158A JASSMs, and GBU-10/12/28 LGBs, MALD, and MALD-J jammer variant.
Accommodation: Two pilots, navigator, radar navigator, and EWO on upward/downward ejection seats. Radar navigator position to be eliminated on B-52J.

Andrea Jenkins/USAF

AT-6 WOLVERINE

Light attack/armed reconnaissance

Brief: The AT-6E is a turboprop, light attack/armed reconnaissance aircraft developed from the T-6 primary trainer. Wolverine incorporates the A-10C's mission computer, the F-16's Hands-on Throttle and Stick (HOTAS), Helmet Mounted Cueing System (HMCS), and a digital glass cockpit with three color MFDs for integrated navigation, sensor, and weapon's management/delivery. The aircraft can carry a wide array of air-to-ground weapons on six wing pylons and can carry a centerline-mounted MX-15D EO/IR sensor for targeting and tactical ISR. The AT-6 is equipped with LINK-16/SADL data links, real-time FMV/ROVER for integration with ground forces, and tactical VHF/UHF/SATCOMS. The type was originally proposed for USAF's Light Attack/Armed Reconnaissance (LAAR) requirement that fell prey to budget cuts a decade ago. The service launched a renewed effort in 2017, kicking off the Light Attack Experiment (OA-X), which evaluated rapidly procurable off-the-shelf CAS/ISR platforms to relieve pressure on existing fleets. USAF procured two AT-6 Wolverines (and an equal number of AFSOC A-29 Super Tucanos) to develop rapidly procurable light CAS/ISR for partner nations. SOCOM opted for neither aircraft, selecting the AT-802U Sky Warden to replace AFSOC's U-28 fleet instead. After a year of manufacturer certification, two AT-6Es arrived at Moody AFB, Ga., on Jan. 12, 2022, testing the Airborne Extensible Relay Over-Horizon Network (AERONet) secure-tactical networking for U.S./partner-nation COIN applications. Colombia, Nigeria, Thailand, and Tunisia teamed with 81st Fighter Squadron personnel to develop light attack/ISR tactics with AERONet. Thailand plans to operate eight AT-6s, Tunisia requested four, and Columbia and Nigeria both operate the similar A-29 Super Tucano. The AT-6Es successfully completed trials on June 14, 2022, and achieved military type certification before being returned to Beechcraft for potential foreign military sale.

Contractors: Beechcraft/Textron Aviation Defense (formerly Raytheon); Lockheed Martin (mission systems); Esterline (glass cockpit); L3/Harris (sensors).
First Flight: Sep. 10, 2009 (AT-6).
Delivered: Feb. 17, 2021.
IOC: N/A.
Production: Three.
Inventory: Two.
Operator: ACC.
Aircraft Location: Moody AFB, Ga.
Active Variants:
▪AT-6E Wolverine. Light attack/armed reconnaissance variant of the T-6A.
Dimensions: Span 33.5 ft, length 33.4 ft, height 10.7 ft.
Weight: Max T-O 10,000 lb.
Power Plant: One Pratt & Whitney Canada PT6A-68D turboprop 1,600 shp.
Performance: Speed 360 mph, range 1,700 miles (with four external tanks), mission endurance 4.5 hr (7.5 hr ferry).
Ceiling: 31,000 ft.
Armament: Wide array of laser/inertial-guided PGMs as well as laser-guided rockets (APKWS), AGM-114 Hellfire, and/or .50 cal gun on six wing-mounted hardpoints.
Accommodation: Two pilots on Martin Baker MK16LA zero/zero ejection seats.

A-10 THUNDERBOLT II

Attack, close-air support, forward air control

Brief: The A-10 "Warthog" is a specialized CAS aircraft tasked with interdiction, Forward Air Controller-Airborne (FAC-A), CSAR, and Strike Control & Reconnaissance. It combines a heavy, diverse weapons load with low-level maneuverability, a large combat radius, and long loiter time. The A-10 is capable of carrying up to 16,000 lb of ordnance in addition to its 30 mm cannon which can destroy heavy armor while the pilot is protected by a titanium-armored cockpit. The prototype YA-10A first flew on May 10, 1972, wining USAF's A-X competition for a new attack aircraft. The A-10A development aircraft first flew on Feb. 15, 1975, and A-10As were delivered

Staff Sgt. Alex Miller

between October 1975 and March 1984. USAF declared A-10A IOC in October 1977. The fleet was modernized under the Precision Engagement Program, resulting in the A-10C which first flew at Eglin in 2005. The A-10C adds color cockpit MFDs, a Helmet Mounted Cueing System (HMCS), Hands-on Throttle and Stick, digital stores management, improved fire-control, GPS-guided weapons, Litening/Sniper pods, advanced data links, and integrated sensors. The A-10C debuted in combat during Iraqi Freedom in 2007. With NVGs and targeting pods, the A-10C can operate under ceilings as low as 1,000 ft including at night. The Operational Flight Program (OFP) continuously updates the A-10's systems and software, and OFP Suite 11 is now planned for fielding in early FY23. The program will then shift to more frequent rolling software upgrades. USAF plans to cut the fleet to 218, upgrading remaining aircraft to continue through 2030 or beyond. Upgrades include replacing primary cockpit instruments with a high-resolution digital glass display, adding directional audio threat cueing, modernizing ARC-210 UHF/VHF comms, adding Ethernet, and integrating Small Diameter Bomb I. Re-winging is key to the aircraft's longevity and extends airframe life to at least 10,000 hours. A total of 173 aircraft received new wingsets prior to modifications recommencing in 2022, and all remaining aircraft will be re-winged through FY26. Congress lifted stipulations barring A-10 cuts for FY23, allowing divestiture of 21 aircraft from the Indiana ANG's 121st Fighter Squadron which will revert to flying the F-16.

Contractors: Fairchild Republic (Lockheed Martin); Boeing/Korean Aerospace Industries (re-wing).
First Flight: Jan. 20, 2005 (A-10C).
Delivered: 2006-2012 (A-10C).
IOC: September 2007 (A-10C).
Production: 713.
Inventory: 281.
Operator: ACC, AFMC, PACAF, ANG, AFRC.
Aircraft Location: Barksdale AFB, La.; Boise Air Terminal, Idaho; Davis-Monthan AFB, Ariz.; Eglin AFB, Fla.; Fort Wayne Arpt., Ind.; Martin State Arpt., Md.; Moody AFB, Ga.; Nellis AFB, Nev.; Osan AB, South Korea; Selfridge ANGB, Mich.; Whiteman AFB, Mo.
Active Variant:
▪A-10C. Upgraded version of the A-10A ground attack aircraft.
Dimensions: Span 57.5 ft, length 53.3 ft, height 14.7 ft.
Weight: Max T-O 51,000 lb.
Power Plant: Two GE Aviation TF34-GE-100 turbofans, each 9,065 lb thrust.
Performance: Speed 518 mph, range 800 miles (farther with air refueling).
Ceiling: 45,000 ft.
Armament: One internally mounted 30 mm, seven-barrel GAU-8/A cannon (1,174 rd of high-explosive incendiary (HEI) or HEI/armor-piercing incendiary); four AIM-9 Sidewinders, AGM-65 Mavericks, laser-guided rockets, most free-fall or guided air-to-surface weapons in USAF inventory, as well as ECM and advanced targeting pods.
Accommodation: Pilot on ACES II zero/zero ejection seat.

F-15 EAGLE

Air superiority fighter

Brief: The F-15 Eagle has been the world's dominant, supersonic, all-weather, day/night air-superiority fighter for more than 40 years. The F-15A first flew on July 27, 1972, and F-15A/Bs were delivered between 1974 and 1979, attaining IOC in September 1975. F-15C/Ds began replacing F-15A/Bs in 1979, offering superior maneuverability, acceleration, range, weapons, and avionics. The C/D incorporates internal EW countermeasures and an added 2,000 lb of internal fuel (with provision for CFTs). The aircraft accounted for 34 of 37 USAF air-to-air kills during its combat debut in Desert Storm. The final 43 production aircraft received the F-15E's APG-70 radar, and the subsequent Multi-Stage Improvement Program (MSIP) enhanced its tactical capabilities. USAF received the first APG-63(V)3 AESA-modified F-15 in 2010, but comprehensive modernization, including the Eagle Passive/Active Warning Survivability System (EPAWSS) was cut after the decision to replace the fleet with new-build F-15EX. USAF also reduced the number of aircraft slated for MIDS/JTRS upgrades to add higher capacity, jam-resistant Link 16 and UHF SATCOM. Though two-thirds of F-15C/Ds

Staff Sgt. Benjamin Raughton

have exceeded their design lives and suffer performance-limiting structural issues, USAF determined SLEP is not cost-effective and reduced mods to only 63 airframes now continuing through FY24. USAF declared the Legion Pod initially operationally capable and fielded it on Kadena-based F-15s in 2022. Legion IRST gives the F-15 passive detection capability to enable long-range air-to-air engagement without exposing intent to adversary aircraft. USAF requested to divest 67 aircraft in FY23 ahead of replacement by the F-15EX. The last F-15C/D departed Nellis and Lakenheath in March and April 2022, respectively, leaving Eglin and Kadena the final Active-duty locations. Kadena began F-15 drawdown in late 2022, and USAF plans to backfill with rotational fighters until a final force-structure decision is made.

Contractors: Boeing (previously McDonnell Douglas).
First Flight: Feb. 26, 1979 (F-15C).
Delivered: 1979-85 (F-15C/D).
IOC: 1979 (F-15C/D).
Production: 874.
Inventory: 185 (F-15C); 18 (F-15D).
Operator: AFMC, PACAF, ANG.
Aircraft Location: Barnes Arpt., Mass.; Eglin AFB, Fla.; Fresno ANGB, Calif.; Jacksonville Arpt., Fla.; Kadena AB, Japan; Klamath Falls (Kingsley Field), Ore.; NAS JRB New Orleans, La.; Portland Arpt., Ore.
Active Variants:
▪F-15C. Upgraded version of the single-seat F-15A.
▪F-15D. Upgraded version of the two-seat F-15B.
Dimensions: Span 42.8 ft, length 63.8 ft, height 18.7 ft.
Weight: Max T-O 68,000 lb.
Power Plant: Two Pratt & Whitney F100-PW-220 augmented turbofans, each 23,450 lb thrust; or two P&W F100-PW-229 augmented turbofans, each 29,000 lb thrust.
Performance: Speed Mach 2.5, ferry range 2,878 miles (3,450 miles with CFTs and three external tanks; farther with air refueling).
Ceiling: 60,000 ft.
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 as well as ECM pods; in a one-time test, an Eagle successfully launched an anti-satellite missile.
Accommodation: Pilot (C); two pilots (D), on ACES II zero/zero ejection seats.

William Lewis/USAF

F-15E STRIKE EAGLE

Multirole fighter

Brief: F-15E is an upgraded, two-seat, all-weather F-15 capable of deep interdiction/attack, tactical nuclear delivery, and air-to-air combat. Strike Eagle is capable of sustaining 9 Gs throughout the flight envelope. It first saw combat in Desert Storm in 1991. F-15E's large, varied load of precision weapons and 20 mm cannon make it a potent ground-attack platform, and radar-guided and IR-homing missiles give it an additional air-to-air capability. Its advanced cockpit includes a wide-field-of-view HUD and helmet mounted cockpit-cueing. The F-15E's avionics permit all-weather day/night engagement and it carries LANTIRN, Sniper, and Litening ATPs on dedicated pylons. The "Dragon's Eye" SAR pod fielded in 2009 provides all-weather surveillance/reconnaissance capability. F-15Es are equipped with Link 16 and BLOS SATCOM. The Strike Eagle is undergoing major avionics modernization centered on the new APG-82(V)1 AESA radar which will increase its lethality against more capable targets. The Eagle Passive/Active Warning Survivability System (EPAWSS) is simultaneously replacing the Strike Eagle's obsolete self-defense suite to increase survivability in future high threat environments. Supporting upgrades include color Large Area Digital (LAD) displays and processors to fully exploit AESA and EPAWSS' targeting and situational awareness improvements, and MIDS/JTRS to enable higher capacity, jam-resistant Link 16. Boeing completed EPAWSS installation on the first two F-15Es in 2022, and fleetwide AESA installs are slated for completion by FY24. Future enhancements include Mobile User Objective System (MUOS) secure, jam-resistant SATCOM and NATO-interoperable SATURN UHF, as well as IRST to discreetly engage airborne targets. An F-15E conducted the first live-fire of the upgraded AIM-120D3 missile, as part of qualification testing over the Eglin range on June 30, 2022.

Contractors: Boeing (previously McDonnell Douglas); BAE Systems (EPAWSS); Raytheon (AESA).
First Flight: Dec. 11, 1986.
Delivered: April 1988-2004.
IOC: September 1989.
Production: 236.
Inventory: 218.
Operator: ACC, AFMC, USAFE.
Aircraft Location: Eglin AFB, Fla.; Mountain Home AFB, Idaho; Nellis AFB, Nev.; RAF Lakenheath, U.K.; Seymour-Johnson AFB, N.C.
Active Variant:
▪F-15E. All-weather strike aircraft derived from the F-15C/D.
Dimensions: Span 42.8 ft, length 63.8 ft, height 18.5 ft.
Weight: Max T-O 81,000 lb.
Power Plant: Two Pratt & Whitney F100-PW-220 augmented turbofans, each 23,450 lb thrust; or two F100-PW-229 augmented turbofans, each 29,000 lb thrust.
Performance: Speed Mach 2.5, range 2,762 miles with CFTs and three external tanks (farther with air refueling).
Ceiling: 50,000 ft.
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) including GBU-53 Stormbreaker and B61-12 nuclear free-fall weapon, as well as ECM, SAR, and advanced targeting pods.
Accommodation: Pilot and WSO on ACES II zero/zero ejection seats.

1st Lt. Savanah Bray

F-15EX EAGLE II

Air superiority fighter

Brief: F-15EX is the most advanced Eagle variant based on the F-15QA as a replacement for the legacy F-15C/D. The Eagle II is the first USAF F-15 to boast digital fly-by-wire flight controls, LAD glass-cockpit with touch-screen interface, and incorporate APG-82 AESA radar, Joint Helmet Mounted Cueing System (JHMCS), and EPAWSS self-defensive suite from the outset. The aircraft pioneers Open Mission System (OMS) software to enable rapid upgrades and capability enhancement, as well as the latest Suite 9.1 software in common with upgraded legacy aircraft. F-15EX promises higher speed, longer range, increased 29,500 lb payload (including two additional weapon stations), and lower operating costs than previous variants. The type also boasts the longest stand-off air-to-air engagement range of any fighter in the USAF inventory. Due to insufficient F-22 procurement, the F-15C/D fleet has continued flying beyond its designed service life, posing a serious risk of structural failure. Similar infrastructure, support, and training requirements will permit existing F-15 units to quickly transition to the F-15EX. The F-15EX incorporates two seats enabling future crew/mission expansion. FY23 efforts focus on integrating F-15EX-unique software into the common F-15 Operational Flight Program build, ramping up production capability, and continuing capability enhancement. USAF awarded Boeing a $1.2 billion contract for the first eight new-build F-15EX on July 13, 2020.

FY21 and FY22 each funded 12 airframes plus a congressional add of five aircraft last year. FY23 funds 24 airframes to speed phase-out of the F-15C/D, though the Air Force now plans to purchase 104 aircraft rather than the originally planned 144. The first aircraft delivered to Eglin on March 11, 2021, supports AFMC developmental testing while the second delivered April 20, 2021, is assigned to ACC for operational testing. The next six jets are slated for delivery in 2023, followed by upward of 76 over the next five years. Combined developmental and operational testing is ongoing, and the type flew its first operational test sortie from Nellis in October 2021. An F-15EX fired a live missile for the first time on Jan. 25, 2022, launching a pair of AIM-120s over the Eglin range.

Contractors: Boeing; BAE Systems (EPAWSS); Raytheon (AESA).
First Flight: Feb. 2, 2021.
Delivered: March 11, 2021-present.
IOC: 2023 (planned).
Production: 104 (planned).
Inventory: Two.
Operator: ACC, AFMC. Planned: ANG.
Aircraft Location: Eglin AFB, Fla. Planned: Klamath Falls (Kingsley Field) and Portland Arpt., Ore.
Active Variant:
▪F-15EX. Future F-15C/D replacement based on the F-15QA developed for Qatar.
Dimensions: Span 42.8 ft, length 63.8 ft, height 18.5 ft.
Weight: Max T-O 81,000 lb.
Power Plant: Two General Electric F110-GE-129 augmented turbofans, each 29,000 lb thrust.
Performance: Speed Mach 2.5, range approx. 2,762 miles (air refuelable).
Ceiling: 60,000 ft.
Armament: One internally mounted M61A1 20 mm six-barrel cannon (500 rd); combination of up to 12 AIM-9 Sidewinders or AIM-120 AMRAAMs, or combination of up to 24 air-to-ground munitions.
Accommodation: Pilot and (optional) second aircrew member on ACES 5 zero/zero ejection seats.

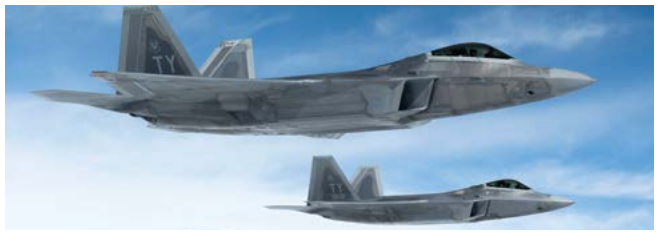
Senior Airman Zachary Rufus

F-16 FIGHTING FALCON

Multirole fighter

Brief: The F-16 is a lightweight, multirole fighter capable of air-to-air, CAS, SEAD, interdiction, FAC-A, tactical nuclear delivery and all-weather strike missions. The "Viper" makes up roughly half the fighter inventory, carries the majority of PGMs in service, and is one of the most maneuverable fighters ever built. The prototype YF-16 first flew Feb. 2, 1974, competing in the USAF Lightweight Fighter competition. After selection, F-16A flew on Dec. 8, 1976, followed by the two-seat F-16B on Aug. 8, 1977. Deliveries began in August 1978, and USAF declared F-16A IOC in October 1980. F-16C/D deliveries began at Block 25 in 1984, adding the APG-68 radar and AMRAAM missile as well as cockpit, airframe, and avionics improvements. Block 30/32 added the HARM missile and more powerful engines, and Block 40/42 introduced the terrain-following LANTIRN pod and wide-angle HUD for high-speed night/all-weather penetration. These airframes boasted higher take-off weight and G-limits and an expanded flight envelope starting in 1988. Block 50/52 was introduced to replace the F-4G in the "Wild Weasel" SEAD-role armed with the HARM missile, longer-range radar, and even higher-performance engines. The F-16 entered combat during Desert Storm in 1991 and scored its first USAF air-to-air kill during Southern Watch on Dec. 27, 1992. The fleet is now cockpit-standardized with color MFD, modular mission computer, Helmet Mounted Integrated Targeting (HMIT), and Link 16. The Operational Flight Program (OFP) continuously updates the F-16's software and most recently added JASSM-ER and enhanced AMMRAM. Most upgrades are managed in Pre-Block (Blocks 25-32) and Post-Block (Blocks 40-52) tranches. USAF retired the final Block 25 aircraft from Luke in September 2022, and will continue retiring 76 Pre-Block aircraft through FY24. Late-block aircraft are undergoing modernization and a total of 450 are also undergoing SLEP to stretch beyond 8,000 flying hours. Modernization centers on the new AN/APG-83 AESA radar, specifically aimed at countering cruise missile threats to the homeland. An initial 72 AESA-equipped aircraft were fielded under an emergent operational need and a further 444 will be upgraded. USAF aims to expand digital RWR upgrades into a future, fully integrated, internal EW suite for active jamming as well as self-defense. The rapidly developed Integrated Viper Electronic Warfare Suite (IVEWS) will leverage AESA and will be rapidly upgradable against new threats. An IVEWS-equipped F-16 will undergo operational assessment this year, followed by potential fleet mods starting in FY25. Comm suite upgrades integrate Mobile User Objective System (MUOS) secure, jam-resistant BLOS and NATO-interoperable LOS SATURN, while MIDS/JTRS will provide higher capacity, jam-resistant Link 16. Other efforts include modernizing mission computer and cockpit displays in conjunction with offensive/defensive upgrades, Mode 5 IFF, navigation improvements, and Auto Ground Collision Avoidance System (AGCAS). An F-16 tested the Legion IRST pod to passively detect and track aerial targets during a series of flights at Eglin in 2022. USAF plans to continue upgrading the F-16 to keep pace with threats through 2040 or beyond. The Wisconsin ANG's 115th Fighter Wing and Alabama ANG 187th FW flew their final F-16 sorties in October 2022 and March 2023, respectively. Both units are transitioning to the F-35.

Contractors: Lockheed Martin (previously General Dynamics); Northrop Grumman (AESA/ IVEWS).
First Flight: June 19, 1984 (F-16C).
Delivered: July 13, 1984-2005 (F-16C/D).
IOC: 1981 (Block 25-32); 1989 (Block 40/42); 1994 (Block 50/52).
Production: 2,206.
Inventory: 752 (F-16C); 145 (F-16D).
Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG, AFRC.
Aircraft Location: Aviano AB, Italy; Edwards AFB, Calif.; Eglin AFB, Fla.; Eielson AFB, Alaska; Holloman AFB, N.M.; Homestead ARB, Fla.; Kunsan AB, South Korea; Luke AFB, Ariz.; Misawa AB, Japan; NAS JRB Fort Worth, Texas; Nellis AFB, Nev.; Osan AB, South Korea; Shaw AFB, S.C.; Spangdahlem AB, Germany; and ANG in Alabama, Arizona, Colorado, District of Columbia (flying from Maryland), Minnesota, New Jersey, Ohio, Oklahoma, South Carolina, South Dakota, Texas. **Planned:** Fort Wayne Arpt., Ind.
Active Variants:
▪F-16C/D Block 30/32. Multinational Staged Improvement Program II upgraded with new engines, flown by ANG, AFRC, and test/aggressor units.
▪F-16CG Block 40/42. Optimized for night/all-weather attack.
▪F-16CJ Block 50/52. Optimized for SEAD with long-range radar, engines, and weapons.
Dimensions: Span 32.8 ft, length 49.3 ft, height 16.7 ft.
Weight: Max T-O 37,500 lb (Block 30/32); 42,300 lb (Block 40/42); 48,000 lb (Block 50/52).
Power Plant: GE Aviation F110-GE-100 augmented turbofan, 29,000 lb thrust (Block 30); Pratt & Whitney F100-PW-220 augmented turbofan, 24,000 lb thrust (Block 32/42); F110-GE-129 turbofan, 29,000 lb thrust (Block 50); F100-PW-229 augmented turbofan, 29,000 lb thrust (upgraded Block 42, Block 52).
Performance: Speed Mach 2+, ferry range 2,002+ miles.
Ceiling: 50,000 ft.
Armament: One M61A1 20 mm cannon (500 rd); up to six AIM-9 Sidewinder or AIM-120 AMRAAMs air-to-air missiles; most air-to-surface weapons in USAF inventory (nuclear and conventional) including JASSM-ER, as well as ECM and advanced targeting pods.
Accommodation: Pilot (C), two pilots (D), on ACES II zero/zero ejection seats.


Tech. Sgt. Betty Chevalier

F-22 RAPTOR

Air superiority/multirole fighter

Brief: The F-22 is a stealthy, penetrating, air dominance, and multirole fighter built for day, night, and adverse weather, full-spectrum operations. The prototype YF-22 first flew as part of USAF's Advanced Tactical Fighter competition on Sept. 29, 1990, followed by the flight of the first F-22 test aircraft in 1997. The Raptor flew its first operational sortie during Noble Eagle in 2006 and debuted in combat striking Islamic State ground targets during Inherent Resolve in 2014. The F-22 achieved its first air-to-air kill downing a Chinese surveillance balloon off the coast of North Carolina on Feb. 3, 2023. Raptor is currently the world's most advanced fighter and its mix of stealth,

long-range supercruise, and multitarget engagement capability make it a key platform in USAF's Indo/Asia-Pacific strategy. F-22's advanced flight controls and high-performance thrust-vectoring engine enable extreme maneuverability. Features include six LCD color cockpit displays, APG-77 AESA radar, EW system with RWR and missile launch detection, and advanced comm/navigation and data links. USAF is aggressively testing enhancements to ensure the F-22's "first-shot, first-kill" advantage against advanced threats until replaced by the Next Generation Air Dominance (NGAD) fighter in the 2030s. Combat-coded aircraft recently completed Increment 3.2B software upgrades adding high-resolution ground mapping SAR, threat geolocation, EA capability, and integrated SDB I, AIM-120D, and AIM-9X. The program employs an "agile" strategy to rapidly and continuously develop, test and field improvements, including adding technologies developed for NGAD back into the Raptor. Ongoing efforts include IRST to stealthily track and target airborne threats, and stealthy external fuel tanks/pylons to extend unrefueled range. Other significant efforts include the Reliability, Availability, and Maintainability Program (RAMP), Link 16, and IFF enhancement. RAMP improves electrical power, replaces avionic-fiberoptics, adds more durable LO, and fixes structures and wiring. Link 16 will enable two-way networking with legacy aircraft via Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS). Initial installs began in FY22 and fleetwide upgrade is now planned for FY25. USAF proposed retiring noncombat-coded Block 20 aircraft to fund NGAD development in FY23, retaining only modernized Block 30/35s. Congress blocked the move pending analysis of the costs to upgrade Block 20s to full combat capability. F-22 formal training is moving from Eglin, where it has been since Hurricane Michael ravaged Tyndall, to a new permanent location at Langley in 2023.

Contractors: Lockheed Martin; Boeing (production partner).
First Flight: Sept. 7, 1997.
Delivered: Oct. 23, 2002-May 2, 2012.
IOC: Dec. 15, 2005.
Production: 195.
Inventory: 185.
Operator: ACC, AFMC, AFRC (associate), PACAF, ANG.
Aircraft Location: Edwards AFB, Calif.; JB Elmendorf-Richardson, Alaska; JB Langley-Eustis, Va.; JB Pearl Harbor-Hickam, Hawaii; Nellis AFB, Nev.
Active Variant:
▪F-22A. Fifth-generation air dominance fighter.
Dimensions: Span 44.5 ft, length 62 ft, height 16.6 ft.
Weight: Max T-O 83,500 lb.
Power Plant: Two Pratt & Whitney F119-PW-100 augmented turbofans, each 35,000 lb thrust.
Performance: Speed Mach 2 with supercruise capability, ferry range 1,850+ miles with two external wing fuel tanks (farther with air refueling).
Ceiling: Above 50,000 ft.
Armament: One internal M61A2 20 mm gun (480 rds); two AIM-9 Sidewinders inside internal weapons bays; six AIM-120 AMRAAMs (air-to-air loadout), or two AIM-9, two AIM-120s, two GBU-32 JDAMs or eight SDBs (air-to-ground loadout) in main internal weapons bay.
Accommodation: Pilot on ACES II zero/zero ejection seat.

F-35 LIGHTNING II

Multirole fighter

Brief: The F-35 Lightning II is a multirole, stealthy, penetrating, all-weather fighter/attack family of tactical aircraft developed under the multinational Joint Strike Fighter program. USAF's conventional F-35A is complemented by the F-35B short takeoff and vertical landing (STOVL) version for USMC, and the carrier-capable F-35C for the Navy. The X-35 demonstrator first flew on Oct. 24, 2000, winning the go-ahead for the F-35A which first flew in developmental form in 2006. Lightning II is planned to replace the A-10 and some F-16s, offering better penetrating capability against advanced A2/AD threats to strike heavily defended targets. USAF's F-35A can carry up to 22,000 lb of weapons on 10 stations: two internal bays for stealth, and/or six wing and fuselage pylons for max loadout. Air Force F-35s first saw combat on April 30, 2019, during Inherent Resolve. The current fleet-standard Block 3F software gives the F-35A full combat capability with an array of precision guided weapons across mission sets including interdiction, basic CAS, and limited SEAD. The next Block 4 iteration will give the F-35A a new maritime strike role and add weapons including the nuclear B61-12, developmental Stand-in Attack Weapon (SiAW), and SDB II, as well as APG-185 radar sensor and EW improvements. Block 4 also corrects deficiencies discovered in concurrent development/testing but is roughly three years behind schedule. USAF is continuing low-rate delivery

Senior Airman Erica Webster

to minimize future retrofits. The Lot 15 through 17 production deal agreed in December 2022 will include the first Tech Refresh 3 (TR-3) aircraft specifically equipped to support Block 4 retrofit. TR-3 flight-testing began in January 2023, and Continuous Capability Development and Delivery (C2D2) will provide ongoing development and modernization. The F-35A also requires increased engine performance to fully exploit Block 4. Both GE and Pratt & Whitney tested prototype engines that offered as much a 30 percent range increase, but USAF opted for an Engine Core Upgrade to the current power plant instead on cost and variant-interoperability grounds. F-35 deliveries were halted for three months following the engine-related crash of an F-35B in December 2022. All three variants will now undergo engine modifications to correct harmonic resonance issues. The F-35 program aims to complete operational testing this year, enabling a full-rate production decision and future cost-saving mutiyear block buys. Operational testing was originally slated for completion in 2019. Congress added FY23 funds to procure 43 airframes, 10 more than the service initially requested. The Czech Republic announced plans to purchase 24 F-35s in July 2022, joining Germany, Finland, and Switzerland as recent allied customers for the jet.

Contractors: Lockheed Martin; BAE Systems; Northrop Grumman; Pratt & Whitney (engine and Engine Core Upgrade).
First Flight: Dec. 15, 2006.
Delivered: April 2011-present.
IOC: Aug. 2, 2016.
Production: Planned: 1,763 (USAF F-35As).
Inventory: 354 (USAF).
Operator: ACC, AETC, AFMC, AFRC (associate), ANG, PACAF, USAFE.
Aircraft Location: Burlington ANGB, Vt.; Edwards AFB, Calif.; Eglin AFB, Fla.; Eielson AFB, Alaska; Hill AFB, Utah; Luke AFB, Ariz.; Nellis AFB, Nev.; RAF Lakenheath, U.K. **Planned:** Dannelly Field, Ala.; NAS JRB Fort Worth, Texas; Truax Field, Wis.; Tyndall AFB, Fla.
Active Variant:
▪F-35A. Conventional takeoff and landing (CTOL) variant for the Air Force.
Dimensions: Span 35 ft, length 51.4 ft, height 14.4 ft.
Weight: Max T-O 70,000 lb.
Power Plant: F-35A: one Pratt & Whitney F135-PW-100 augmented turbofan, 40,000 lb thrust.
Performance: Speed Mach 1.6 with full internal weapons load, range 1,380 miles.
Ceiling: 50,000 ft.
Armament: F-35A: one 25 mm GAU-22/A cannon; standard internal loadout: two AIM-120 AMRAAMs and two GBU-31 JDAMs.
Accommodation: Pilot on Martin Baker MK16 zero/zero ejection seat.

Capt. Jason Sanchez

F-117 NIGHTHAWK

Test and training

Brief: The F-117 was the world's first operational stealth aircraft, designed to expand USAF's ability to strike critical, heavily defended targets. Its small radar signature, LO technologies, and advanced targeting system allowed the aircraft to penetrate dense threat environments and deliver precision weapons against heavily defended, high-value targets with pinpoint accuracy. Primary missions included precision attack, air interdiction, SEAD, and special operations. The type was first publicly acknowledged in November 1988 and conducted its first operational deployment during Just Cause over Panama in 1989. Highly classified F-117A development and manufacturing

began simultaneously in November 1978, using many parts transferred or modified from existing aircraft. The F-117As were first stationed at Tonopah Test Range in Nevada to conduct test flying before transferring operationally to Holloman in 1992. A single aircraft was shot down in combat over Serbia on March 27, 1999, and the F-117 fleet was officially retired on April 22, 2008. The remaining airframes entered climate-controlled storage at Tonopah, with several being maintained in flyable condition for the Air Force Flight Test Center. F-117s have recently reemerged, notably supporting several exercises in 2020, operating more frequently and openly alongside Aggressor aircraft at Nellis and MCAS Miramar. USAF has acknowledged a need for more advanced, threat-representative training and recently reactivated the 65th Aggressor Squadron at Nellis with early F-35As to enhance fifth-generation combat training. F-117s most recently flew dissimilar air combat training alongside ANG F-15s at Fresno in September 2021, and took part in ANG's large-force employment Exercise Sentry Savannah in May 2022. A combined 45 aircraft remain in flying (or regeneratable stored) condition with approximately three airframes undergoing demilitarization and disposal each year. USAF contracted to maintain the type for test and training support through at least 2034.

Contractor: Lockheed Martin.
First Flight: June 18, 1981.
Delivered: 1982-summer 1990.
IOC: October 1983.
Production: 59.
Inventory: 45 (Type 1000 storage).
Operator: AFMC.
Aircraft Location: Tonopah Test Range, Nev.
Active Variants:
▪F-117A. First-generation stealth attack aircraft.
Dimensions: Span 43.3 ft, length 65.9 ft, height 12.4 ft.
Weight: Max gross 52,500 lb.
Weight: Max T-O 70,000 lb.
Power Plant: Two General Electric F404-GE-F1D2 non-afterburning turbojets, each 9,040 lb thrust.
Performance: Speed 0.9 Mach, mission radius unrefueled (5,000 lb weapons load) 656 miles.
Ceiling: 35,000 ft.
Armament: Full internal carriage of a variety of tactical weapons, including laser- and GPS-guided 2,000 lb munitions.
Accommodation: Pilot on ACES II zero/zero ejection seat.

SPECIAL OPERATIONS AIRCRAFT

Sierra Nevada Corp.

A-29 SUPER TUCANO

Light attack

Brief: The A-29 Super Tucano is a turboprop light attack/armed reconnaissance aircraft designed by Embraer in Brazil and built under license by Sierra Nevada Corp. USAF has long sought a cost-effective, manned light CAS/tactical ISR platform for operations in permissive counterinsurgency scenarios. The A-29 was initially a contender for the Air Force's Light Attack/Armed Reconnaissance (LAAR) requirement for approximately 100 aircraft that fell prey to budget cuts a decade ago. The service launched a renewed effort in 2017, kicking off the Light Attack Experiment (OA-X) to rapidly evaluate off-the-shelf CAS/ISR platforms to relieve pressure on existing, higher-cost fleets such as the A-10 and F-16. A fatal A-29 crash abruptly ended the flight segment of evaluations at Holloman on June 22, 2018. Trials, however, yielded sufficient data for USAF to opt for two AT-6Bs, and two—later increased to three—A-29s to form a Combat Aviation Advisor and SOF-support capability. The A-29 was not selected as one of the five aircraft USSCOM evaluated to replace the AFSOC-operated U-28A fleet, ultimately won by the AT-802U Sky Warden. AETC's 81st Fighter Squadron at Moody also operated the A-29, initially training Afghan Air Force crews. The unit further trained a total of 64 Nigerian Air Force pilots through September 2021, supporting the sale of 12 A-29s to Nigeria. A total of 15 countries operate the type worldwide. Sierra Nevada delivered all three aircraft to Hurlburt in early 2021, though the Air Force now considers the aircraft excess to need and plans to offer the airframes for foreign military sale.

Contractor: Sierra Nevada Corp.
First Flight: June 2, 1999.
Delivered: Feb. 23, 2021-March 31, 2021.
IOC: N/A.
Production: Three.
Inventory: Three.
Operator: AETC, AFSOC.
Aircraft Location: Hurlburt Field, Fla.; Moody AFB, Ga.
Active Variants:
▪A-29 Super Tucano. License-built version of the Embraer EMB-314 light attack aircraft.
Dimensions: Span 36.5 ft, length 37.3 ft, height 13 ft.
Weight: Max T-O 11,905 lb.
Power Plant: One Pratt & Whitney Canada PT6A-68C turboprop, 1,604 shp.
Performance: Speed 368 mph, range 1,900 miles (with wing-mounted external tanks).
Ceiling: 35,000 ft.
Armament: Two internal wing-mounted .50-caliber machine guns (200 rd each), up to 3,714 lb of external weapons on four wing and one centerline station.
Accommodation: Two aircrew on Martin Baker MK10 zero/zero ejection seats.

William Lewis/USAF

AC-130J GHOSTRIDER

Attack

Brief: The AC-130J is AFSOC's primary CAS, air interdiction, and armed reconnaissance platform optimized for convoy escort, point defense, and supporting urban combat. The next-generation gunship is designed to provide ground forces a persistent direct-fire platform and is based on a highly modified MC-130J. Airframes are retrofitted after delivery with the modular Precision Strike Package, wing-mounted weapons, and gunship-specific systems. The initial aircraft delivered was damaged beyond repair when it crashed during a test sortie on April 21, 2015. Ghostrider deployed to combat for the first time in Afghanistan in June 2019. AC-130Js are upgraded and managed in common with the HC/MC-130J, and are receiving Block 8.1 avionics upgrades along with the baseline C-130J. SOF-specific enhancements are rapidly developed and integrated in response to operational requirements. The aircraft's PSP weapons system, initially developed on the AC-130W, includes a dual mission management console, robust communications suite, two EO/IR sensors, advanced fire-control equipment, PGM delivery capability, and trainable cannons. Block 20 added/retrofitted a 105 mm gun, laser-guided SDB, side-facing pilot tactical HUD, and Large Aircraft Infrared Countermeasures (LAIRCM). Block 20+/30 improved gun accuracy, hardened GPS, and added Hellfire missile and Small Glide Munition as a result of lessons learned in operational testing. The first Block 30 was delivered for testing in 2019 and fleetwide retrofit is planned by FY25, with two aircraft funded in FY23. Lockheed Martin delivered the first Airborne High Energy Laser (AHEL) weapon in October 2021, which it plans to test on the AC-130J. Ongoing upgrades include re-engineering and modernization of the 105 mm gun, installation of engine IR Suppression System (IRSS), radio frequency countermeasures (RFCM) to detect, locate, and respond to threats, defensive systems upgrades, and HF/VHF/UHF/SATCOM suite modernization. The AC-130J fully replaced the AC-130U/W with the retirement of the last AC-130W on July 13, 2022, completing AFOSC's gunship recapitalization effort. AFSOC recently reduced its planned buy from 37 to 30 aircraft, making the aircraft delivered to Cannon Nov. 2, 2022, the final AC-130J. AFSOC plans to shift AC-130J formal training from Hurlburt to Kirtland were delayed a year to FY23.

Contractor: Lockheed Martin, Sierra Nevada Corp. (RFCM).

First Flight: Jan. 31, 2014.
Delivered: July 29, 2015-Nov. 2, 2022.
IOC: Sept. 30, 2017.
Production: 31.
Inventory: 29.
Operator: AFSOC; **Planned:** AETC.
Aircraft Location: Hurlburt Field, Fla.; Cannon AFB, N.M. **Planned:** Kirtland AFB, N.M.
Active Variants:
▪AC-130J Ghostrider Block 20. Production standard gunship with additional 105 mm gun.
▪AC-130J Ghostrider Block 30. Production aircraft with post-operational test upgrades.
Dimensions: Span 132.6 ft, length 97.7 ft, height 39.1 ft.
Weight: Max T-O 164,000 lb.
Power Plant: Four Rolls-Royce AE 2100D3 turboprops, each 4,700 shp.
Performance: Speed 416 mph, range 3,000 miles (farther with air refueling).
Ceiling: 28,000 ft.
Armament: Trainable 30 mm GAU-23/A cannon; 105 mm cannon; up to eight wing pylon-mounted GBU-39 SDB or AGM-114 Hellfire; aft-firing GBU-69B Small Glide Munition or AGM-176 Griffin (deployed from 10 Common Launch Tubes integrated into the aircraft's ramp/door).
Accommodation: Two pilots, CSO, WSO, sensor operator, loadmaster, and three gunners.

Tech. Sgt. Sam King

C-145 COMBAT COYOTE

Training and light special air mobility

Brief: The C-145 is a STOL multipurpose utility and SOF proficiency training aircraft based on the Polish-built PZL Mielec M-28 Skytruck. The high-wing STOL aircraft features nonretractable landing gear for austere operations. USSOCOM assets are operated by AFSOC as a nonstandard fleet, initially supporting small combat teams. The aircraft first deployed in 2011 to Afghanistan. It is reconfigurable for 2,400 lb of cargo airdrop, casualty evacuation, CSAR, and humanitarian missions. C-145As later shifted to partnership capacity building Aviation Foreign Internal Defense (AvFID) missions. AFSOC now uses contract aircraft to provide partner countries with more tailored assistance and opted to cut the fleet from 16 to the current five aircraft in 2015. USSOCOM evaluated the armed MC-145 Coyote as one of five types considered to replace the U-28A before ultimately selecting the AT-802U Sky Warden. C-145s provided aircrew proficiency for combat aviation advisers until the command began divesting the remaining fleet in FY23. The 711th Special Operations Squadron at Duke flew the type's last operational sortie before retirement on Dec. 15, 2022.

Contractor: PZL Mielec (Lockheed Martin/Sikorsky subsidiary).
First Flight: July 1993 (PZL M-28).
Delivered: 2009-2013.
IOC: N/A.
Production: 16.
Inventory: Five, USSOCOM-owned.
Operator: AFSOC, AFRC (associate).
Aircraft Location: Duke Field, Fla.
Active Variant:
▪C-145A. Militarized civilian M-28 Skytruck used for SOF support and training.
Dimensions: Span 72.3 ft, length 43 ft, height 16.1 ft.
Weight: Max T-O 16,534 lb.
Power Plant: Two Pratt & Whitney PT6A-65B turboprops, 1,100 shp.
Performance: Speed 256.5 mph, range 1,010 miles.
Ceiling: 25,000 ft.
Accommodation: Two pilots, one loadmaster. **Load:** 16 passengers or 10 paratroopers; up to four litters; max cargo 5,000 lb.

Michelle Gigante/USAF

C-146 WOLFHOUND

Special operations mobility

Brief: The C-146 provides flexible, responsive airlift for special operations teams flying from austere and semi-prepared airfields worldwide. Wolfhound is based on the German-built Dornier 328 regional airliner and was purchased by USSOCOM, modified by Sierra Nevada Corp., and designated C-146. The aircraft are operated by AFSOC as a nonstandard fleet providing direct support to SOF teams worldwide. Modifications include ARC-231, PRC-117, and Iridium communications suite, troop/cargo-capable cabin, casualty evacuation capability, NVG compatibility, and STOL/austere operations enhancements. The aircraft first deployed in support of USAFRICOM in 2011. Recent upgrades include navigation enhancements to permit ops in GPS-degraded environments. C-146s notably participated in the tactical landing and refueling operation on a Michigan highway during Exercise Northern Agility, as well as the first Agile Combat Employment operations from a roadway in Latvia as part of Exercise Trojan Footprint in May 2022.

Contractors: Fairchild-Dornier; Sierra Nevada Corp.
First Flight: December 1991 (Dornier 328).
Delivered: 2011-2017.
IOC: Circa 2011.
Production: 20 (converted).
Inventory: 20 (USSOCOM-owned).
Operator: AFSOC.
Aircraft Location: Cannon AFB, N.M.; Duke Field, Fla.
Active Variant:
▪C-146A. Pre-owned civil Dornier 328 modified for SOF airlift.
Dimensions: Span 69.6 ft, length 68.8 ft, height 23.8 ft.
Weight: Max T-O 30,843 lb.
Power Plant: Two Pratt & Whitney PW-119C turboprops, each 2,282 shp.
Performance: Speed 310 mph, range 1,500 miles (2,000 lb cargo).
Ceiling: 31,000 ft.
Accommodation: Two pilots, one loadmaster.
Load: 27 passengers; up to four litters; max cargo 6,000 lb.

Senior Airman Trevor Gordnier

CV-22 OSPREY

Multimission lift

Brief: The CV-22 is a medium-lift, vertical takeoff and landing (VTOL) tiltrotor, primarily used for clandestine long-range, all-weather penetration to insert, recover, and support SOF teams in hostile, denied, and politically sensitive areas. Derived from the V-22, which flew in prototype form on March 19, 1989, USAF CV-22Bs are equipped with a fully integrated precision TF/TA radar navigation, digital cockpit management system, FLIR, integrated NVG/HUD, digital map system, robust self-defense systems, and secure anti-jam comms. The CV-22 can conduct shipboard and austere forward operations and is USAF's sole high-speed vertical lift asset. It is also fully capable of operating in nuclear, biological, and chemical (NBC) warfare conditions. CV-22s first deployed to Africa in November 2008 and debuted in combat in Iraq in 2009. The Department of the Navy leads joint-service sustainment with USAF funds, while SOCOM foots special operations specific mods. The program is currently retrofitting CV-22s to Block 20 standard, in common with USMC's MV-22s. Mods include new cabin lighting, Color

Helmet Mounted Displays, IR searchlight, lightweight ballistic armor, EW upgrades, avionics, self-defensive improvements, weapons integration, and ISR and situational awareness enhancements. USSOCOM is replacing the CV-22's legacy APQ-186 radar with the Silent Knight TF/TA radar (in common with the MC-130J) under a three-year contract awarded in FY21. A CV-22 test-flew the stealthier, low-altitude, night/all-weather navigation radar for the first time in 2020. Integration of a ventral-mounted 7.62 mm minigun will eventually give pilots a helmet-cued, 360-degree field of defensive fire to complement the ramp-mounted weapon. Priority development includes improving the Osprey's rapid, long-distance self-deployment capabilities, and modifying its nacelles to improve maintainability, engine IR suppression, and reduce dust/ debris ingestion. AFSOC briefly grounded the fleet in 2022 due to engine-gearbox issues affecting aircraft controllability. FY23 includes developmental funds to improve gearbox, clutch, and proprotor components, and AFSOC instituted training and procedural changes to mitigate risk in the interim.

Contractors: Boeing; Bell Helicopter Textron.
First Flight: February 2000 (CV-22).
Delivered: Sept. 19, 2005-present.
IOC: 2009.
Production: 54 (planned).
Inventory: 52.
Operator: AETC, AFSOC, ANG (associate).
Aircraft Location: Cannon AFB, N.M.; Hurlburt Field, Fla.; Kirtland AFB, N.M.; RAF Mildenhall, U.K.; Yokota AB, Japan.
Active Variant:
▪CV-22B. Air Force special operations variant of the V-22 Osprey.
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.
Power Plant: Two Rolls-Royce-Allison AE1107C turboshafts, each 6,200 shp.
Performance: Cruise speed 277 mph, combat radius 575 miles with one internal auxiliary fuel tank, self-deploys 2,100 miles with one in-flight refueling.
Ceiling: 25,000 ft.
Armament: One ramp-mounted .50-caliber machine gun. **Planned:** One belly mounted forward firing GAU-17 (modified) 7.62 mm minigun Full-azimuth Defensive Weapon System (FDWS).
Accommodation: Two pilots, two flight engineers.
Load: 24 troops seated, 32 troops on floor, or 10,000 lb cargo.

Staff Sgt. Tony Harp

EC-130J COMMANDO SOLO/SUPER J

Psychological warfare/special operations airlift

Brief: The EC-130J is the Air Force's primary psychological warfare platform, providing Military Information Support Operations (MISO) and civil affairs broadcast. Roles include offensive counterinformation radio, television, and military communications broadcast, EA, and/or SOF mobility. Aircraft are also equipped with enhanced self-protection including Large Aircraft IR Countermeasures (LAIRCM) to counter MANPAD threats. Legacy Commando Solo variants have conducted psychological operations in almost every U.S. contingency since 1980 and the EC-130J debuted in combat during Enduring Freedom in 2001. With transition to the J model, USAF added a new, secondary mission resulting in the "Super J" variant. Three heavily modified EC-130J Commando Solo served as a standard broadcasting station for psychological warfare operations while the four "Super Js" perform secondary, low-cost EA in addition to special operations. USAF began modernizing the fleet with the new Multi-Mission Platform-Heavy (MMP-H) digital broadcast system in 2018. The system includes a roll-on internal payload as well as the external podded Communication EA Surveillance and Reconnaissance (CEASAR) and Long-Range Broadcast System (LRBS), giving both variants full MISO/EA capabilities. The software-defined digital system is capable of UHF/VHF and AM/FM radio, cellular, and television broadcast as well as advanced EA at a stand-off range of up to 175 miles. The MC-130J Commando II is replacing both Commando Solo and Super-J as part of AFSOC's multimission fleet consolidation. Commando Solo flew its final broadcast sortie on Sept. 16, 2022, and all three aircraft will be retired in FY23. The four Super-J will be de-converted to C-130J configuration and transferred to the ANG schoolhouse at Little Rock as the 193rd SOW transitions to the MC-130J.

Contractors: Lockheed Martin; Raytheon; Sierra Nevada Corp. (Link 16/ AbMN).
First Flight: November 2003.
Delivered: Oct. 17, 1999-2006.
IOC: 2004.
Production: Seven.
Inventory: Three (Commando Solo); four (Super J).
Operator: ANG.
Aircraft Location: Harrisburg Arpt., Pa.
Active Variants:
▪EC-130J Commando Solo. Modified C-130J used for broadcast and psyops.
▪EC-130J Super J. Modified C-130J used for SOF mobility and psyops.
Dimensions: Span 132.6 ft, length 97.8 ft, height 38.8 ft.
Weight: Max T-O 164,000 lb.
Power Plant: Four Rolls-Royce-Allison AE2100D3 turboprops, each 4,637 shp.
Performance: Speed 335 mph cruise, range 2,645 miles (air refuelable).
Ceiling: 28,000 ft.
Accommodation: Two pilots, flight systems officer, mission systems officer, two loadmasters, five electronic communications systems (CS) operators.

Travis Burcham/USAF

MC-12W LIBERTY

Tactical ISR

Brief: The MC-12W is a crewed, medium/low-altitude tactical ISR, SIGINT, and targeting platform based on the Beechcraft King Air 350ER (Extended Range). It was hastily developed under Project Liberty to meet an urgent operational need for crewed battlefield ISR and deployed to Iraq and Afghanistan in less than a year in 2009. MC-12W is capable of complete ISR collection, processing, analysis, and dissemination. The aircraft provides targeting data and tactical ISR direct to special operations ground forces. Specialized equipment includes FMV, laser designation, SIGINT, advanced BLOS connectivity, and advanced SATCOM. ACC passed 20 airframes to USSOCOM in 2015, and the Oklahoma ANG formed a dedicated SOF support mission with the remaining aircraft, deploying for the first time to Afghanistan in 2015. Pooling aircraft within SOCOM initially hampered the 137th SOW's effort to reach full capability. Coordination between AFSOC and the ANG eventually freed 13 aircraft, enabling the aircrew qualifications and availability needed to reach full operational capability in 2022. The fleet requires sensor modernization to meet COCOM requirements including SAR for ground-moving target tracking in poor visibility, and a second high-fidelity EO/IR/full-motion video sensor in addition to a modernized tactical data link. SOCOM announced it is procuring a fleet of 75 AT-802U Sky Warden light attack/armed reconnaissance aircraft to replace the U-28A as well as the MC-12W over the next few years.

Contractors: Beechcraft; L3Harris (EO/IR sensors).
First Flight: April 28, 2009.
Delivered: April 2009-2012.
IOC: June 2009.
Production: 42.
Inventory: 13.
Operator: ANG.
Aircraft Location: Will Rogers ANGB, Okla.
Active Variant:
▪MC-12W. Modified Beechcraft King Air 350ER equipped for battlefield ISR and targeting.
Dimensions: Span 57.9 ft, length 46.7 ft, height 14.3 ft.
Weight: Max T-O 16,500 lb.
Power Plant: Two Pratt & Whitney Canada PT6A-60A turboprops, each 1,050 shp.
Performance: Speed 359 mph, range 2,760 miles.
Ceiling: 35,000 ft.
Accommodation: Two pilots, combat systems operator, tactical systems operator.

Staff Sgt. Miranda Mahoney

MC-130H COMBAT TALON II

Special operations airlift/aerial refueling

Brief: The MC-130H is a special operations tanker/mobility aircraft based on the C-130H. Its primary missions are covert day, night, and adverse weather infiltration, exfiltration, and resupply of special operations forces in hostile or denied territory. MC-130H also provides airdrop resupply, rotary wing aerial refueling, and psyops. The aircraft are equipped with TF/TA radar, precision INS/GPS navigation, and electronic and IR counter-measures for self-protection. The fleet is fitted with wing-mounted external fuel tanks and drogue refueling pods to refuel HH-60 and CV-22 and can also receive fuel in flight. Aircraft are capable of airdrop using the Joint Precision Airdrop System and operating from austere and unmarked strips. The original MC-130Es were converted in the mid-1960s, followed by the MC-130P (previously HC-130N/P), which were delivered in the mid-1980s and retired in 2017. MC-130Hs were converted from base-model C-130H to supplement the Combat Talon I and Combat Shadow fleets and the first aircraft was delivered to Hurlburt on June 29, 1992. MC-130H have been continuously upgraded over their service life and boast an integrated glass cockpit and a modernized pod-based aerial refueling system. The type notably undertook noncombatant evacuations from Liberia in 1996, saw combat during Allied Force, and kicked off both Enduring Freedom and Iraqi Freedom, seizing key airfields during the invasions of Iraq and Afghanistan. Two aircraft conducted the type's final combatant operation evacuating Afghanistan during Allies Refuge in 2021. AFSOC retired the final MC-130H to storage at Davis-Monthan on April 2, 2023, completing transition to the MC-130J Commando II. The fleet accumulated some 264,442 flying hours over 106,850 sorties since entering operational service in late 1992.

Contractors: Lockheed Martin (airframe); Boeing.
First Flight: 1984.
Delivered: 1991-1994.
IOC: June 30, 1993.
Production: 24.
Inventory: Eight.
Operator: AFSOC.
Aircraft Location: Hurlburt Field, Fla.
Active Variant:
▪MC-130H Combat Talon II. SOF support and aerial refueling tanker.
Dimensions: Span 132.6 ft, height 38.5 ft, length 99.8 ft.
Weight: Max T-O 155,000 lb.
Power Plant: Four Allison T56-A-15 turboprops, each 4,910 shp.
Performance: Speed 300 mph, range 3,105 miles.
Fuel Capacity: Approx. 63,000 lb (81,120 lb with additional internal tanks) at up to 450 gpm.
Ceiling: 33,000 ft.
Accommodation: Two pilots, navigator, EWO, flight engineer, two loadmasters. **Load:** 77 troops, 52 paratroops, or 57 litters.

MC-130J COMMANDO II

Special operations airlift/aerial refueling

Brief: The MC-130J is USAF's next-generation special operations tanker/mobility aircraft based on the C-130J. Designated Commando II (previously Combat Shadow II) in honor of the WWII C-47, the aircraft are tasked with covert day, night, and adverse weather infiltration, exfiltration, and resupply of special operations forces in hostile or denied territory. They also provide airdrop resupply, rotary wing aerial refueling, psyops, and rubber raiding craft deployment for littoral ingress/egress. Specialized mission systems include advanced, integrated defensive systems including LAIRCM, EO/IR targeting sensor, and an added CSO flight-deck station to manage refueling, tactical navigation, and comms. MC-130Js are equipped with wing-mounted external tanks and drogue refueling pods to provision tilt-rotor and rotary-winged aircraft as well as a boom-style receptacle to receive fuel in-flight. The MC-130J shares system commonality with both the HC-130J rescue and AC-130J gunship versions, sharing overlapping upgrades and modernization with both types. The MC-130J was pulled out of baseline C-130J Block 7/8.1 software upgrades, which were then merged with comm/nav modernization in 2022. "Block 8.X" now comprises critical software for HF/VHF/UHF SATCOM upgrades, including secure, jam-resistant Mobile User Objective System (MUOS) BLOS and anti-jam NATO-interoperable SATURN UHF. Link 16 mods were delayed for funding and a planned switch to high-capacity, jam-resistant MIDS-JTRS. Commando II marks a significant capability enhancement with the addition of Terrain-Following/Terrain Avoidance (TF/TA) radar (housed in a second radome below the cockpit). Silent Knight TF/TA will enable the MC-130J to fully replace the MC-130H's low-level nighttime/adverse weather penetration role. Development concluded in 2021 and AFSOC plans to field four TF/TA-equipped aircraft this year. FY23 funds six radars as well as bringing two early airframes up to fleet-standard configuration. MC-130Js are also receiving modernized EW and tactical situational awareness via Radio Frequency Countermeasure (RFCM) and Airborne Mission Networking (AbMN). RFCM improves detection, location, and response to emerging threats, while AbMN gives the aircrew a common air/ground picture to manage complex workloads.

Staff Sgt. Jake Jacobsen

AFSOC is consolidating its multimission fleet, retiring the MC-130H and EC-130J Commando Solo/Super J. Three MC-130Js are planned for delivery in 2023, including initial aircraft for the Pennsylvania ANG's 193rd SOW. Aircraft previously earmarked for gunship conversion were redirected to the unit to stand up the first non-Active-duty MC-130J unit which received its first aircraft on Feb. 7, 2023. Demonstration of a float-equipped MC-130J for non-runway operations in INDOPACOM was delayed, despite showing conceptual viability in 2022.

Contractors: Lockheed Martin (airframe); Boeing; Sierra Nevada Corp. (RFCM); Raytheon (TF/TA radar).
First Flight: April 20, 2011.
Delivered: Sept. 29, 2011-present.
IOC: Dec. 7, 2012.
Production: 59 (planned).
Inventory: 54.
Operator: AETC, AFSOC, ANG.
Aircraft Location: Cannon AFB, N.M.; Harrisburg Arpt., Pa.; Kadena AB, Japan; Kirtland AFB, N.M.; RAF Mildenhall, U.K.
Active Variant:
▪MC-130J. Next-generation SOF support and aerial refueling tanker based on the C-130J.
Dimensions: Span 132.6 ft, length 97.8 ft, height 38.8 ft.
Weight: Max T-O 164,000 lb.
Power Plant: Four Rolls-Royce AE2100D3 turboprops, each 4,591 shp.
Performance: Speed 416 mph, range 3,000 miles (further with air refueling).
Fuel Capacity: 61,360 lb at 150-300 gpm (100 gpm dual, simultaneous refueling).
Ceiling: 28,000 ft with 42,000-lb payload.
Accommodation: Two pilots, CSO, two loadmasters. **Load:** 42,000 lb of cargo/personnel (see C-130J for configurations).

U-28A DRACO

Tactical ISR

Brief: The U-28A is a crewed, tactical ISR and targeting platform based on the Pilatus PC-12. The USSOCOM-owned aircraft are operated by AFSOC as a nonstandard fleet. Draco is employed worldwide in support of special operations ground forces, humanitarian efforts, and search and rescue. AFSOC first employed the aircraft during Enduring Freedom in Afghanistan as well as Iraqi Freedom. Mission equipment includes advanced radio-comms suite, IR suppression, missile, hostile fire and laser warning, EO

Airman 1st Class Moses Taylor

sensors, remote SIGINT, and advanced navigation systems. The primary Multispectral Targeting System includes FMV, EO-IR, IR real-time video, and coaligned laser designator. Recent upgrades include U-28 EQ+ mods that add high-definition FMV to EQ/PC-12 configured aircraft for extended standoff "find, fix, finish" capabilities in support of counter-ISIS ops. Additional improvements include Enhanced Ground Proximity Warning to prevent flight-into-terrain accidents, updated BLOS SATCOM connectivity, and navigation mods to enable ops in GPS-degraded environments. Two aircraft were lost to fatal mishaps in Djibouti in 2012 and at Cannon in 2017, and FY21 funds were allocated to replace an airframe lost in an airfield attack at a forward location. AFSOC surpassed 600,000 flying hours including 328,000 in direct support of combat operations in early 2021. SOCOM announced it is procuring a fleet of 75 AT-802U Sky Warden light attack/armed reconnaissance aircraft to replace the U-28A as well as the MC-12W. AFSOC plans to complete transition from the U-28 by 2029.

Contractor: Pilatus Aircraft Ltd.
First Flight: May 31, 1991 (PC-12).
Delivered: 2006-present.
IOC: June 2006.
Production: 36.
Inventory: 30 (U-28A); five (PC-12) (USSOCOM-owned).
Operator: AFSOC, AFRC.
Aircraft Location: Cannon AFB, N.M.; Hurlburt Field, Fla.
Active Variant:
▪U-28A. Special operations tactical ISR aircraft based on the Pilatus PC-12.
▪PC-12. Converted civilian Pilatus PC-12 equipped for SOF support/training.
Dimensions: Span 53.3 ft, length 47.3 ft, height 14 ft.
Weight: Max T-O 10,935 lb.
Power Plant: Single Pratt & Whitney PT6A-67B, 1,200 shp.
Performance: Speed 253 mph, range 1,725 miles.
Ceiling: 30,000 ft.
Accommodation: Two pilots, CSO, tactical systems officer; up to nine passengers or 3,000 lb cargo (configuration dependent).

COMMAND, CONTROL, COMMUNICATIONS/BATTLE MANAGEMENT AIRCRAFT

Tech. Sgt. Curt Beach

E-3 SENTRY

Battle management/early warning/C2

Brief: The E-3 Airborne Warning and Control System (AWACS) is a heavily modified Boeing 707-320B tasked with all-weather, air and maritime surveillance, command and control, battle management, target, threat, and emitter detection, classification, and tracking. The aircraft is capable of surveilling airspace in excess of a 250-mile radius from surface to stratosphere. AWACS coordinates theater air operations in direct subordination to joint/combined air and space operations centers. It can simultaneously conduct C2, BM, and target detection/tracking. E-3Bs were upgraded to Block 30/35 standards in 2001. Block 40/45 aircraft are redesignated E-3G. The upgrade is the most comprehensive enhancement to date and improves tracking/identification, system reliability, and life-cycle cost. Mods include open-architecture computing, operator workload reduction, new consoles, improved electronic support measures (ESM), and passive surveillance capability. DRAGON (Diminishing manufacturing sources Replacement of Avionics for Global Operations and Navigation) upgrades add a digital cockpit and next-generation CNS/GATM. Four USAF aircraft are slated for DRAGON in FY23 and mods to remaining aircraft are now expected by 2025. Development includes Electronic Protection (EP) to improve radar processing for classified requirements, modernizing airborne moving target indication, and fourth- to fifth-generation connectivity (to integrate F-22 and F-35). Ongoing mods include accelerated Mode 5 IFF install (as an airspace compliance bridge to DRAGON), Communication Network Upgrade (CNU) to add high-speed jam-resistant Link 16, and high-bandwidth internet to quickly prosecute time-sensitive targets. FY23 begins AWACS Communications Integration Program (ACIP) which will include BLOS SATCOM/second-generation NATO UHF, and anti-jam GPS. An E-3G demonstrated the ability to receive in-flight EW updates to counter emergent threats during a proof-of-concept demo in 2022. USAF aims to replace AWACS with a space-based capability. Due to a lack of mature space-based system and difficulty sustaining Sentry, the service issued Boeing a $1.2 billion contract to replace a portion of the AWACS fleet with the E-7A Wedgetail. USAF curtailed E-3 modernization starting in FY23 to fund E-7A, fielding two prototypes for testing by 2027. The service plans to retire 15 Sentrys in FY23, freeing resources to improve the remaining fleet's availability until retirement in FY29.

Contractors: Boeing, Northrop Grumman (radar); Lockheed Martin (computer); Collins Aerospace (DRAGON cockpit upgrade).
First Flight: Oct. 31, 1975 (full mission equipment).
Delivered: March 1977-1984.
IOC: 1977; July 28, 2014 (Block 40/45).
Production: 31.
Inventory: Eight (E-3B); 23 (E-3G).
Operator: ACC, PACAF, AFRC (associate).
Aircraft Location: JB Elmendorf-Richardson, Alaska; Kadena AB, Japan; Tinker AFB, Okla.
Active Variants:
▪E-3B. Block 30/35 upgraded aircraft.
▪E-3G. Block 40/45 upgraded aircraft.
Dimensions: Span 145.8 ft, length 152.9 ft, height 41.8 ft.
Weight: Max T-O 335,000 lb.
Power Plant: Four Pratt & Whitney TF33-PW-100A turbofans, each 21,000 lb thrust.
Performance: Speed 360 mph, range 5,000+ miles (air refuelable).
Ceiling: Above 35,000 ft.
Accommodation: Two pilots, navigator, flight engineer, 13-19 mission specialists.

E-4 NATIONAL AIRBORNE OPERATIONS CENTER

Nuclear command and control

Brief: The E-4B is a highly survivable flying C3 center enabling national leaders to direct nuclear and conventional forces, execute emergency war orders, and coordinate civil response actions in support of the National Military Command System (NMCS). It is hardened against the effects of nuclear detonations, including electromagnetic pulse (EMP). Comms and data processing capabilities include EHF Milstar SATCOM, six-channel International Maritime Satellite, and a tri-band radome that houses the SHF communications antenna. All aircraft underwent Block 1 upgrades, enhancing electronic and communications infrastructure with commercial off-the-shelf (COTS) systems. Ongoing upgrades include replacing Milstar data links with AEHF-compatible FAB-T, replacing the VLF/LF transmitter, and replacing legacy SHF with Survivable Super High Frequency (SSHF), enabling uninterrupted, jam-resistant nuclear C2 fleetwide by 2023. E-4B airframes are viable to approximately 2033, but phaseout of commercial 747-200s hampers continued sustainment. USAF plans to replace the

Karen Abeyasekere/USAF

E-4B with the Survivable Airborne Operations Center (SAOC) and issued a request to industry for development of up to four, potentially used, but similarly sized commercial-derivative airframes in December 2020. Changes to acquisition strategy delayed initial solicitations but the service is aiming to conclude technology maturation in FY23 and take delivery of the initial aircraft by the early 2030s.

Contractors: Boeing; Raytheon (FAB-T); L3Harris (SSHF); Boeing/Collins Aerospace (Low-Frequency Transmit System).
First Flight: June 13, 1973 (E-4A); June 10, 1978 (E-4B).
Delivered: December 1974-1985.
IOC: December 1974 (E-4A); January 1980 (E-4B).
Production: Four.
Inventory: Four.
Operator: AFGSC.
Aircraft Location: Offutt AFB, Neb.
Active Variant:
▪E-4B. Modified Boeing 747-200 equipped as a NAOC.
Dimensions: Span 195.7 ft, length 231.3 ft, height 63.4 ft.
Weight: Max T-O 800,000 lb.
Power Plant: Four General Electric CF6-50E2 turbofans, each 52,500 lb thrust.
Performance: Speed 602 mph, range 7,130 miles, 12-hr normal endurance, 72-hr with air refueling.
Ceiling: Above 30,000 ft.
Accommodation: Two pilots, navigator, flight engineer, up to 110 battle staff/mission crew.

Barry Bena/USAF

E-8 JSTARS

Command and control/ISR

Brief: E-8C is a ground moving target indication (GMTI), airborne battlefield management/command and control platform. Its primary mission is providing theater commanders with ground surveillance data to support tactical operations. E-8 evolved from the Army/Air Force Joint Surveillance Target Attack Radar System (JSTARS) program. The aircraft made its first radar-equipped test flight in December 1988, and the first two aircraft deployed for Desert Storm while the system was still under development. Early airframes were eventually retrofitted to Block 20 production standards featuring more powerful computers, an internet protocol local area network, and BLOS connectivity. JSTARS is equipped with a canoe-shaped radome under the forward fuselage housing a 24-ft-long, side-looking phased array radar antenna. It can locate, classify, and track vehicles and ships at distances exceeding 124 miles, and more recent refinements added human-target tracking. Target data is transmitted via data link to ground stations or other aircraft. USAF dropped plans to replace JSTARS with a modern, business-class aircraft pursuing the Advanced Battle Management System (ABMS) instead. ABMS notionally disaggregated JSTARS functions among several platforms but was drastically cut in FY21, refocusing on technology development. USAF now plans to shift future GMTI efforts to a space-based approach to overcome anti-access/area denial threats. Ongoing upgrades include secure Common Data Link (CDL) for LOS networking to Common Ground Stations and UHF/VHF SATCOM modernization. Congress approved divestiture of JSTARS starting with four airframes in FY22. USAF will retire an additional eight aircraft in FY23 and complete phaseout in FY24.

Contractors: Northrop Grumman; Raytheon.
First Flight: April 1, 1988.
Delivered: March 22, 1996-March 23, 2005.
IOC: Dec. 18, 1997.
Production: 18.
Inventory: 12 (E-8C); one (TE-8).
Operator: ANG.
Aircraft Location: Robins AFB, Ga.
Active Variants:
▪E-8C. Block 20 upgraded JSTARS platform based on the Boeing 707-300.
▪TE-8A. Crew training aircraft based on the E-8.
Dimensions: Span 145.8 ft, length 152.9 ft, height 42.5 ft.
Weight: Max T-O 336,000 lb.
Power Plant: Four Pratt & Whitney TF33-102C turbojets, each 19,200 lb thrust.
Performance: Speed 584 mph (optimal orbit), range 11 hr normal endurance (longer with air refueling).
Ceiling: 42,000 ft.
Accommodation: Two pilots, navigator, flight engineer, 15 Air Force/three Army mission crew (mission dependent).

Staff Sgt. Bennie Davis III

E-9A WIDGET

Range control

Brief: The E-9A is a modified DHC-8 commuter aircraft that provides air-to-air telemetry support for weapons testing, target drone operations, and range clearance. The aircraft supports operations at the Eglin Test and Training Range over the Gulf of Mexico and provides telemetry for weapons system evaluation at Holloman and the Utah Test and Training Range. Mission modifications include AN/APS-143(V-1) airborne sea surveillance radar, UHF telemetry, and signal relay systems. The E-9 is able to track flying and surface targets. It can detect small watercraft at ranges up to 25 miles. The fleet operates in concert with three drone recovery vessels and two patrol boats to clear waterways and airspace of civil traffic before live-fire testing or hazardous military activities commence. It also provides tracking and assistance with recovering targets. The aircraft can remotely initiate destruction of damaged or malfunctioning aerial target drones. FY23 funds are limited to low-cost sustainment and development upgrades.

Contractors: Bombardier (formerly De Havilland Canada); Sierra Nevada Corp. (conversion).
First Flight: June 1983 (DHC-8).
Delivered: 1988.
IOC: June 1988.
Production: Two.
Inventory: Two.
Operator: ACC.
Aircraft Location: Tyndall AFB, Fla.
Active Variant:
▪E-9A. Military surveillance version of the DHC-8 commuter airliner.
Dimensions: Span 85 ft, length 73 ft, height 24.5 ft.
Weight: Max T-O 34,500 lb.
Power Plant: Two Pratt & Whitney PW-120A turboprop engines, each 1,800 shp.
Performance: Speed 280 mph, range 1,000 miles.
Ceiling: 30,000 ft.
Accommodation: Two pilots, two mission operators.

E-11A BATTLEFIELD AIRBORNE COMMUNICATIONS NODE

Communications relay

Brief: The E-11 is a modified, Bombardier Global 6000/ BD-700-1A10 or Global 6500 business jet equipped with specialized communications relay equipment to translate between tactical comm and data links. It provides joint range extension, BLOS C2, and internet protocol-based data transfer between dissimilar systems. E-11A was fielded to meet an urgent operational need for BLOS air-to-ground relay and enables troops to overcome comm limitations in rugged terrain. The system entered combat in Afghanistan in 2008, and a single E-11 crashed near Kandahar Airfield

Senior Airman Jacob Wrightsman

on Jan. 27, 2020, killing both aircrew members. The fleet was designated E-11A after USAF purchased the first (previously leased) aircraft in 2011. The Battlefield Airborne Communications Node (BACN) payload was initially integrated on a mixed fleet of manned E-11As and unmanned EQ-4B Global Hawks. ACC retired the EQ-4B in July 2021 and began procuring six additional airframes to expand the E-11 fleet to nine aircraft. USAF began procuring a single airframe each year in FY21 to complete the fleet by 2026. The first E-11 based on the newer Global 6500 was delivered to 430th Expeditionary Electronic Combat Squadron at Prince Sultan AB, Saudi Arabia, Dec. 16, 2022. The fifth and sixth airframes are slated for delivery in 2023, and FY23 funds will purchase and modify one E-11. Northrop Grumman was awarded a $3.6 billion five-year support contract in early 2021, which also includes funding for research, development and testing, as well as the integration of future payloads. Ongoing upgrades include adding military GPS to operate in higher-end threat environments, advanced navigation, along with flight safety, reliability, performance, and self-defensive improvements. ACC and the Georgia ANG at Robins are transitioning from JSTARS to operating BACN. Robins expects to receive its first E-11A in early 2023 and reach full operational capability by 2027.

Contractors: Bombardier; Northrop Grumman (integration and support).
First Flight: August 2007.
Delivered: December 2008-present.
IOC: Circa 2011.
Production: Four (nine planned).
Inventory: Three.
Operator: ACC. **Planned:** ANG (associate).
Aircraft Location: Al Dhafra AB, UAE; Prince Sultan AB, Saudi Arabia. **Planned:** Robins AFB, Ga.
Active Variant:
▪E-11A. Modified Bombardier Global 6000, BD-700, or Global 6500 equipped with the BACN payload.
Dimensions: Span 94 ft, length 99 ft 5 in, height 25 ft 6 in.
Weight: Max T-O 99,500 lb.
Power Plant: Two Rolls-Royce BR710A2-20 turbofans, each 14,750 lb thrust (Global 6000/BD-700); two BR700-710D5-21 turbofans, each 15,125 lb thrust (Global 6500).
Performance: Speed Mach 0.88, range 6,900 miles (Global 6000); speed Mach 0.9, range, 7,595 miles (Global 6500).
Ceiling: 51,000 ft.
Accommodation: Two pilots.

EC-37B COMPASS CALL

Electronic warfare/electronic attack

Brief: The EC-37B is a next-generation, tactical jamming platform tasked with disruption of enemy C3, radar, and navigation. It will also offer offensive counterinformation, EA, and SEAD support. The aircraft is based on the ultra-long-range Gulfstream G550 business aircraft and adapted from the Navy's special mission configuration. USAF awarded L3 Technologies a contract on Sept. 7, 2017, to replace the EC-130H in the tactical EA role and transport its "Compass Call" systems to a more modern aircraft. The program, originally dubbed "EC-X" is "re-hosting" upgraded EC-130H mission equipment directly to the EC-37 with nearly 70 percent remaining unchanged. EC-37B is faster, more economical, capable of higher altitude operations, and is more survivable than the EC-130H. Upgrades will allow it to conduct standoff jamming/EA from greater distances for attacks

Airman 1st Class Vaughn Weber

against A2/AD targets. The first aircraft was purchased in FY17, followed by a second in FY18. Congress accelerated the program by funding two airframes in FY19, and USAF plans to procure and modify one aircraft a year through FY25. The first five aircraft will receive the EC-130H's upgraded Baseline 3 package, including Advanced Radar Countermeasure System (ARCS) and other significant capability enhancements. The EC-37 will not receive comparable low-band capability until Baseline 4, which will debut on the sixth airframe. Baseline 4 will debut the System-Wide Open Reconfigurable Dynamic Architecture (SWORD-A) to enable rapid future upgrades. USAF postponed buying a seventh airframe in FY22 to focus on Baseline 4 development, installation of equipment on the sixth airframe, and implementing technical changes. Congress approved the service's FY23 unfunded request for four aircraft, restoring the planned fleet to 10 aircraft. USAF plans to begin testing the Baseline 3 EC-37B in early 2023 prior to starting crew training in 2024 with IOC now planned for 2026.

Contractors: Gulfstream Aerospace (airframe); BAE Systems; L3 Harris (mission equipment).
First Flight: Aug. 25, 2021.
Delivered: 2023 (planned).
IOC: 2026 (planned).
Production: 10 (planned).
Inventory: Zero.
Operator: ACC (planned).
Aircraft Location: Davis-Monthan AFB, Ariz. (planned).
Active Variant:
▪EC-37B. Military Electronic Attack special-mission variant of the Gulfstream G550.
Dimensions: Span 93.5 ft, length 96.4 ft, height 25.8 ft.
Weight: Max T-O 90,500 lb.
Power Plant: Two BR710C4-11 turbofans, each 15,385 lb thrust.
Performance: Speed 600 mph, range 6,300 miles.
Ceiling: 51,000 ft.
Accommodation: Two pilots; TBD.

Senior Airman Alex Miller

EC-130H COMPASS CALL

Electronic warfare/electronic attack

Brief: The EC-130H is a modified C-130H designed to disrupt enemy C3 and limit adversary coordination and force management. Tasks include tactical jamming/disruption of communications, radar, and navigation, offensive counterinformation, EA, and SEAD support. The fleet has been deployed near-constantly since the beginning of combat operations in Afghanistan in 2001. The aircraft was designed to be easily updated and modified. All aircraft have been retrofitted to Block 35 standards and are air refuelable. Mission equipment upgrades occur approximately every three years to ensure continued protection and effectiveness against evolving threats. Baseline 2 mods are ongoing, and the Baseline 3 configuration, including the Advanced Radar Countermeasure System (ARCS) and other significant capability enhancements, is slated for fielding in 2023. Baseline 4 will be fielded on the next-generation EC-37B in 2026, and some 70 percent of the EC-130H's mission equipment will be directly cross-decked to its successor platform. Funding delays required extending the EC-130H with

center wing box replacement/structural mods (in common with the C-130H fleet) and upgrades include digital glass cockpits, Mode 5 IFF/airspace compliant CNS/ATM, and color weather radar. AFCENT inactivated the 41st Expeditionary Electronic Combat Squadron at Al Dhafra on Sept. 28, 2021. The unit logged 14,753 sorties in-theater totaling 90,000 hours since initially deploying to Afghanistan in 2001. The first aircraft retired to the boneyard at Davis-Monthan on Aug. 31, 2021, followed by two additional airframes on Nov. 8, 2021, and March 2, 2022. EC-130Hs were grounded pending propeller inspections in September 2022, following discovery of widespread cracks affecting legacy C-130 fleets. ACC plans to divest two airframes in late FY23-early FY24, reducing the fleet to five and freeing mission equipment for use on the EC-37B.

Contractors: Lockheed Martin; BAE Systems (mission equipment); L3Harris (integration and sustainment).
First Flight: 1981.
Delivered: March 19, 1982-unknown.
IOC: 1983; Block 35 from 2011.
Production: (Converted).
Inventory: Seven (EC-130H).
Operator: ACC.
Aircraft Location: Davis-Monthan AFB, Ariz.
Active Variant:
▪EC-130H. Electronic attack variant of the C-130H.
Dimensions: Span 132.6 ft, length 99 ft, height 38 ft.
Weight: Max T-O 155,000 lb.
Power Plant: Four Allison T56-A-15 turboprops, each 4,910 shp.
Performance: Speed 300 mph at 20,000 ft, unrefueled range 2,295 miles, seven-hour normal endurance (air refuelable).
Ceiling: 25,000 ft.
Accommodation: Two pilots, navigator, flight engineer; mission crew: two EWOs; mission crew supervisor (cryptologic), four cryptologic linguists, acquisition operator, and airborne maintenance technician.

INTELLIGENCE, SURVEILLANCE, RECONNAISSANCE AIRCRAFT

Tomas Acevedos/Vtimages

P-9A PALE ALE

Maritime patrol, detection, and monitoring

Brief: The P-9A is a heavily modified Bombardier Q202 (DHC-8) commuter aircraft equipped for maritime patrol as well as advanced Detection and Monitoring (D&M) missions. The three-aircraft fleet is owned by ACC and primarily tasked to USSOUTHCOM to detect and monitor narcotic and illicit trafficking from South and Central America, as well as the Caribbean and Eastern Pacific. The P-9A is a Government Owned Contractor Operated (GOCO) fleet and conducts more than 7,200 flying hours per year, primarily based from the Navy's Counterdrug Cooperative Security Location in Comalapa, El Salvador. Aircraft also conduct forward-deployed operations from airfields throughout the Caribbean as well as South and Central America, lasting approximately 730 days.

Contractors: Bombardier (formerly De Havilland Canada); Sierra Nevada Corp. (operator).
First Flight: N/A.
Delivered: N/A.
IOC: N/A.
Production: Three.
Inventory: Three (Contractor operated).
Operator: ACC.
Aircraft Location: Comalapa, El Salvador; forward operating locations across USSOUTHCOM.
Active Variant:
▪P-9A. Maritime patrol, detection and monitoring aircraft converted from the Bombardier Q202 commuter airliner.
Dimensions: Span 85 ft, length 73 ft, height 24.6 ft.
Weight: Max T-O 36,300 lb.
Power Plant: Two Pratt & Whitney PW-123C/D turboprop engines, each 2,150 shp.
Performance: Speed 333 mph, range approx. 1,300 miles.
Ceiling: 25,000 ft.
Accommodation: Two pilots, unknown mission crew.

Tech. Sgt. Kayleigh Phillips

RC-26 CONDOR

Tactical ISR

Brief: The RC-26 is a modified Fairchild Metro 23 tasked with counter-narcotics, manned tactical ISR, disaster response, and civil support missions. USAF selected the C-26 to fulfill a joint ANG and Army National Guard airlift requirement in 1988, subsequently modifying the airframes to the RC-26 configuration. The aircraft is equipped with specialized digital cameras, IR video, and communications equipment to enable domestic and international anti-trafficking. The aircraft has a secondary role providing real-time video streaming to responders following hurricanes, wildfires, and other disasters. In the fire-support role, aircraft sensors can detect fires at up to 80 miles and accurately map them from up to 3 miles away. An extensive comm suite allows communications from 29 to 960 MHz including provisions for plugged-in 800 MHz handheld radio and airphones. Congress barred Air Force efforts to retire the increasingly outdated fleet in 2020 and 2021 before approving retirement in FY23. The ANG completed accelerated retirement of the fleet in January 2023, with a final aircraft departing Ellington Field for preservation in the Hagerstown Aviation Museum at Fairchild's former production facilities in Maryland, Feb. 15.

Contractors: Fairchild (airframe); Elbit Systems (avionics upgrade).
First Flight: 1990.
Delivered: March 1989-1996 (delivered as C-26A/B).
IOC: N/A.
Production: 10 (C-26A); 33 (C-26B); 11 (RC-26).
Inventory: 11.
Operator: ANG.
Aircraft Location: Des Moines Aprt., Iowa; Ellington Field, Texas; Fairchild AFB, Wash.; Fresno Yosemite Arpt., Calif.; Key Field, Miss.; Kirtland AFB, N.M.; Montgomery Regional Arpt., Ala.; Truax Field, Wis.; Tucson Arpt., Ariz.; Yeager Arpt., W.Va.
Active Variants:
▪RC-26B. Surveillance version of the Fairchild C-26.
Dimensions: Span 57 ft, length 59.5 ft, height 16.6 ft.
Weight: Max T-O 16,500 lb.
Power Plant: Two Garrett TPE331-12UAR-701 turboprops, each 1,100 shp.
Performance: Speed 334 mph, range 2,070 miles.
Ceiling: 25,000 ft.
Accommodation: Two pilots, navigator/mission systems operator.

RC-135S COBRA BALL

Electronic reconnaissance

Brief: The RC-135S gathers measurement and signature intelligence (MASINT) on missile-associated signatures and tracks during boost and reentry. Cobra Ball superseded Rivet Ball and Rivet Amber, receiving the current designation on Oct. 24, 1969, and collects both optical and electronic data on ballistic missile activity. An aircraft was lost in a crash

Tech. Sgt. Daniel Asselta

during inclement weather at Shemya AFB, Alaska, on March 15, 1981. The variant's specialized equipment includes the long-range Medium Wave Infrared Array (MIRA) EO/IR sensor suite, all-weather tracking radar, and an advanced communications suite. Reconnaissance data is used to assess missile threats, evaluate missile performance, characterize adversary missiles, and analyze weapons testing and technology. Data also supports treaty verification and theater ballistic missile nonproliferation. It can deploy anywhere in the world in 24 hours and provide on-scene EO reconnaissance. Continuous baseline upgrades are now projected to keep the fleet viable through 2050, and flexible funding permits rapid, variant-specific mods in response to emerging/evolving threats. Aircraft are currently undergoing integration and testing of Baseline 7 mods (similar to Rivet Joint Baseline 12). Baseline 7 includes integrating Rivet Joint's COMINT suite, digital electromagnetic signature direction finding, digital search, and SATCOM-aided target discrimination. Two RC-135Ss notably monitored reentry vehicles from the test launch of Russia's newest RS-28 Sarmat ICBM on Apr. 22, 2022, operating from the Western Pacific.

Contractors: Boeing (airframe); L3Harris, Textron Systems (mission systems).
First Flight: Circa 1969.
Delivered: Jan. 11, 1970-November 2000 (redelivery as RC-135S).
IOC: March 1972 (Cobra Ball II).
Production: Four converted.
Inventory: Three.
Operator: ACC.
Aircraft Location: Offutt AFB, Neb.
Active Variant:
▪RC-135S Cobra Ball. Modified C-135 equipped for MASINT/treaty verification.
Dimensions: Span 131 ft, length 135 ft, height 42 ft.
Weight: Max T-O 297,000 lb.
Power Plant: Four CFM International F108-CF-201 turbofans, each 21,600 lb thrust.
Performance: Speed 517+ mph, range 3,900 miles (farther with air refueling).
Ceiling: 45,000 ft.
Accommodation: Two pilots, navigator, three EWOs, two airborne systems engineers, two airborne mission specialists.

SuneKuma

RC-135U COMBAT SENT

Electronic reconnaissance

Brief: The RC-135U is tasked with strategic reconnaissance and technical intelligence (TECHINT) gathering on radar/emitter systems. Three Combat Sent aircraft were converted from RC-135Cs in 1970-71 to fill a critical need for data collection on adversary radar threats and defenses. Combat Sent's distinctive chin and wingtip antenna arrays, large cheek fairings, and extended tail contain specialized sensor suites to collect data and analyze airborne, land, and naval radar/emitter systems. Each airframe incorporates a different, tailored sensor suite, and the data gathered is critical to the effective design and programming of RWR (radar warning receivers), jammers, decoys, anti-radiation missiles, and threat simulators. Combat Sent additionally enables strategic analysis for National Command Authorities and combatant forces. The aircraft utilizes radar/ solid-state doppler, INS, celestial, and GPS for navigation, and is capable of both operator, automated, and blended signal gathering and analysis. Continuous baseline upgrades are now projected to keep the fleet viable through 2050, and flexible funding permits rapid variant-specific mods in response to emerging/evolving threats. FY23 focuses on sustaining and completing upgrades to Baseline 6 (similar to Rivet Joint Baseline 12). Baseline 6 includes wideband SATCOM reachback, integrating Rivet Joint's Baseline 13 COMINT suite, improving operator interface, enhancing antennas and processors, and capability upgrades for dense signal environments.

Contractors: Boeing (airframe); L3Harris, Textron (mission systems).
First Flight: N/A.
Delivered: May-December 1971 (RC-135U).
IOC: 1971.
Production: Three converted.
Inventory: Two.
Operator: ACC.
Aircraft Location: Offutt AFB, Neb.; forward operating locations: Al Udeid AB, Qatar; NSF Diego Garcia, U.K.; Eielson AFB, Alaska; Kadena AB, Japan; RAF Mildenhall, U.K.; NSA Souda Bay, Greece.
Active Variant:
▪RC-135U Combat Sent. Modified C-135 equipped for radar/emitter analysis.
Dimensions: Span 135 ft, length 140 ft, height 42 ft.
Weight: Max T-O 299,000 lb.
Power Plant: Four CFM International F108-CF-201 turbofans, each 21,600 lb thrust.
Performance: Cruise speed 517 mph, range 4,140 miles, 8-hr normal endurance, 24-hr crew endurance (farther with air refueling).
Ceiling: 42,000 ft.
Accommodation: Two pilots, one navigator, two airborne systems engineers; Mission crew: 10 EW officers, six or more electronic, technical, mission-area specialists.

2nd Lt. Hailey Malay

RC-135V/W RIVET JOINT

Electronic reconnaissance

Brief: The RC-135V/W is tasked with real-time electronic and signals intelligence-gathering, analysis, and dissemination in support of theater and strategic-level commanders. The extensively modified C-135s detect, identify, and geolocate signals throughout the electromagnetic spectrum. Rivet Joint is mostly used to exploit electronic battlefield intelligence and deliver near-real-time ISR information to tactical forces, combatant commanders, and National Command Authorities. The British Royal Air Force also operates three RC-135W Airseeker aircraft, which are co-crewed by USAF/RAF personnel. Onboard capabilities encompass rapid search, detection, measurement, identification, demodulation, geolocation, and fusion of data from potentially thousands of electronic emitters. Continuous baseline upgrades keep the fleet viable and drive standards for Combat Sent/Cobra Ball. Flexible funds permit rapid, variant-specific mods in response to emerging/evolving threats. The current Baseline 11/12 modernized cockpit and operator interface, added new direction finding COMINT, precision ELINT/SIGINT, improved collection in dense-signal environments, enhanced near real-time data dissemination, and integrated RC-135 with the Distributed Common Ground Station (DCGS). USAF is currently upgrading the remaining 10 Baseline 11 aircraft to future Baseline 13 standards. Baseline 13 focuses on signal search and geolocation improvements, wideband signal recording, jam-resistant search, moving emitter target location and tracking, and wideband datalink improvement. FY23 also supports continued Baseline 12 enhancement, and upgrading the aircraft's autopilot as well as ground systems. Development includes Baseline 14 planning, automated search and detection, employment of artificial intelligence, and collaboration to speed collection, analysis, and distribution. The RAF extended its agreement with USAF to continue jointly operating the type through at least 2035.

Contractors: Boeing (airframe); L3Harris (mission systems).
First Flight: N/A.
Delivered: Circa 1973-99 (continuous equipment updates).
IOC: Circa 1973.
Production: Converted.
Inventory: Eight (RC-135V); nine (RC-135W); three (TC-135W); one (NC-135W).
Operator: ACC, AFMC.
Aircraft Location: Offutt AFB, Neb.; Kadena AB, Japan; RAF Mildenhall, U.K.; RAF Waddington, U.K. (USAF co-manned).
Active Variants:
▪RC-135V/W Rivet Joint. Standoff airborne SIGINT variant of the C-135.
▪TC-135W. Training version of the operational aircraft.
▪NC-135W. Rivet Joint systems integration testbed operated by AFMC.
Dimensions: Span 131 ft, length 135 ft, height 42 ft.
Weight: Max T-O 297,000 lb.
Power Plant: Four CFM International F108-CF-201 turbofans, each 21,600 lb thrust.
Performance: Speed 500+ mph, range 3,900 miles (farther with air refueling).
Ceiling: 50,000 ft.
Accommodation: Three pilots, two navigators, three EWO, 14 intelligence operators, four airborne maintenance technicians (six additional, if required).

William Lewis/USAF

U-2S DRAGON LADY

High-altitude reconnaissance

Brief: U-2S is the Air Force's only manned, strategic, high-altitude, long-endurance ISR platform and is capable of SIGINT, IMINT, and MASINT collection. The aircraft's modular payload systems allow it to carry a wide variety of advanced optical, multispectral, EO/IR, SAR, SIGINT, and other payloads simultaneously. Its open system architecture also permits rapid fielding of new sensors to counter emerging threats and requirements. The original U-2A first flew on Aug. 4, 1955. The type was further developed into the larger, more capable U-2R, which first took flight on Aug. 28, 1967, and was delivered between 1967 and 1968. Current U-2s date to the 1980s when U-2R production was reopened under the designation TR-1 (later returned to U-2R designation in 1992). The TR-1A first flew on Aug. 1, 1981, and was re-engined and modernized starting in 1994, emerging as the U-2S. Current Block 20 U-2S feature glass cockpits, digital autopilot, modernized EW system, and updated data links. Its major sensors are the ASARS-2A SAR, SYERS-2A multispectral EO/IR imagery system, and enhanced Airborne Signals Intelligence Payload (ASIP). The aircraft is also capable of mounting the legacy optical bar camera for broad-area synoptic imagery, though operations from Beale concluded in 2022. Modification and upgrades are focused on sustaining U-2 capability through its currently planned retirement in FY26, while meeting current and emerging requirements. Current development and mods support Block 20.1 upgrades. Major efforts include ASARS-2B/C integration, avionics and navigation refresh, (Link-16/ IFDL, MADL) modernization, next-generation SIGINT, and quick-response capabilities to meet emergent ISR requirements. ASARS-2B/C significantly improves the U-2's high-altitude, deep-look radar ground mapping, moving target, and maritime capabilities and moves to an open, easily upgradable architecture. ASARS-2B/C will continue flight-testing through expected IOC in 2024. Other ongoing efforts include GPS refresh, quick-change modular mission systems and unmanned-system interoperability, EW system upgrades, and a helmet and pressure suit refresh. The program continues to prioritize experimental sensors, systems, and software to meet emerging threats and develop networked, next-generation BM/C2.

Contractors: Lockheed Martin, Northrop Grumman (ASIP); Raytheon (ASARS); UTC Aerospace (SYERS/Optical Bar Camera).
First Flight: October 1994 (U-2S).
Delivered: September 1981-October 1989 (TR-1/U-2R).
IOC: Circa 1981 (U-2R).
Production: 35 (T/U-2S).
Inventory: 27 (U-2); four (TU-2).
Operator: ACC.
Aircraft Location: Beale AFB, Calif.; permanent forward operating locations worldwide.
Active Variants:
▪U-2S. Current variant of the U-2/TR-1.
▪TU-2S. A two-seat trainer aircraft originally designated U-2ST.
Dimensions: Span 105 ft, length 63 ft, height 16 ft.
Weight: Max T-O 40,000 lb.
Power Plant: GE Aviation F118-GE-101A turbofan, 17,000 lb thrust.
Performance: Speed 410 mph, range 7,000+ miles.
Ceiling: Above 70,000 ft.
Accommodation: Pilot (U-2S); two pilots (TU-2S) on RQ201 zero/zero ejection seats.

USAF

WC-130J

Weather reconnaissance

Brief: The WC-130J "Weatherbird" is a modularly configurable C-130J equipped with specialized systems to penetrate tropical and winter storms, capture meteorological data, and aid severe weather forecasting. Early WC-130Bs entered service in 1959, followed by the WC-130E in 1962, and WC-130H in 1964. The WC-130J began replacing legacy variants in 1999, though several H models remained in service with the Puerto Rico ANG until a fatal crash resulted in the fleet's retirement in 2019. All WC-130Js are operated by AFRC's 53rd Weather Reconnaissance Squadron "Hurricane Hunters" at Keesler. Mission equipment includes a pod-mounted Stepped-Frequency Microwave Radiometer (SFMR) for monitoring surface winds and precipitation rates, parachute-deployed GPS dropsondes to gather vertical atmospheric profiles, and palletized operator stations/equipment running specialized software. WC-130Js are optionally equipped with two external wing tanks, as well as an internal auxiliary fuel tank to increase range and endurance. Crews include an added aerial weather reconnaissance officer/flight director and weather system specialist/loadmaster. Aircraft are capable of penetrating tropical cyclones from up to 10,000 ft to as low as 500 ft. The fleet primarily monitors oceanic weather over the Atlantic, Central Pacific, Caribbean, and Gulf of Mexico. Airframes are modernized alongside the baseline C-130J fleet, including Block 8.1 upgrades (slated for trial install in 2023), airspace compliance mods, and enhanced service-life center wing sections. WC-130Js recently tested a new SATCOM that would enable continuous real-time streaming of radar and storm data from the aircraft to forecasters on the ground. The modular X-band antenna tested during the 2021 hurricane season was mounted in a dome fairing in place of the flight deck escape hatch. AFRC is returning the fleet to the more weather-resistant and durable gloss-grey paint scheme worn by WC-130s prior to 2007. The fleet notably flew missions collecting data on hurricanes Fiona and Ian, which pummeled the U.S. East Coast in 2022, before shifting to atmospheric river research, probing systems that brought torrential rain and flooding to California in early 2023.

Contractor: Lockheed Martin.
First Flight: April 5, 1996 (C-130J).
Delivered: Sept. 30, 1999-September 2005.
IOC: October 2006.
Production: 10.
Inventory: 10.
Operator: AFRC.
Aircraft Location: Keesler AFB, Miss.
Active Variant:
▪WC-130J. Weather reconnaissance version of the C-130J.
Dimensions: Span 132.6 ft, length 97.8 ft, height 38.8 ft.
Weight: Max T-O 155,000 lb; max payload 42,000 lb.
Power Plant: Four Rolls-Royce AE2100D3 turboprops, each 4,700 shp.
Performance: Speed 417 mph; range with 35,000 lb payload 1,841 miles (3,000+ miles with external/auxiliary tanks).
Ceiling: With max payload, 26,000 ft.
Accommodation: Two pilots, aerial reconnaissance weather officer, loadmaster/dropsonde operator. **Load:** palletized weather systems.

Nicholas Harnack/USAF

WC-135 CONSTANT PHOENIX

Air sampling and collection

Brief: WC-135's mission is nuclear test monitoring, airborne radiological sampling, and arms control treaty verification. The previous fleet of modified C-135Bs is being replaced by KC-135R-based aircraft equipped with air sampling and collection equipment. The aircraft primarily support monitoring under the 1963 Limited Nuclear Test Ban Treaty. Air sampling WB-29s detected debris from the Soviet Union's first atomic test in 1949, and subsequent aircraft have monitored recent weapons tests in North Korea, as well as the Chernobyl and Fukushima nuclear disasters. The WC-135's sampling and collection suite allows mission crew to detect radioactive "clouds" in real time. The collection system uses external flow-through devices to collect particles on filter paper for later analysis. The podded particulate sampler/Radiation Monitoring and Analysis System (RMAS) detects radiation contact, and the Directional Gamma Sensor System (DGSS) guides the crew toward the plume for collection. The Whole Air Collection System (WACS) captures and stores radioactive samples from the aircraft's bleed-air system. An integrated control system permits real-time mission system interface and monitors internal and external radiation levels for safety and analysis. The C-130J-mounted Harvester WACS/Particulate Airborne Collection Systems (PACS) augments Constant Phoenix, and a modular system deployable on the KC-46 or RPA platform is under development. USAF deemed replacing the aging fleet to be more cost-effective than re-engining the legacy WC-135C/W. Conversion of three KC-135R tankers to WC-135R standards began in 2019 utilizing the same sensor suite. L3 Technologies completed retrofit and redelivered the first modernized WC-135R Constant Phoenix to the 55th Wing, temporarily operating at Lincoln Airport, on July 11, 2022. The WC-135R features modernized glass cockpits and uprated CFM-56 turbofans (common with the KC-135 fleet) which significantly improves the aircraft's range, service ceiling, performance, and maintainability. The final legacy WC-135C—serial 62-3582—retired on Nov. 16, 2020, followed by the last WC-135W—serial 61-2667—on Sept. 7, 2022. ACC plans to receive two additional modernized aircraft by mid-2023, enlarging the operational Constant Phoenix fleet to three aircraft.

Contractors: Boeing; L3 Technologies (WC-135R conversion).
First Flight: 1965; June 2022 (WC-135R).
Delivered: 1965-96; 2021 (WC-135R).
IOC: December 1965; 2022 (WC-135R).
Production: Two (WC-135C/W); three (WC-135R).
Inventory: Three (WC-135R).
Operator: ACC.
Aircraft Location: Lincoln Airport, Neb. (temporary operating location).
Planned: Offutt AFB, Neb.
Active Variants:
▪WC-135R. Modified KC-135R tankers, replacing the aging WC-135C/W fleet.
Dimensions: Span 130.8 ft, length 136.3 ft, height 41.7 ft.
Weight: Max T-O 322,500 lb. (WC-135R).
Power Plant: Four CFM International CFM56-2 turbofans, each 21,634 lb thrust (WC-135R).
Performance: Speed 530 mph, range approx. 3,900 miles (farther with air refueling) (WC-135R).
Ceiling: 50,000 ft. (WC-135R).
Accommodation: Two pilots, navigator, up to 31 special equipment operators/observers as required.

TANKER AIRCRAFT

HC-130J COMBAT KING II

Aerial refueling/airlift

Brief: The HC-130J is tasked with helicopter in-flight refueling support for CSAR/personnel recovery, tactical C2, and pararescue (PJ) deployment. It replaces legacy HC-130N/Ps and is based on the USMC's KC-130J tanker. It adds an enhanced service-life wing, improved cargo handling system,

Senior Airman Jacob Stephens

refueling receptacle, EO/IR sensor, flight deck CSO console, and dual SATCOM. Features include integrated INS/GPS, NVG-compatible lighting, FLIR, and integrated situational awareness. Recently added Advanced Threat Warning and RF countermeasures, as well as chaff/flares give the HC-130 the latest self-defensive capability for recovery operations in contested environments. USAF plans to standardize HC/AC/MC-130J block upgrades, and current efforts bring all HC-130Js to a common standard. Ongoing development and upgrades include avionics Block 8.1 (in common with the C-130J fleet), Lightweight Airborne Radio System (LARS), Situational Awareness Capabilities Upgrade (SACU), and radio frequency countermeasures (RFCM) to detect, locate, and respond to threats. ACC is completing fleetwide LARS upgrades transitioning to the new 406 MHz distress frequency and improving timely location of aircraft, vessels, and personnel. SACU is replacing the legacy data link with Link 16, Blue Force tracking, advanced mission planning, and new displays to enhance secure networking/comms fleetwide. Aft troop door mods add improved visibility scanning windows and armor as well as improve durability. ACC reached its planned fleet size of 39 aircraft in 2022, completing recapitalization of the fixed-wing rescue fleet.

Contractor: Lockheed Martin.
First Flight: July 29, 2010.
Delivered: Sept. 24, 2010-present.
IOC: April 25, 2013.
Production: 39 (planned).
Inventory: 39.
Operator: ACC, AETC, AFRC, ANG.
Aircraft Location: Davis-Monthan AFB, Ariz.; Francis S. Gabreski Arpt., N.Y.; JB Elmendorf-Richardson, Alaska; Kirtland AFB, N.M.; Moffett Field, Calif.; Moody AFB, Ga.; Patrick SFB, Fla.
Active Variants:
▪HC-130J. KC-130J modified for CSAR and aerial refueling.
Dimensions: Span 132.6 ft, length 97.8 ft, height 38.8 ft.
Weight: Max T-O 164,000 lb.
Power Plant: Four Rolls-Royce AE2100D3 turboprops, each 4,591 shp.
Performance: Speed 363.4 mph at S-L, range 4,000+ miles (farther with air refueling).
Ceiling: 33,000 ft.
Fuel Capacity: 61,360 lb at 150-300 gpm (100 gpm dual, simultaneous refueling).
Accommodation: Two pilots, CSO, two loadmasters, three PJs.

KC-10 EXTENDER

Aerial refueling/airlift

Brief: The KC-10 is a multirole tanker/transport capable of aeromedical evacuation, based on the McDonnell Douglas DC-10-30CF. The aircraft is USAF's largest air-refueling aircraft. It is simultaneously capable of tanker and cargo roles, enabling it to support worldwide fighter deployments. The aircraft employs an advanced aerial refueling boom and hose/drogue system allowing it to refuel a wide variety of U.S. and allied aircraft, including the CV-22 tilt-rotor, within the same mission. The aircraft has three large fuel tanks under the cargo floor and an air-refueling operator's station recessed into the aft fuselage. It is also refuelable by boom-equipped tankers. Ongoing mods include modernized navigation, surveillance, and air traffic management (CNS/ATM) to bring the fleet into compliance with FAA mandates, and advanced Mode 5 IFF. The fleet amassed more than 2.3 million flying hours before the first three tankers retired in 2020. Congress prevented USAF from making drastic KC-10 cuts in 2021 citing capacity concerns with delays to the KC-46 program, but removed limitations starting in FY22. AMC shed 12 airframes last year and aims to accelerate retiring 14 aircraft this year, proposing a new "roadmap" to reinvest in KC-46 and future capabilities through the planned divestiture of the fleet in 2024. McGuire completed its final KC-10 deployment in May 2022, having operated from RAF Mildenhall in response to Russia's invasion of Ukraine.

Airman 1st Class Sean Hetz

Contractors: McDonnell Douglas (now Boeing); Collins Aerospace (CNS/ATM).
First Flight: April 1980.
Delivered: March 1981-April 1990.
IOC: August 1982.
Production: 60.
Inventory: 36.
Operator: AMC, AFRC (associate).
Aircraft Location: JB McGuire-Dix-Lakehurst, N.J.; Travis AFB, Calif.
Active Variant:
▪KC-10A. Modified McDonnell Douglas DC-10 designed as a multirole cargo-tanker.
Dimensions: Span 165.4 ft, length 181.6 ft, height 58 ft.
Weight: Max T-O 590,000 lb.
Power Plant: Three GE Aviation CF6-50C2 turbofans, each 52,500 lb thrust.
Performance: Speed 619 mph, range 11,500 miles, or 4,400 miles with max cargo (air refuelable).
Ceiling: 42,000 ft.
Fuel Capacity: 356,000+ lb. at 1,100 gpm (boom), 470 gpm (drogue).
Accommodation: 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 up to approx. 170,000 lb.

Senior Airman Kimberly Barrera

KC-46 PEGASUS

Aerial refueling/airlift

Brief: The KC-46A is a heavily modified Boeing 767-200ER multirole passenger/cargo-tanker equipped with flying boom and probe/drogue refueling capability using the Wing Air Refueling Pod (WARP) system. It is also equipped for aeromedical evacuation. KC-46 incorporates the 787's state-of-the-art cockpit, a fly-by-wire boom, remote boom-operator's station, advanced self-defensive suite including Large Aircraft IR Countermeasures (LAIRCM), RWR, tactical situational awareness, comms relay hosting, and nuclear/chem/bio hardening. In 2011 Boeing was awarded a contract for 179 KC-46A tankers, the first increment (KC-X), to replace about half of USAF's KC-135R fleet. Compared to the 50-year-old KC-135, the KC-46A has more fuel capacity, improved efficiency, and enhanced cargo and AE capability. Like the KC-10, it employs an advanced refueling boom and independently operating hose/drogue system. The program's provisioned 767-2C prototype (minus refueling boom) flew on Dec. 28, 2014, and received FAA type certification in December 2017. USAF accepted its first production KC-46 from Boeing on Jan. 10, 2019. The service awarded LRIP contracts for 19 aircraft in 2016, a follow-on Lot 3 contract for 15 aircraft in 2017, 18 aircraft in 2018, 15 in 2019, and 27 in 2021. USAF awarded the most recent Lot 6 and Lot 7 contracts for a combined 30 aircraft in August 2022 and January 2023, raising the quantity on contract to 124 airframes. Full-rate production was initially planned for Lot 3 but has been pushed to Lot 10 due to program delays. FY23 funds support purchase of 15 tankers. The KC-46 completed developmental testing and entered operational testing in 2019, though planned IOC and full-rate production has slipped to FY24 or later due to remaining deficiencies with the boom and remote vision system (RVS). USAF accepted Boeing's revised 3-dimensional RVS design comprised of six color/IR cameras in April 2022, and aims to field the system on the KC-46 in 2025. AMC began employing KC-46 for non-combat refueling of a limited number of types starting in 2021 and cleared the type for worldwide combat support to 85 percent of receiver types in September 2022. USAF aims to test the first element of its Advanced Battle Management System (ABMS), a C2 pod to networking fifth-generation aircraft in high-threat environments, on the KC-46 as early as 2024. KC-46 set an endurance record of 24.2 hours aloft as well as experimenting with reduced crew, flying with a single pilot and boom operator in 2022. USAF is considering an upgraded KC-46 as one option for a possible 75-aircraft "bridge" to a next-generation, possibly stealthy, tanker. March was selected as the next preferred alternative base to host KC-46s.

Contractor: Boeing.
First Flight: Sept. 25, 2015 (KC-46A).
Delivered: December 2018-present.
IOC: FY24 (planned).
Production: 179 (planned).
Inventory: 48 (KC-46A).
Operator: AETC, AFMC, AFRC, AMC, ANG.
Aircraft Location: Altus AFB, Okla.; Edwards AFB, Calif.; JB McGuire-Dix- Lakehurst, N.J.; McConnell AFB, Kan.; Pease ANGB, N.H.; Seymour-Johnson AFB, N.C. Planned: MacDill AFB, Fla.; March ARB, Calif.; Travis AFB, Calif.; others TBD.
Active Variant:
▪KC-46A. Modified Boeing 767 designed as a multirole cargo tanker.
Dimensions: Span 156 ft, length 165.5 ft, height 52.8 ft.
Weight: Max T-O 415,000 lb.
Power Plant: Two Pratt & Whitney PW4062, each 62,000 lb thrust.
Performance: Speed 650 mph, range 7,350 miles (farther with air refueling).
Ceiling: 43,000 ft.
Fuel Capacity: 212,299 lb., max transfer load 207,672 lb at 1,200 gpm (boom), 400 gpm (drogue).
Accommodation: Two pilots, boom operator, and up to 12 additional crew; 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.

KC-135 STRATOTANKER

Aerial refueling/airlift

Brief: The KC-135 is an aerial tanker capable of simultaneous cargo and AE missions and has been the mainstay of the USAF tanker fleet for more than 60 years. The C-135 family is similar in appearance to the commercial 707 but designed to unique military specifications and first flew on Aug. 31, 1956. The KC-135A fleet was delivered between June 1957 and January 1965, reaching IOC at Castle AFB, Calif., in 1957. KC-135s were re-engined under two separate but concurrent programs and redelivered as the KC-135E and the current KC-135R beginning in July 1984. Twenty KC-135Rs received Multipoint Refueling System (MPRS) hose/drogue pods on each wing to simultaneously refuel two NATO or Navy aircraft. (Standard KC-135s can use a single drogue adapter attached to the boom).

Airman 1st Class Megan Estrada

A small number of McConnell-based aircraft are also receiver-capable, incorporating a forward-fuselage receptacle. KC-135s can be equipped with a podded Large-Aircraft IR Countermeasures (LAIRCM) system to track/jam IR missiles for high-threat missions. The fleet is undergoing Block 45 cockpit upgrades at a rate of 38 aircraft a year through 2027. Block 45 cockpit mods enhance the modernized PACER CRAG flight deck with an additional glass cockpit display for engine instrumentation, a radar altimeter, advanced autopilot, and modern flight director. Other ongoing upgrades include Aero-I long-distance oceanic satellite tracking/C2 replacement, and rudder position indicator retrofit. Iridium SATCOM will replace Aero-I fleetwide by 2026, while rudder instrumentation aims to prevent accidents like the fatal 2013 Kyrgyzstan crash. FY23 launches Mobile User Objective System (MUOS) secure, jam-resistant BLOS and NATO-interoperable LOS SATURN. Two KC-135s were converted to WC-135R standards to replace Constant Phoenix in 2022. Congress barred KC-135 cuts to prevent a tanker shortage due to KC-46 delays in FY21 but

allowed 18 KC-135s to retire in FY22 followed by 13 in FY23. Retirements make room for KC-46 beddown at March and McGuire. USAF plans to retain the fleet until at least 2050, but announced plans to possibly pursue a "bridge tanker" to augment KC-46 until a notional Next-Generation Air-Refueling System (NGAS) emerges.

Contractors: Boeing; Collins Aerospace (Block 45/Iridium SATCOM).
First Flight: Aug. 4, 1982 (KC-135R).
Delivered: July 1984-June 9, 2005 (KC-135R).
IOC: June 1957.
Production: 732 (420 converted to KC-135R).
Inventory: 330 (KC-135R); 45 (KC-135T).
Operator: AETC, AFMC, AMC, PACAF, USAFE, ANG, AFRC.
Aircraft Location: Altus AFB, Okla.; Beale AFB, Calif.; Fairchild AFB, Wash.; Grissom ARB, Ind.; JB Andrews, Md.; Kadena AB, Japan; MacDill AFB, Fla.; March ARB, Calif.; McConnell AFB, Kan.; RAF Mildenhall, U.K.; Seymour-Johnson AFB, N.C.; Tinker AFB, Okla.; and ANG in Alabama, Alaska (active associate), Arizona, Hawaii, Illinois, Iowa, Kansas, Maine, Michigan, Mississippi, Nebraska, New Jersey, New York, Ohio, Pennsylvania, Tennessee, Utah, Washington, Wisconsin.
Active Variants:
▪KC-135R. Re-engined KC-135A fitted with CFM turbofan engines.
▪KC-135T. Reengined former KC-135Qs, able to carry different fuels in wing and fuselage tanks.
Dimensions: Span 130.8 ft, length 136.3 ft, height 41.7 ft.
Weight: Max T-O 322,500 lb.
Power Plant: Four CFM International CFM56-2 (USAF designation F108) turbofans, each 21,634 lb thrust.
Performance: Speed 530 mph at 30,000 ft, range 1,500 miles with 150,000 lb transfer fuel, up to 11,015 miles for ferry missions.
Ceiling: 50,000 ft.
Fuel Capacity: Max transfer load 200,000 lb at 1,100 gpm (boom), 450 gpm (MPRS pods).
Accommodation: Two pilots, navigator, boom operator, AE crew: two flight nurses, three medical technicians (adjusted as needed).
Load: 37 passengers, six cargo pallets, max 83,000 lb.

AIRLIFT AIRCRAFT

Airman 1st Class Zachary Foster

C-5 GALAXY

Strategic airlift

Brief: The C-5 is USAF's largest airlifter and one of the world's largest aircraft, capable of lifting unusually large/heavy cargo over intercontinental ranges. It can also take off and land in relatively short distances, and taxi on substandard surfaces if required. The Galaxy's front and rear cargo doors permit simultaneous drive-through loading/unloading. The aircraft's unique upper deck is split between the flight deck—with galley and crew rest area forward of the wing—and a troop compartment seating 75 passengers and a second gallery/lavatory aft of the wing. The C-5A first flew on June 30, 1968, and a total of 81 were delivered between 1969 and 1973, reaching IOC in September 1970. C-5As underwent major wing modifications to extend their service lives and all but one (converted to C-5M) were retired. The C-5B first flew in 1985 and was delivered between 1986 and 1989. C-5Bs incorporated all C-5A improvements including strengthened wings, uprated turbofans, color weather radar, triple INS, and defensive systems (on some aircraft). Two C-5As were modified for outsize space cargo and redelivered as C-5Cs in 1989 and 1990. The combined Avionics Modernization Program (AMP) and Reliability Enhancement and Re-engining Program (RERP) resulted in the C-5M Super Galaxy. Upgraded aircraft incorporate new engines with 20 percent increase in thrust, as well as avionics, structural, and reliability fixes. A total of 49 B models, two C models, and a single C-5A were converted. Ongoing modifications include CNS/ATM upgrades, new mission computers and off-the-shelf color weather radar, Large Aircraft IR Countermeasures (LAIRCM) improvements, and a lavatory redesign to address corrosion. Development to replace the aircraft's flight deck displays to support future upgrades and modernization begins in FY23.

Contractors: Lockheed Martin; Collins Aerospace and Honeywell (CNS/ATM, weather radar/mission computer).
First Flight: June 6, 2006 (C-5M).
Delivered: Feb. 9, 2009-Aug. 2, 2018 (C-5M).
IOC: Feb. 21, 2014 (C-5M).
Production: 131 (52 converted to C-5M).
Inventory: 50 (C-5M); two (C-5M-SCM).
Operator: AMC, AFRC.
Aircraft Location: Dover AFB, Del.; JBSA-Lackland, Texas; Travis AFB, Calif.; Westover ARB, Mass.
Active Variants:
▪C-5M. Super Galaxy converted from C-5A/B, incorporating AMP and RERP.
▪C-5M-SCM. Super Galaxy converted from C-5C to carry large NASA/space cargo.
Dimensions: Span 222.8 ft, length 247.8 ft, height 65.1 ft.
Weight: Max T-O 840,000 lb.
Power Plant: Four GE Aviation F138-GE-100 (CF6-80C2) turbofans, each 50,580 lb thrust.
Performance: Speed 518 mph, range 5,524 miles with 120,000 lb of cargo.
Ceiling: 45,000 ft.
Accommodation: Two pilots, two flight engineers, three loadmasters.
Load: 81 troops and 36 standard pallets, max 285,000 lb; incl seven MRAP vehicles, six AH-64 Apache helicopters, four M2 Bradley fighting vehicles, or two M1 Abrams main battle tanks.

Joshua McClanahan/USAF

C-12 HURON

Light airlift

Brief: C-12 is tasked with multimission passenger and priority light-cargo airlift, medevac, as well as diplomatic and flight-test support. The family of aircraft includes military versions of the Beechcraft King Air and 1900C (C-12J). Flight decks and cabins are pressurized for high-altitude flight. The C-12D incorporates a cargo door with an integral airstair, high-flotation landing gear, structural improvements, and optional external wingtip tanks. Both C-12C and C-12D are deployed to U.S. embassies worldwide and incorporate earlier three-bladed propellers. The C-12F incorporated uprated engines, four-bladed propellers, and an increased service ceiling. The C-12J is a completely different aircraft based on the Beechcraft 1900C commuter airliner with a large, aft cargo door. C-12Js are operated by AFMC for testing and PACAF in support of U.S. Forces Japan with provision for two litters or 10 ambulatory patients in the AE role. C-12Js incorporate extensive avionics upgrades, including three MFDs, integrated GPS, flight management systems, autopilot, VHF/UHF radios, and weather radar.

Contractor: Beechcraft.
First Flight: Oct. 27, 1972 (Super King Air 200), March 1, 1990 (1900C).
Delivered: 1974-mid 1990s.
IOC: Circa 1974.
Production: 30 (C-12A/C); six (C-12D); 46 (C-12F): four (C-12J).
Inventory: 16 (C-12C); six (C-12D); three (C-12F); four (C-12J).
Operator: AFMC, PACAF.
Aircraft Location: Edwards AFB, Calif.; Holloman AFB, N.M. (J); JB Elmendorf-Richardson, Alaska; Yokota AB, Japan (J); various U.S. embassies.
Active Variants:
▪C-12C. C-12As retrofit with PT6A-41 engines.
▪C-12D. C-12 with an enlarged cargo door and strengthened wings.
▪C-12F. C-12 with uprated PT6A-42 engines, eight-passenger seating, and AE capability.
▪C-12J. Military version of the Beechcraft Model 1900C commuter airliner.
Dimensions: Span 54.5 ft, length 43.8 ft, height 15 ft (C/D/F); span 54.5 ft, length 57 ft, height 15 ft (J).

YubiKey

Modern Authentication for the Modern WarFighter. DOD approved CAC alternative.

Not all MFA is created Equal

Modern cyberthreats require modern authentication. Choose the YubiKey for modern, phishing-resistant multi-factor authentication.

The DOD-approved YubiKey is FIPS 140-2 validated and offers highest aussurance authentication for non-CAC eligible workers, contractors, mobile and BYOAD/BYOD users, teleworkers, isolated networks and cloud services. YubiKeys are multi-protocol with support for Smartcard (CAC/PIV) and modern FIDO2, offering a path to modern authentication with support for existing systems.

yubico

Learn more at yubi.co/federal

The appearance of U.S. Department of Defense (DoD) visual information does not imply or constitute DoD endorsement.

Weight: Max T-O 15,000 lb (F); 16,710 lb (J).
Power Plant: Pratt & Whitney Canada PT6A-41 (C/D) or PT6A-42 (F) turboprops, each 850 shp; PT6A-65B turboprops, each 1,173 shp (J).
Performance: Speed 300 mph (C/D), 336 mph (F), range 2,271 miles; 284 mph, range 1,669 miles (J).
Ceiling: 31,000 ft (C/D); 35,000 ft (F); 25,000 ft (J).
Accommodation: Two pilots.
Load: Eight passengers (C/D/F), 19 passengers or 3,500 lb cargo (C-12J).

Chase Kohler/USAF

C-17 GLOBEMASTER III

Tactical/strategic airlift

Brief: C-17 is a heavy-lift, strategic transport capable of direct tactical delivery of all classes of military cargo. It is the U.S. military's core airlift asset, capable of operating on small, austere airfields (3,500 ft by 90 ft) previously limited to C-130s. It is the only aircraft able to directly deliver or airdrop outsize cargo into a tactical environment and it is the first military transport to feature fully digital, fly-by-wire control. Boeing delivered the 223rd and final USAF aircraft on Sept. 12, 2013, and the final international aircraft on Nov. 29, 2015. Block 16 avionics and weather radar mods were completed in 2015. Block 20 upgrades included some 60 programs to bring early production aircraft to a common configuration, and Block 21 including Mode 5 IFF and airspace compliance were completed fleetwide in 2020. FY23 continues fleetwide HUD replacement through FY28, and funds enhanced high-bandwidth BLOS voice/data SATCOMS. Ongoing upgrades also include next-generation Large Aircraft Infrared Countermeasures (LAIRCM) to combat man-portable air defenses, as well as safety and sustainment mods. The Roll-on/Roll-off Conference Capsule to replace the "Silver Bullet" for in-flight conferencing is currently finishing testing and integration. The C-17 fleet was heavily tasked evacuating U.S. and allied personnel from Afghanistan during Operation Allies Refuge, including carrying a record-breaking 823 passengers on a single flight on Aug. 15, 2021. The C-17 fleet is currently the largest consumer of jet fuel in the inventory. AMC launched trial efforts at Charleston and Travis in 2022 to test commercial best-practices aimed at reducing consumption.

Contractor: Boeing (previously McDonnell Douglas).
First Flight: Sept. 15, 1991.
Delivered: June 1993-September 2013.
IOC: Jan. 17, 1995.
Production: 257.
Inventory: 222.
Operator: AETC, AMC, PACAF, ANG, AFRC.
Aircraft Location: Altus AFB, Okla.; Dover AFB, Del.; 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.; Pittsburgh Arpt., Pa.; Travis AFB, Calif.; Wright-Patterson AFB, Ohio; and ANG in Hawaii (associate), Mississippi, North Carolina, West Virginia, and New York.
Active Variant:
▪C-17A. Long-range tactical/strategic airlifter.
Dimensions: Span 169.8 ft, length 174 ft, height 55.1 ft.
Weight: Max T-O 585,000 lb.
Power Plant: Four Pratt & Whitney F117-PW-100 turbofans, each 40,440 lb thrust.
Performance: Speed 518 mph at 25,000 ft, range 2,760 miles with 169,000 lb payload (farther with air refueling).
Ceiling: 45,000 ft.
Accommodation: Two pilots, loadmaster; AE crew: Two flight nurses, three medical technicians (mission dependent).
Load: 102 troops/paratroopers; 36 litter and 54 ambulatory patients; 18 pallets up to max payload 170,900 lb.

1st Lt. Sam Eckholm

C-21

Light airlift

Brief: The C-21 "Cougar" is a militarized Learjet 35 used for passenger and priority light-cargo airlift and aeromedical transport. It is equipped with color weather radar, TACAN, and HF/VHF/UHF radios. It provides medium-range operational support for time-sensitive movement of people and cargo throughout the U.S. and the European theater, including AE missions if required. Recent efforts include the C-21 Avionics Upgrade Program (AUP), which added a modern glass cockpit, digital weather radar, GPS, flight management system, satellite-updating real-time flight information, digital black boxes, and ADS-B/Mode 5 transponder. USAF added BLOS comms concurrently with AUP to save costs. The fleet was also retrofitted with enlarged aft-fuselage "delta fins" to improve low-speed stability and control, eliminating previous approach/landing flight restrictions. Ongoing modifications are limited to required low-cost airworthiness and safety upgrades.

Contractor: Bombardier (previously Gates Learjet).
First Flight: January 1973.
Delivered: April 1984-October 1985.
IOC: April 1984.
Production: 84.
Inventory: 19.
Operator: AMC, USAFE.
Aircraft Location: Ramstein AB, Germany; Scott AFB, Ill.
Active Variant:
▪C-21A. Military version of the Learjet 35A.
Dimensions: Span 39.5 ft, length 48.6 ft, height 12.2 ft.
Weight: Max T-O 18,300 lb.
Power Plant: Two AlliedSignal TFE731-2-B2 turbofans, each 3,500 lb thrust.
Performance: Speed 530 mph at 41,000 ft, range 2,306 miles.
Ceiling: 45,000 ft.
Accommodation: Two pilots; AE crew: Flight nurse, two medical technicians (mission dependent).
Load: Eight passengers, 3,153 lb cargo; one litter or five ambulatory patients (AE role).

C-32

VIP transport

Brief: The C-32A provides dedicated vice presidential and DV airlift while the C-32B is tasked with politically sensitive crisis-mobility. Both types were acquired as commercial Boeing 757s. Aircraft assigned to the 89th Airlift Wing at JB Andrews fly under the call sign "Air Force Two" during vice presidential missions, but additionally serve the First Lady, Congress, and Cabinet officials. The cabin is divided into sections, including a worldwide clear and secure voice and data communications suite, first-class cabin, two business-class cabins, center galley, lavatories, fully enclosed stateroom, and a conference and staff area. The C-32B provides DOD discreet, rapid, global airlift in support of government crisis response efforts. The C-32's modern flight deck is designed to be easily upgraded. The C-32A fleet recently underwent a full cabin refurbishment to match the VC-25 as well as installation of fully reclining crew rest seats to enable long-endurance missions without pre-positioned relief crews. FY22 launched Senior Leader Communication Modernization across the executive fleets including Wideband SATCOM, secure air-to-air/ground comms, commercial WiFi, in-flight information, and enhanced airborne executive phones. Two C-32s will undergo Senior Leader comm installation in FY23 with modification fleetwide planned for by 2027. DOD completed analysis to replace the C-32, E-4B, and Navy E-6B Mercury with a common airframe but opted to retain the fleet potentially through 2040, shifting funds to explore future supersonic transport technology.

Contractors: Boeing; L3 Harris (Senior Leader Communications Modernization).
First Flight: Feb. 11, 1998 (C-32A).

Tech. Sgt. Benjamin Mota

Delivered: June-December 1998.
IOC: 1998.
Production: Six.
Inventory: Four (C-32A); two (C-32B).
Operator: AMC, ANG.
Aircraft Location: JB Andrews, Md. (A); JB McGuire-Dix-Lakehurst, N.J. (B).
Active Variants:
▪C-32A. Presidential support-configured commercial Boeing 757-200 airliner.
▪C-32B. Commercial Boeing 757-200 tasked with global crisis response airlift.
Dimensions: Span 124.6 ft, length 155.2 ft, height 44.5 ft.
Weight: Max T-O 255,000 lb.
Power Plant: Two Pratt & Whitney PW2040 turbofans, each 41,700 lb thrust.
Performance: Speed 530 mph, range 6,325 miles.
Ceiling: 42,000 ft.
Accommodation: Two pilots, up to 14 cabin and maintenance crew (varies with mission).
Load: Up to 45 passengers.

Airman 1st Class Emily Farnsworth

C-37

VIP transport

Brief: The C-37 family provides worldwide special air mission and DV support, consisting of military versions of the ultra-long-range Gulfstream business aircraft. The C-37A is based on the Gulfstream V and is equipped with separate VIP and passenger areas, secure global voice and data communications suites, enhanced weather radar, autopilot, and advanced HUD. The C-37B, first delivered in 2004, is based on the G550 and adds directional IR countermeasures for self-defense and the advanced Honeywell Plane-View flight deck. Ongoing mods include commercial wideband SATCOM, to ensure leaders' access to secure data and voice networks, and FAA-required CNS/ATM updates. FY23 continues Wideband SATCOM upgrades as part of the Senior Leader Communication Modernization effort across USAF's executive fleets. A total of 16 aircraft will be modified, including four in FY23, to ensure redundant, survivable and secure/top-secret voice, data, and video conferencing for uninterrupted worldwide C2. Existing aircraft will receive modernized en route air traffic SATCOMS, which will be standard on future airframes. USAF aims to expand the fleet by as many as 40 additional aircraft to backfill the now-retired C-20, leading to delivery of a fourth and fifth C-37B in 2019 and 2020 respectively. The service awarded Gulfstream a $127.4 million fleet expansion contract for another two aircraft, which were delivered to JB Andrews on Nov. 3, 2021, and Feb. 15, 2022.

Contractors: Gulfstream Aerospace; Honeywell (commercial SATCOM replacement); L3 Harris (Senior Leader Communications Modernization).
First Flight: October 1998 (C-37A).
Delivered: Oct. 14, 1998-February 2022.
IOC: Dec. 9, 1998.
Production: 16 (planned).
Inventory: Nine (C-37A); seven (C-37B).
Operator: AMC, PACAF, USAFE.
Aircraft Location: JB Andrews, Md.; JB Pearl Harbor-Hickam, Hawaii; Ramstein AB, Germany.
Active Variants:
▪**C-37A.** Military version of the Gulfstream V.
▪C-37B. Military version of the Gulfstream G550.
Dimensions: Span 93.5 ft, length 96.4 ft, height 25.8 ft.
Weight: Max T-O 90,500 lb. (A); 91,000 lb. (B).
Power Plant: Two BMW/Rolls-Royce BR710A14-10 turbofans, each 14,750 lb thrust (A); two BMW/Rolls-Royce BR710C4-11 turbofans, each 15,385 lb thrust (B).
Performance: Speed 600 mph (cruise 345 mph); range 6,300 miles (A), 6,700 miles (B).
Ceiling: 51,000 ft.
Accommodation: Two pilots, flight attendant, crew chief.
Load: Up to 12 passengers (A); 14 passengers (B).

Maj. Stanley Paregien

C-40 CLIPPER

VIP transport

Brief: The C-40 is a medium-range DV airlift aircraft based on the commercial Boeing 737-700. It is used to transport senior military commanders, Cabinet officials, and members of Congress, as well as performing other support missions. C-40Bs are equipped with an office-in-the-sky arrangement, including clear and secure voice/data communication and broadband data/video. C-40Cs lack the advanced communications suite, are VIP configured with sleep accommodations, and are reconfigurable to carry 42 to 111 passengers. Both versions have modern avionics, integrated GPS and flight-management system/electronic flight instrument system, and HUD. Each aircraft has auxiliary fuel tanks and managed passenger communications. Recent mods add fully reclining crew rest seats to enable long endurance missions without pre-positioned relief crews. FY23 continues Senior Leader Communication Modernization across the executive fleets, including Wideband SATCOM, secure air-to-air/ground comms, commercial WiFi, in-flight information, and enhanced airborne executive phones. Two aircraft will be upgraded in FY23 to ensure redundant, survivable and secure/top-secret voice, data, and video conferencing for uninterrupted worldwide C2.

Contractors: Boeing; L3Harris (Wideband SATCOM/Senior Leader Communication Modernization).
First Flight: April 14, 1999 (C-40A).
Delivered: 2002-2007.
IOC: Feb. 28, 2003.
Production: 11.
Inventory: Four (C-40B); seven (C-40C).
Operator: AMC, ANG, AFRC.
Aircraft Location: JB Andrews, Md.; Scott AFB, Ill.
Active Variants:
▪C-40B. VIP military-configured Boeing 737-700 with advanced comms.
▪C-40C. Passenger-configured Boeing 737-700, lacking advanced comms.
Dimensions: Span 117.4 ft, length 110.3 ft, height 41.2 ft.
Weight: Max T-O 171,000 lb.
Power Plant: Two GE Aviation CFM56-7 turbofans, each 27,000 lb thrust.
Performance: Speed 530 mph, range 5,750 miles.
Ceiling: 41,000 ft.
Accommodation: Two pilots, up to eight cabin and maintenance crew (varies by model/mission).
Load: Up to 89 passengers (B); up to 111 passengers (C).

Master Sgt. Tamara Dabney/ANG

C-130H HERCULES

Tactical airlift

Brief: The C-130H is an all-purpose theater transport that performs diverse roles, including tactical and intertheater airlift and airdrop, AE, aerial spraying, aerial firefighting, and humanitarian support. The developmental YC-130A first flew in August 1954 with the C-130A entering USAF service in 1956. The H model improved on the later C-130E and was delivered starting in 1965, with delivery of the current, more advanced models starting in 1974. Improvements included uprated engines, redesigned outer wing, improved pneumatic systems, new avionics, improved radar, and NVG lighting. USAF intends to partially recapitalize the C-130H fleet with the C-130J and modernize the remaining fleet with new avionics, safety, and performance improvements. Ongoing upgrades include critical center wing box replacement, electronic propeller controls/engine efficiency mods, C-130H Avionics Modernization Program (previously Viability and Airspace Access Program), and NP2000 propellers. AMP Increment 1 was completed fleetwide in April 2021, adding new CNS/ATM and bringing legacy C-130s into compliance with international airspace rules. L3Harris completed the first Increment 2-upgraded aircraft in April 2022. A total of 124 C-130Hs will receive Increment 2 mods, which add terrain awareness and warning, new flight management, and modern glass cockpit displays through 2027. UHF Satcom modernization was added to Increment 2 in FY23, rolling in Mobile User Objective System (MUOS) secure, jam-resistant BLOS, and NATO-interoperable LOS SATURN. The fleet also began eight-bladed NP2000 propellor retrofits, which enhance performance up to 20 percent. USAF currently has 83 aircraft on-contract for NP2000 and will likely accelerate retrofits following a fleetwide grounding in 2022 due to cracks in the current four-bladed units. Both AFRC's 908th AW at Maxwell and the Ohio ANG's 179th AW at Mansfield-Lahm ended C-130H operations in April 2022. USAF plans to retire eight C-130Hs in FY23, cutting the total tactical airlift fleet to 271 aircraft.

Contractors: Lockheed Martin (airframe); L3Harris (AMP Increment 2); Collins Aerospace (NP2000).
First Flight: 1965 (C-130H).
Delivered: April 1975-96 (current C-130H2/H3).
IOC: Circa 1974.
Production: 1,202 (C-130H).
Inventory: 128.
Operator: ANG, AFRC.
Aircraft Location: Dobbins ARB, Ga.; Little Rock AFB, Ark.; Minneapolis-St. Paul Arpt./ARS, Minn.; Peterson SFB, Colo. (MAFFS); Youngstown ARS (Modular Aerial Spray System (MASS), and ANG in Arkansas, Connecticut, Delaware, Georgia, Illinois, Minnesota, Missouri, Montana, Nevada (MAFFS), Texas, Wyoming (MAFFS).
Active Variant:
▪C-130H Hercules. Updated late-production version of the legacy C-130.
Dimensions: Span 132.6 ft, length 97.8 ft, height 38.8 ft.
Weight: Max T-O 155,000 lb; max payload 42,000 lb.
Power Plant: Four Allison T56-A-15, or Rolls-Royce T56 3.5 turboprops, each 4,591 shp (approx. 20 percent increased thrust with NP2000 propellers).
Performance: Speed 366 mph; range with 35,000 lb payload 1,496 miles.
Ceiling: With max payload, 23,000 ft.
Accommodation: Two pilots, navigator, flight engineer, loadmaster. **Load:** Up to 92 combat troops or 64 paratroopers or 74 litters or six cargo pallets or 16 Container Delivery System (CDS) bundles or any combination of these up to max weight.

C-130J/C-130-J-30 SUPER HERCULES

Tactical airlift

Brief: The C-130J is the redesigned, current production version of the C-130 all-purpose theater transport. Missions include tactical and intertheater airlift, airdrop, AE, and wildfire suppression using the Modular Airborne Fire Fighting System (MAFFS), and humanitarian relief. The aircraft first deployed to combat in Southwest Asia in 2004. The Super Hercules features three-crew flight operations, more powerful engines, composite six-blade propellers, and digital avionics and mission computers. The C-130J can fly faster, higher, and farther than the C-130H. The C-130J-30 variant features a 15-foot-longer "stretched" fuselage. The combined fleet is sustained via block upgrades. USAF combined Block 7/8.1 upgrades to reduce modification downtime. Block 7 includes Link 16, new flight management systems, civil GPS, and a special mission processor. Ongoing Block 8.1 upgrades add improved LOS data link and BLOS comms, improved precision navigational aids, enhanced covert lighting, replaces UHF comms with SATCOMS, and updates mission planning systems. Block 8.1's Mode 5 IFF and air traffic management upgrades were successfully fielded ahead of cycle to meet FAA and global airspace requirements. Airframes delivered since 2009 incorporate enhanced service life center wings, and four early production airframes will be retrofitted in 2023. Major development focuses on modernized secure, jam-resistant HF/UHF/SATCOM voice and data (MUOS and NATO Saturn) as well as

Staff Sgt. Kristen Pittman

data links to keep pace with newer satellites and networking. Congress added funds beyond the current multiyear C-130J contract, including 16 C-130Js for the ANG units and four for AFRC, bringing planned C-130J procurement to 202 aircraft. ANG units in Kentucky and West Virginia completed transition from the C-130H to C-130J in 2022, and Georgia is slated to receive J models as they become available.

Contractor: Lockheed Martin.
First Flight: April 5, 1996.
Delivered: February 1999-present.
IOC: October 2006.
Production: 2,600+ worldwide, 202 (USAF).
Inventory: 151.
Operator: AETC, AMC, PACAF, USAFE, ANG, AFRC.
Aircraft Location: Dyess AFB, Texas; Keesler AFB, Miss.; Little Rock AFB, Ark.; Ramstein AB, Germany; Yokota AB, Japan; and ANG in California, Kentucky, Rhode Island, Kentucky, Texas, and West Virginia. **Planned:** ANG in Georgia.
Active Variants:
▪C-130J Super Hercules. Current production version.
▪C-130J-30 Super Hercules. Stretched version capable of accommodating larger loads.
Dimensions: Span 132.6 ft, length 97.8 ft, height 38.8 ft.; (J-30 length) 112.8 ft.
Weight: Max T-O 155,000 lb (J), 164,000 lb (J-30); max payload 42,000 lb (J), 44,000 lb (J-30).
Power Plant: Four Rolls-Royce AE2100D3 turboprops, each 4,700 shp.
Performance: Speed 417 mph (J), 410 mph (J-30); range with 35,000 lb payload 1,841 miles (J), 2,417 miles (J-30).
Ceiling: With max payload, 26,000 ft (J), 28,000 ft (J-30).
Accommodation: Two pilots, loadmaster.
Load: Up to 92 combat troops or 64 paratroopers or 74 litters or six cargo pallets or 16 Container Delivery System (CDS) bundles or any combination of these up to max weight (J); 128 combat troops or 92 paratroopers or 97 litters or eight pallets or 24 CDS bundles or any combination of these up to max weight (J-30).

LC-130H SKIBIRD

Arctic support/tactical airlift

Brief: The LC-130H is a ski-equipped, Arctic-support derivative of the C-130H. It is capable of direct resupply of Antarctic research stations and high-arctic radar sites with ice and snowpack runways. The LC-130H fleet supports the National Science Foundation's (NSF) Antarctic research, ferrying much of the material, provisions, and personnel between Christchurch, New Zealand, and McMurdo Station, Antarctica. The aircraft also provide ongoing support to the remote Amundsen-Scott South Pole Station. USAF began augmenting the Navy's "Operation Deep Freeze" with the C-124 in 1956. C-130s began Antarctic support in 1959, operating without skis until the initial ski-borne deployment of the C-130D in January 1960. By 1975, the New York ANG's 109th AW operated USAF's only ski-equipped LC-130 supporting Distant Early Warning sites in the high Arctic. The unit began

Maj. David Price/ANG

augmenting Navy LC-130s during Deep Freeze in 1988, before taking over primary responsibility in 1999. Three aircraft were converted from ex-Navy LC-130Rs, and the NSF funded an additional three new-build aircraft in 1995-96. LC-130s have been upgraded with eight-bladed NP-2000 propellers to increase takeoff performance, digital cockpit displays and flight management systems, multifunction radar, modernized comms, and a single air data computer. LC-130s are upgraded along with the baseline C-130H fleet, including center wing box replacement, Mode 5 IFF, and the Avionics Modernization Program that launched Increment 2 in 2022. Required upgrades include NVG-compatible flight deck, secure BLOS data link, increased reliability commercial SATCOM, and self-defensive/missile warning capability. The ANG test-flew an LC-130 with upgraded T56 3.5 engine enhancements for the first time in October 2022. Paired with the NP2000 propellers, the upgrade improves payload, range, high-altitude performance, and reliability. The ANG plans to retrofit all 10 aircraft by early 2024. LC-130s flew a total of 40 Operation Deep Freeze missions supporting NSF research during the 2022-23 season, carrying a total of 204 passengers and 357,962 pounds of cargo. Crews additionally logged 24 long-range flights between Christchurch, New Zealand, and Antarctica, including four medical evacuations. Congress renewed pressure on USAF to recapitalize the LC-130 (likely with C-130J) fleets citing increased Russian and Chinese activity in the Arctic.

Contractor: Lockheed Martin.
First Flight: 1957 (ski-equipped C-130D).
Delivered: 1974-96.
IOC: Circa October 1984.
Production: 10.
Inventory: 10.
Operator: ANG.
Aircraft Location: Stratton ANGB, N.Y.
Active Variants:
▪LC-130H Skibird. Arctic support variant with wheel-ski gear and eight-bladed propellers.
Dimensions: Span 132.6 ft, length 97.8 ft, height 38.8 ft.; Nose Ski 10 ft by six ft wide, main gear skis 12 ft by six ft wide.
Weight: Max T-O 155,000 lb; max payload 45,000 lb.
Power Plant: Four Rolls-Royce T56 3.5 turboprops, each 4,591 shp.
Performance: Speed 366 mph; range with 35,000 lb payload 1,636 miles (with engine upgrades).
Ceiling: With max payload, 23,000 ft.
Accommodation: Two pilots, navigator, flight engineer, loadmaster.
Load: Up to 92 passengers or 74 litters; six cargo pallets, 16 Container Delivery System (CDS) bundles, or any combination up to max weight.

Adam Schultz/White House

VC-25 AIR FORCE ONE

Presidential airlift

Brief: The VC-25 is a specially configured Boeing 747-200B equipped for airlifting the President and his entourage. VC-25s operate under the call sign "Air Force One" when the President is aboard, and SAM (Special Air Mission) during non-presidential flights. Aircraft are equipped with staff work areas, a conference room, a general seating area, and an executive office. Communications capability includes worldwide secure and clear communications and a full suite of strategic C2 comm/data links. The aircraft also has a full self-defensive suite. The fleet is operated by the Presidential Airlift Group of the 89th Airlift Wing at JB Andrews. Congress directed retirement of the VC-25A by the end of 2025 and FY20 funded the fleet's final block upgrade, which included protected satcom, weather radar, digital voice/data comms, and networking. The modifications aim to maintain fleet viability until the VC-25B (based on Boeing's modernized 747-8 Intercontinental) enters service. Significant ongoing upgrades comprise mission comms, notably the Senior Leader Communication Modernization effort across the executive fleets. USAF issued Boeing a $3.9 billion presidential aircraft replacement contract to modify two undelivered commercial 747-8s to VC-25B standards in 2018. Boeing began modifications in 2020, to add mission comms, DV interior, self-defensive systems, integral airstairs/ground-level boarding, autonomous baggage handling, a second auxiliary power unit, and uprated electrical systems. Specifications exclude aerial refueling capability to reduce program cost. Delivery of the first aircraft has slipped three years to 2027 due to manufacturing delays, jeopardizing the VC-25A's planned out-of-service date. Delivery of the second and final aircraft is now planned for 2028. The White House announced VC-25B will retain a modernized version of its traditional livery, reversing previous administration plans to radically change the scheme.

Contractor: Boeing.
First Flight: Sept. 6, 1990 (VC-25A).
Delivered: August-December 1990.
IOC: Dec. 8, 1990; **planned** 2027 (VC-25B).
Production: Two VC-25A; two VC-25B (undergoing modification).
Inventory: Two (VC-25A).
Operator: AMC.
Aircraft Location: JB Andrews, Md.
Active Variants:
▪VC-25A. Specially configured presidential support version of the Boeing 747-200B.
▪VC-25B. Next-generation presidential aircraft based on the Boeing 747-8 Intercontinental.
Dimensions: Span 195.8 ft, length 231.8 ft, height 63.4 ft (A); span 224.5 ft, length 250.2 ft, height 63.4 ft (B).
Weight: Max T-O 833,000 lb (A); max T-O 987,000 lb (B).
Power Plant: Four GE Aviation CF6-80C2B1 turbofans, each 56,700 lb thrust (A); four GE Aviation GEnx-2B turbofans, each 66,500 lb thrust (B).
Performance: Speed 630 mph, range 7,800 miles (farther with air refueling) (A); speed 660 mph, range 8,900 miles (B).
Ceiling: 45,100 ft.
Accommodation: Two pilots, navigator, flight engineer, up to 22 cabin and maintenance crew; **Load:** Up to 102 passengers (A); TBD (B).

HELICOPTERS

Staff Sgt. Darius SostreMiroir

HH-60 PAVE HAWK

Personnel recovery/medium lift

Brief: The HH-60G Pave Hawk is an armed, all-weather day/night CSAR helicopter derived from the UH-60 Black Hawk. Additional missions include casualty/medical evacuation, disaster and humanitarian response, firefighting, and combat/utility support. The HH-60G is equipped with advanced INS/GPS/Doppler navigation systems, SATCOM, and secure/anti-jam communications, and personnel locating system (PLS) that aids location of a survivor's radio. It includes automatic flight control, NVG lighting, FLIR, an engine/rotor blade anti-ice system, in-flight refueling probe, additional fuel tanks, and an integral rescue hoist. Combat enhancements include a full, self-defensive suite and two miniguns (or .50-caliber guns). Major upgrades include Block 162, which encompasses Avionics Communications Suite Upgrade and replaces obsolete systems with color weather radar, improved TACAN, new RWR, auto direction finding, and digital intercoms. HH-60U are modified UH-60Ms operated by AFMC for testing and support. USAF initially pursued new-build UH-60Ms as

loss replacements for the HH-60G, ultimately modifying Army surplus UH-60Ls instead. The first of 21 UH-60L combat loss replacements was delivered in 2016 with the final aircraft entering service in 2022. Ongoing mods include color cockpit displays, Mode 5 IFF, loss-replacement mission systems, and defensive system support. Davis-Monthan's 55th Rescue Squadron completed its final HH-60G deployment in October 2022, ahead of transition to the next-generation HH-60W. USAF retired the first 34 airframes in 2022 year and intends to completely recapitalize the fleet with the HH-60W by FY26.

Contractor: Lockheed Martin Sikorsky.
First Flight: October 1974.
Delivered: 1982-1998 (HH-60G).
IOC: 1982.
Production: 112 (HH-60G); three (HH-60U).
Inventory: 74 (HH-60G); three (HH-60U).
Operator: ACC, AETC, AFMC (HH-60U), PACAF, USAFE, ANG, AFRC.
Aircraft Location: Aviano AB, Italy; 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.; Nellis AFB, Nev.; Patrick SFB, Fla.
Active Variants:
▪HH-60G. Modified UH-60 helicopter equipped for CSAR.
▪HH-60U. Modified UH-60M helicopters utilized by AFMC for utility and test support.
Dimensions: Rotor diameter 53.6 ft, overall length 64.7 ft, height 16.7 ft.
Weight: Max T-O 22,000 lb.
Power Plant: Two GE Aviation T700-GE-700/701C turboshafts, each 1,560-1,940 shp.
Performance: Speed 184 mph; range 580 miles (farther with air refueling).
Ceiling: 14,000 ft.
Armament: Two 7.62 mm miniguns or two .50-caliber machine guns.
Accommodation: Two pilots, flight engineer, gunner.
Load: Up to three PJs and four non-ambulatory patients.

Airman 1st Class Karissa Dick

HH-60 JOLLY GREEN II

Personnel recovery/medium lift

Brief: The HH-60W is an armed, all-weather day/night CSAR helicopter meant to replace the HH-60G. The type is derived from the UH-60M Black Hawk and dubbed "Jolly Green II" in honor of the Vietnam-era HH-3 and HH-53. Additional missions include casualty/medical evacuation, disaster and humanitarian response, firefighting, and combat/utility support. The HH-60W features a fully digital glass cockpit, improved hot weather/high-altitude performance, onboard self-defenses capable of defeating higher-end threats, an enlarged cabin, and double the internal fuel capacity of the HH-60G. Features include digital RWR, laser/missile/hostile fire warning, integrated chaff/flares, cabin and cockpit armor, externally mounted 7.62 mm and .50-cal weapons, LINK 16, SADL, integrated cockpit/cabin displays, advanced comms, ADSB, tactical moving map displays, upturned IR-masking exhausts, and efficient wide-chord rotor blades. USAF awarded Sikorsky Aircraft the $1.28 billion Combat Rescue Helicopter contract to replace the HH-60G on June 26, 2014. USAF revised its accelerated procurement plans to buy a total of 75 HH-60Ws over five lots (decreased from a planned 113 aircraft). A total of 55 LRIP helicopters would be procured in four lots from FY19 to FY22, with the final two lots procured through 2024. USAF accepted the first production aircraft from Sikorsky on May 18, 2021, and requested funds to procure 10 aircraft completing its planned buy in FY23. Congress, however, doubled the FY23 request boosting the overall program to 85 airframes. Planned capability improvements include adding Distributed Aperture IR Counter Measure (DAIRCM), jam-resistant GPS, Degraded Visual Environment (DVE) system, Video Data Link (VDL), improved Blue Force Tracker, integrated system diagnostics, wideband-UHF and narrowband SATCOMS, and airspace compliance updates. The HH-60W completed developmental testing and established the helicopter's baseline configuration ahead of operational testing starting in April 2022. ACC declared IOC in September 2022, clearing the type for its first operational deployment to AFRICOM shortly thereafter. A full-rate production decision is expected in 2023.

Contractor: Lockheed Martin Sikorsky.
First Flight: May 17, 2019.
Delivered: 2019-present.
IOC: Sept. 7, 2022.
Production: 85 (planned).
Inventory: 24 (HH-60W).
Operator: ACC, AETC. Planned: PACAF, USAFE, ANG, AFRC.
Aircraft Location: Duke Field, Fla.; Kirtland AFB, N.M.; Moody AFB, Ga.
Planned: Aviano AB, Italy; Davis-Monthan AFB, Ariz.; Francis S. Gabreski Arpt., N.Y.; JB Elmendorf-Richardson, Alaska; Kadena AB, Japan; Moffett Field, Calif.; Nellis AFB, Nev.; Patrick SFB, Fla.
Active Variants:
▪HH-60W. Developmental next-generation Combat Rescue Helicopter based on the UH-60M.
Dimensions: Rotor diameter 53.6 ft, overall length 64.7 ft, height 16.7 ft.
Weight: Max T-O 22,500 lb.
Power Plant: Two GE Aviation T700-GE-701D turboshafts, each 1,857 shp.
Performance: Speed 176 mph; range 690 miles (air refuelable).
Ceiling: 20,000 ft.
Armament: Two 7.62 mm miniguns or two .50-caliber machine guns.
Accommodation: two pilots, flight engineer, gunner, two PJs.
Load: TBD.

Airman 1st Class Bridgitte Taylor

MH-139 GREY WOLF

Missile field security/light lift

Brief: The MH-139 is based on the Leonardo AW139 and is modified with mission-specific equipment, systems, and armament by prime contractor Boeing. Features include an open-architecture glass cockpit, weather radar, enhanced ground proximity warning, radar altimeter, engine IR signature reduction, and military UHF/SATCOMS. The helicopter also features defensive systems such as chaff/flares and missile warning, cockpit and cabin ballistic protection, and crashworthy, self-sealing fuel tanks. AFGSC aircraft will be optionally armed with cabin-mounted 7.62 mm M240 machine guns. USAF awarded Boeing the $2.4 billion UH-1N replacement contract on Sept. 24, 2018, following cancellation of the earlier Common Vertical Lift Support Program (CVLSP). Requirements were driven by the MH-139's primary ICBM-field security and support role, but it will eventually replace UH-1Ns in the DV lift and aircrew survival training roles as well. The service plans to procure up to 80 MH-139s (reduced from 84) through FY27, basing aircraft at JB Andrews, F. E. Warren, Maxwell (schoolhouse), Malmstrom (first operational location), and Minot. Two helicopters will remain at Eglin for systems integration work. Since the commercial AW139 is a mature system, USAF streamlined developmental testing to focus on mission requirements. Six engineering development airframes supported initial contractor-led developmental flight and ground testing. Test flights at Duke Field in February 2020, however, uncovered performance-limiting deficiencies in crosswinds, degraded visual conditions, and austere operating conditions, delaying FAA certification to 2022. The MH-139 received military certification on Aug. 12, 2022, and USAF received four helicopters from Boeing to continue military-specific developmental testing. AFMC and AFGSC plan to conduct 15 months of testing on flight envelop expansion and safety, validating mission suitability, and developing tactics and procedures before launching operational testing in mid-2024. IOC was initially pegged for 2021 but slipped due to certification delays. FY23 funds procure five low-rate production aircraft and a decision to ramp up to full rate production of 15 helicopters per year is expected in 2023. USAF officially announced plans to base 25 MH-139s at JB Andrews, but has yet to solidify early plans to replace Hueys at Fairchild and Yokota.

Contractors: Boeing (prime contractor); Leonardo (formerly Agusta-Westland) (airframe); Honeywell (avionics).
First Flight: 2019.
Delivered: August 2022-present; (USAF/contractor-operated test aircraft delivered Dec. 19, 2019).
IOC: 2023 (planned).
Production: 80 (planned).
Inventory: Four.
Operator: AFMC. Planned: AETC, Air Force District of Washington, AFGSC, AFRC.
Aircraft Location: Duke Field, Fla. Planned: F. E. Warren AFB, Wyo.; JB Andrews, Md.; Malmstrom AFB, Mont.; Maxwell AFB, Ala.; Minot AFB, N.D.; TBD.
Active Variants:
▪MH-139A. Military version of the Agusta Westland AW139 for utility support and light lift.
Dimensions: Rotor diameter 45.2 ft, length 54.7 ft, height 16.3 ft.
Weight: Max gross 14,110 lb.
Power Plant: Two Pratt & Whitney PT6C-67C turboshaft, each 1,100 shp.
Performance: Speed 167 mph, range 890 miles.
Ceiling: 20,000 ft.
Armament: Two M240 7.62 mm machine guns (mission dependent).
Accommodation: Two pilots, flight engineer.
Load: 15 passengers (depending on fuel, equipment, and atmospheric conditions) or up to four litters and five medical personnel.

Airman 1st Class Stassney Davis

UH-1 HUEY/IROQUOIS

Light lift/training

Brief: The UH-1N aircraft initially provided search and rescue capabilities before replacing earlier Huey variants in the ICBM field security and support role. UH-1Ns also provide administrative/DV lift to U.S. National Capital Region at JB Andrews and U.S. Forces-Japan at Yokota, as well as supporting aircrew survival training at Fairchild. The TH-1H fleet provides Air Force helicopter pilot training at Fort Novosel (formerly Fort Rucker). USAF converted all single-engine UH-1H models to TH-1H variants, extending their service lives by at least 20 years. USAF awarded Boeing the $2.4 billion UH-1N replacement contract for up to 84 MH-139s in 2018, but contract delays pushed initial fielding to 2023 or beyond. The fleet recently received NVG-compatible cockpits, upgraded sensors, and safety and sustainment improvements. The ongoing SLEP of up to 63 airframes aims to bridge the gap until the MH-139A is fielded. USAF planned to begin retiring the fleet in 2022 with full retirement by 2032, though no airframes have yet been divested. The UH-1N is the only DOD aircraft fleet to consistently achieve its target mission capable rate over the past decade.

Contractors: Bell Helicopter; Lockheed Martin (TH-1H prime).
First Flight: April 1969 (UH-1N).
Delivered: September 1970-1974; November 2005-2013 (TH-1H).
IOC: October 1970 (UH-1N); circa 2009 (TH-1H).
Production: 28 (TH-1H); 79 (USAF UH-1Ns).
Inventory: 28 (TH-1H); 63 (UH-1N).
Operator: AETC, Air Force District of Washington, AFGSC, AFMC, PACAF.
Aircraft Location: Eglin AFB, Fla.; Fairchild AFB, Wash.; F. E. Warren AFB, Wyo.; Fort Novosel, Ala.; JB Andrews, Md.; Kirtland AFB, N.M.; Malmstrom AFB, Mont.; Minot AFB, N.D.; Yokota AB, Japan.
Active Variants:
▪TH-1H. Modified twin-engine version of UH-1H used for flight training.
▪UH-1N. Military version of the Bell 212 used for utility support and light lift.
Dimensions: Rotor diameter 48 ft, length 57 ft, height 13 ft. (TH-1H); rotor diameter 48 ft, length 57.1 ft, height 12.8 ft. (UH-1N).
Weight: Max gross 10,500 lb.
Power Plant: One Honeywell T53-L-703 turboshaft, 1,800 shp (TH-1H); two Pratt & Whitney Canada T400-CP-400 turboshafts, 1,290 shp (UH-1N).
Performance: Speed 149 mph, range 300+ miles (UH-1N).
Ceiling: 15,000 ft (10,000 ft with 10,000+ lb).
Armament: (Optional) two General Electric 7.62 mm miniguns or two 40 mm grenade launchers; two seven-tube 2.75-in rocket launchers.
Accommodation: Two pilots, flight engineer.
Load: Six to 13 passengers (depending on fuel, equipment, and atmospheric conditions) or up to six litters or, without seats, bulky, oversize cargo (UH-1N).

TRAINER AIRCRAFT

Senior Airman Tyler McQuiston

T-1 JAYHAWK

Advanced trainer

Brief: The T-1A is a military version of the Beechcraft 400A business jet used in the advanced phase of JSUPT for tanker/transport pilot and CSO training pipelines. The cockpit seats an instructor and two students. Militarization includes UHF/VHF radios, INS, TACAN, airborne direction finder, increased bird-strike resistance, and an additional fuselage fuel tank. CSO training aircraft also incorporate GPS-driven synthetic aperture radar (SAR) and simulated RWR, as well as a second student and instructor station. Upgrade efforts are focused on avionics modernization and include new MFD and terrain collision avoidance systems. USAF awarded a $156 million Avionics Modernization Program (AMP) contract to replace the type's obsolescent flight deck with a commercial glass cockpit in 2018, and the first modified aircraft flew in March 2019. A total of 55 aircraft (including all CSO-training aircraft) were upgraded through October 2021. USAF announced plans to divest the majority of the fleet starting in FY23 citing cost-prohibitive obsolescence issues. The service plans to retain only the 21 CSO-configured trainers at Pensacola, relying instead on simulators to conduct mobility pilot qualifications.

Contractors: Beechcraft (airframe); Field Aerospace/Collins Aerospace (AMP).
Operator: AETC.
First Flight: July 5, 1991.
Delivered: Jan. 17, 1992-July 1997.
IOC: January 1993.
Production: 180.
Inventory: 177.
Aircraft Location: Columbus AFB, Miss.; Laughlin AFB and JBSA-Randolph, Texas; Vance AFB, Okla.; NAS Pensacola, Fla.
Active Variant:
▪T-1A. Military trainer version of Beechcraft 400A.
Dimensions: Span 43.5 ft, length 48.4 ft, height 13.9 ft.
Weight: Max T-O 16,100 lb.
Power Plant: Two Pratt & Whitney Canada JT15D-5B turbofans, each 2,900 lb thrust.
Performance: Speed 538 mph, range 2,555 miles.
Ceiling: 41,000 ft.
Accommodation: Three pilots (two students side-by-side, instructor in jump-seat); one pilot, one CSO trainee side-by side, instructor in jump-seat, one radar/system student and one instructor at aft-consoles (CSO-training configured aircraft).

T-6 TEXAN II

Primary trainer

Brief: The T-6 is a joint Air Force/Navy undergraduate pilot trainer developed under the Joint Primary Aircraft Training System program. The aircraft is based on the Swiss-designed Pilatus PC-9, and the Navy version is designated T-6B. Mods include a strengthened fuselage, zero/zero ejection seats, upgraded engine, increased fuel capacity, pressurized cockpit, bird-resistant canopy, and digital avionics with sunlight-readable

Jet Fabra/USAF

LCDs. The tandem student and instructor positions are interchangeable, including single-pilot operation from either seat. The T-6 is fully aerobatic and features an anti-G system. USAF production was completed in 2010, with an expected service life of 21 years. Ongoing mods include a crash-survivable flight data recorder, updated training aids and Next-Generation Onboard Oxygen Generation System (OBOGS) to combat hypoxia-like incidents. Improved maintenance and inspections have resulted in an 82 percent reduction in hypoxic incidents and will continue until fleetwide retrofit is completed in mid-2024. USAF recently sought information from industry to replace the T-6A's aging HUD cockpit displays and interface, integrate simulated air-to-air/air-to-ground weapons and EW, and modernize debriefing aids. Future development includes controlled flight into terrain avoidance systems. A total of 76 T-6s and 203 T-38s were temporarily grounded for ejection seat inspections in July 2022, due to initiator defect concerns.

Contractor: Beechcraft/Textron Aviation Defense (formerly Raytheon).
First Flight: July 15, 1998.
Delivered: May 2000-May 2010.
IOC: May 2000.
Production: 452 (USAF); 328 (USN).
Inventory: 442 (USAF).
Operator: AETC, USN.
Aircraft Location: USAF: Columbus AFB, Miss.; Laughlin AFB, JBSA-Randolph, and Sheppard AFB, Texas; Vance AFB, Okla.; NAS Pensacola, Fla.
Active Variants:
▪T-6A. Joint service primary training aircraft, based on the Pilatus PC-9.
Dimensions: Span 33.5 ft, length 33.4 ft, height 10.7 ft.
Weight: Max T-O 8,300 lb (T-6).
Power Plant: One Pratt & Whitney Canada PT6A-68 turboprop, 1,100 shp.
Performance: Speed 320 mph, range 1,035 miles.
Ceiling: 31,000 ft.
Accommodation: Two pilots on Martin Baker MK16LA zero/zero ejection seats.

Boeing

T-7A RED HAWK

Advanced trainer

Brief: The T-7A Red Hawk is the Air Force's developmental next-generation, supersonic advanced jet trainer. The service selected the joint-venture Boeing-SAAB aircraft as the winner of its $9.2 billion "T-X" competition to replace the T-38 on Sept. 20, 2018. The Air Force dubbed the type "Red Hawk" in honor of the WWII Tuskegee Airmen. The T-7A was rapidly developed in fewer than three years using digital design techniques earning USAF's initial "e" prefix designating it part of the "Digital Century Series" to quickly field new, low-cost designs. eT-7A was designed from the outset to replicate the systems and performance of advanced fourth- and fifth-generation aircraft including high-G/high angle of attack performance and a blend of synthetic and onboard systems, including simulated radar, defensive systems, data links, and smart weapons. It incorporates fly-by-wire controls, a fully digital glass cockpit, "stadium seating" to improve backseat visibility, next-gen ACES 5 ejection seats, modular systems architecture, and maintainer-friendly design to cut downtime and life cycle cost. T-7A is being developed in tandem with the Ground-Based Training System simulator and courseware to provide AETC with a seamless, comprehensive flight training program. The first of two "production ready" airframes flew from Boeing's facility at St. Louis on Dec. 21, 2016, launching initial flight testing. Boeing rolled out the first of five Engineering and Manufacturing Development aircraft on April 28, 2022, which will begin flight-envelope expansion at Edwards.
USAF reduced funding in FY22 due to supply chain delays and additional testing required to assess the instability at high angles of attack noted in early trials. Software fixes were implemented to cure the stability problems but ejection seat issues are now delaying the low-rate production decision by more than a year to late 2025. Initial operational testing should begin in late 2023, with delivery of five additional test assets by FY24. USAF plans to procure an initial 351 aircraft with the first production T-7A slated for delivery to Randolph.

Contractors: Boeing-SAAB; General Electric (engine); Collins Aerospace (cockpit/ejection seats).
First Flight: Dec. 20, 2016 (T-X).
Delivered: 2023 onward (planned).
IOC: 2026 (planned).
Production: 351 (planned).
Inventory: Three (contractor-owned test airframes).
Operator: Boeing, AFMC; Planned: AETC.
Aircraft Location: Edwards AFB, Calif. Planned: Columbus AFB, Miss.; Laughlin AFB, JBSA- Randolph, and Sheppard AFB, Texas; Vance AFB, Okla.
Active Variants:
▪T-7A. Developmental next-generation advanced trainer.
Dimensions: Span 30.6 ft, length 46.9 ft, height 13.5 ft.
Weight: Max T-O 12,125 lb.
Power Plant: General Electric F404-GE-103 augmented turbofan, 17,200 lb thrust.
Performance: Speed Mach 1+, range approx. 1,140 miles.
Ceiling: 50,000 ft+.
Accommodation: Two pilots on ACES 5 zero/zero ejection seats.

Staff Sgt. Joseph Pick

T-38 TALON

Advanced trainer

Brief: The T-38 was the first supersonic trainer aircraft and primarily serves AETC's advanced JSUPT fighter/bomber tracks and Introduction to Fighter Fundamentals. The aircraft is used to teach supersonic techniques, aerobatics, formation, night and instrument flying, and cross-country/low-level navigation. The T-38 is also used by the USAF Test Pilot School to train test pilots and flight-test engineers and by ACC and AFGSC as a companion trainer to maintain pilot proficiency. ACC uses regenerated T-38s as dedicated Aggressor aircraft for F-22 training and companion trainers for the B-2 and U-2 programs. T-38Bs are equipped with a gunsight and centerline station for mounting external stores including ECM pod/practice bomb dispensers. Aircraft were redesignated T-38Cs after avionics modernization that added a glass cockpit and HUD, color MFDs, mission computer, integrated INS/GPS, and reshaped engine inlets. T-38s were designed for 7,000 flying hours but many have surpassed 20,000 hours, requiring life-extension to bridge the gap to replacement by the T-7A. Pacer Classic III is the type's third structural renewal effort and the most intensive in its history. It replaces major longerons, bulkheads/formers, intakes, internal skins, and structural floors on 180 high-risk T-38Cs. The first airframe was redelivered in 2015 and a total of 18 aircraft will undergo rework in FY23. An additional 161 T-38s will receive selected structural improvements to address longeron and bulkhead fatigue due to extended use. Other key efforts also include digital cockpit display replacement, HUD

and flight data-transfer refresh, and navigation system fixes to prevent spatial disorientation. A total of 203 T-38s and 76 T-6s were temporarily grounded for ejection seat inspections in July 2022 due to initiator defect concerns. T-38s were involved in two significant mishaps at Columbus in 2022, an ejection due to controllability problems on departure Nov. 7, and a gear-up landing 12 days later.

Contractors: Northrop Grumman; Boeing (sustainment); CPI Aerostructures (Pacer Classic III kits).
First Flight: April 1959 (T-38A); July 8, 1998 (T-38C).
Delivered: 1961-72 (T-38A); 2002-07 (T-38C).
IOC: March 1961.
Production: 1,187.
Inventory: 53 (T-38A); six (AT-38B); 438 (T-38C).
Operator: ACC, AETC, AFGSC, AFMC.
Aircraft Location: Beale AFB and Edwards AFB, Calif.; Columbus AFB, Miss.; Holloman AFB, N.M.; JB Langley-Eustis, Va.; JBSA-Randolph and Sheppard AFB, Texas; Eglin AFB (temporarily relocated from Tyndall AFB), Fla., Vance AFB, Okla.; Whiteman AFB, Mo.
Active Variants:
▪T-38A. Upgraded version with Pacer Classic I and II mods.
▪AT-38B. Armed weapons training version.
▪T-38C. Modernized airframes incorporating glass cockpits and upgraded engines.
Dimensions: Span 25.3 ft, length 46.3 ft, height 12.8 ft.
Weight: Max T-O 12,093 lb.
Power Plant: Two General Electric J85-GE-5 augmented turbojets, each 2,900 lb thrust.
Performance: Speed 812 mph, range 1,093 miles.
Ceiling: 55,000 ft+.
Accommodation: Two pilots on Martin Baker US16T zero/zero ejection seats.

EXPERIMENTAL AND TEST VEHICLES

USAF

X-37B ORBITAL TEST VEHICLE

Orbital test

Brief: X-37B is an unmanned experimental Orbital Test Vehicle (OTV) aimed at developing and maturing a reusable space-launch capability and conducting classified, extended, on-orbit missions/experiments and/or launching small satellites. NASA began the X-37 program in 1999, with the intention of building two demonstrators to validate technologies for both launch/on-orbit flight, and reentry/landing. Only the Approach and Landing Test Vehicle (ALTV) was built before NASA handed over the program to DARPA, which completed ALTV captive-carry/drop testing with the subscale X-40A in 2006. The X-37B is based on NASA's notional OTV and is boosted into low-Earth orbit atop a standard Atlas V or SpaceX Falcon 9 launch vehicle for long-endurance space missions. The craft has an internal payload bay similar to the Space Shuttle orbiter's and can deploy satellites or conduct on-orbit experimentation. The vehicle autonomously re-enters the atmosphere upon command from a ground control station (GCS), and it lands conventionally on the runway. Development includes advanced guidance, navigation and controls, avionics, thermal-resistant materials, propulsion, and autonomous control systems. The program's two test vehicles have successfully completed six orbital missions. The first mission (OTV-1) launched in 2010 and remained on orbit 224 days. The OTV-2 and OTV-3 missions launched in 2011 and 2012, and remained on orbit 468 days and 674 days, respectively. The OTV-4 mission remained aloft for 718 days and landed at Cape Canaveral for the first time on March 25, 2017. The OTV-5 mission marked the type's first launch atop a SpaceX Falcon 9 on Sept. 7, 2017, setting a new record of 780 days on orbit, returning to Earth on Oct. 27, 2019. USSF launched its inaugural X-37B mission, OTV-6 (USSF-7), on May 17, 2020, which surpassed all previous flights, logging 908 days on orbit before landing at Kennedy Space Center on Nov. 12, 2022. OTV-6 was equipped with an aft-mounted service module enabling it to carry a larger research payload. The craft successfully deployed the U.S. Air Force Academy's experimental FalconSat-8 as well as conduct a demonstration converting solar to RF microwave energy and transmitting it back to Earth.

Contractor: Boeing.
Operator: USSF SPoC, Delta 9 Detachment 1, (DEL 9 Det 1).
First Launch: April 22, 2010.
IOC: N/A.
Launch Vehicle: Atlas V, Falcon 9.
Production: Two.
Inventory: Two.
Operational Location: Cape Canaveral SFS, Fla. (launch/landing); Vandenberg SFB, Calif., Kennedy Space Center, Fla. (landing).
Active Variant:
▪X-37B. DARPA/USAF-developed Orbital Test Vehicles.
Dimensions: Span 14 ft, length 29.25 ft (without service module), height 9.5 ft.
Weight: 11,000 lb at launch.
Propulsion: Single liquid-propellant rocket motor.
Endurance: 908+ days on orbit.
Orbit Altitude: Low-Earth orbit (LEO) at 110-500 miles.
Power: Gallium arsenide solar cells with lithium-ion batteries.

Kyle Brasier/USAF

X-62 VARIABLE-STABILITY IN-FLIGHT TEST AIRCRAFT

In-flight simulator

Brief: The X-62 Variable-stability In-flight Simulator Test Aircraft (VISTA) is a highly modified F-16D Block 30 capable of replicating the flight characteristics of a wide array of aircraft. VISTA was initially modified to support the Multi-Axis Thrust-Vectoring (MATV) program that tested the combat potential of high-angle-of-attack maneuver starting in July 1993. VISTA completed 95 test flights with the Axisymmetric Vectoring Exhaust Nozzle (AVEN) and General Electric F110-GE-100 engine before the program terminated in 1994. The aircraft subsequently became a mainstay of the USAF Test Pilot School, training test pilots and flight-test engineers to evaluate unstable or unpredictable aircraft with relative safety. The VISTA aircraft recently aided in the development and testing of Automatic Integrated Collision Avoidance Systems (ICAS), enhancing the safety of the F-16 and other fighter fleets. Originally designated NF-16D, the aircraft was equipped with the VISTA Simulation System (VSS) which could generate differing flight dynamics for the pilot, linked to a second control stick in the cockpit. VISTA incorporates an enlarged dorsal spine for additional equipment as well as a drag chute in common with some export variants of the F-16. It was redesignated X-62 in 2021 as part of a radical modernization effort that included upgrading VSS and integrating the new System for Autonomous Control of Simulation (SACS) and Model Following Algorithm (MFA). The X-62 flew a series of tests with the new systems, including a 17-hour flight controlled by artificial intelligence in December 2022. Open-architecture upgrades now permit rapid reprogramming to replicate a broader variety of aircraft including uncrewed platforms. Air Force Research Laboratory plans to employ the upgraded X-62 supporting its Skyborg paired, autonomous aircraft test program starting in 2024. The X-62 is operated in partnership with Calspan Aviation and continues to support the Air Force Test Pilot School syllabus in addition to test work.

Contractors: Lockheed Martin; Calspan Aviation (VISTA VSS).
First Flight: April 1992 (NF-16D VISTA).
Delivered: January 1995.
IOC: 1992.
Production: One.
Inventory: One.
Operator: AFMC (AFRL, AFTPS).
Aircraft Location: Edwards AFB, Calif.
Active Variants:
▪X-62A. Highly modified F-16D Variable stability In-Flight Simulator Aircraft (VISTA).
Dimensions: Span 32.8 ft, length 49.3 ft, height 16.7 ft.

Weight: Max T-O 42,300 lb.
Power Plant: F100-PW-229 augmented turbofan, 29,000 lb thrust.
Performance: Speed Mach 2+, range 3,200 miles.
Ceiling: 50,000 ft.
Accommodation: Two pilots on ACES II zero/zero ejection seats.

UNCREWED AIRCRAFT SYSTEMS

Sara Vidoni/USAF

BMQ-167 SUBSCALE AERIAL TARGET

Full-scale aerial target

Brief: BQM-167A is a subscale, unmanned aerial target and threat simulator serving missile/weapons development, testing, validation, and training over the Eglin Test and Training Range. The 82nd Aerial Targets Squadron employs the cheaper subscale targets to complement its QF-16 full scale aerial target fleet operating from Tyndall. The BQM-167 is boosted to flying speed from a launch rail via a solid-fuel Rocket-Assisted Take Off (RATO) motor that is then jettisoned. BQM-167 is capable of representing air targets maneuvering at up to 9 Gs at speeds up to Mach 0.91 and altitudes between 50 and 50,000 feet. The drone is constructed of durable, lightweight composites, equipped with a recovery parachute, and depending on its condition capable of being refurbished and reused. BQM-167s incorporate a scoring system and a range of threat-simulating systems/stores, including IFF, EA pods, IR/radar countermeasures as well as IR/radar signature augmentation to simulate a variety of threats. The Air Force competitively awarded the first BQM-167 production contract in 2002 and most recently awarded a $338 million contract for Lot 17 through 21 covering 79 targets in September 2021. FY23 funds support production of 17 subscale targets. An F-15EX successfully shot down a BMQ-167 on its first live-fire shot using an AIM-120D missile over the Eglin range in January 2022.

Contractors: Kratos Unmanned Aerial Systems.
First Flight: Dec. 8, 2004.
Delivered: 2004-present.
IOC: 2008.
Production: 800+ (planned).
Inventory: Approx. 37.
Operator: ACC.
Aircraft Location: Tyndall AFB, Fla.
Active Variants:
▪BQM-167A. Subscale aerial target.
Dimensions: Span 10.5 ft, length 20 ft, height 4 ft.
Weight: Max T-O 2,050 lb.
Power Plant: MicroTurbo (Safran) Tri 60-5 turbofan, 1,000 lb thrust.
Performance: Speed Mach 0.91, range unknown.
Ceiling: 50,000 ft.
Defensive Systems: Chaff/flares, EA pods, IR/RF wing pods (augmentation).
Accommodation: Preprogramed, unmanned.

MQ-9 REAPER

Attack/armed reconnaissance

Brief: The MQ-9B is a medium- to high-altitude, long-endurance hunter-killer RPA, primarily tasked with eliminating time-critical and high-value targets in permissive environments. Additional roles include CAS, CSAR, precision strike, armed overwatch, target development/designation, and terminal weapon guidance. The MQ-9 fulfills a secondary tactical ISR role utilizing its Multispectral Targeting System-B (MTS-B), upgraded Lynx SAR, and/or Gorgon Stare wide-area surveillance (fielded on seven modified aircraft). MTS-B integrates EO/ IR, color/ monochrome daylight TV, image-intensified TV, and a laser designator/ illuminator. MTS-B provides FMV as separate video streams or fused together. The MQ-9 employs SAR for

Tech. Sgt. Emerson Nuñez

JDAM targeting and dismounted target tracking. A Reaper system comprises three aircraft, GCS, LOS/BLOS satellite and terrestrial data links, support equipment/personnel, and crews for deployed 24-hour operations. MQ-9B debuted in combat in Afghanistan in 2007. The fleet is split between earlier Block 1 and later Block 5 aircraft that are retrofitted to meet operational needs. Extended Range (ER) mods add external fuel tanks, a four-bladed propeller, engine alcohol/water injection, heavyweight landing gear, longer wings and tail surfaces, and other enhancements. A total of 106 Block 1 aircraft were upgraded to ER standards through 2020, and the Block 5 fleet is currently undergoing mods. General Atomics successfully flew the future MQ-9 Multi-Domain Operations (M2DO) configuration for the first time Nov. 10, 2022. M2DO offers enhanced data link and control robustness, plug-and-play system integration, and double the power to integrate future advanced sensors, systems, and algorithms. M2DO enhancements include anti-jam GPS, Link 16, internet-protocol and modular mission system architecture, enhanced C2 resiliency, and greater flight autonomy/automation. Ongoing mods include ER conversions, DAS-4 high-definition EO/IR sensor, data link, GPS, and Gorgon Stare improvements, reliability mods, and capability enhancements. The service is transitioning the fleet from counterinsurgency to future roles in or near contested airspace. Reapers demonstrated a maritime support, C2, and ISR role flying from forward operating locations in the Pacific as well as conducting tactical SATCOM Automatic Take-Off and Land Capability (ATLC) operations in 2022. ATLC enables MQ-9 to operate from any airfield in the world without a line-of-sight ground station vastly increasing its flexibility. USAF plans to retire Block 1s by 2024 followed by the highest-time Block 5 airframes through 2027. Plans call for retaining 140 Reapers through 2035, until a more survivable, flexible, and advanced platform can be fielded. An MQ-9 was lost in a high-profile mid-air collision with a Russian Su-27 following a botched intercept in international airspace over the Black Sea on March 14, 2023.

Contractors: General Atomics Aeronautical Systems; L3Harris; Raytheon (sensors).
First Flight: February 2001.
Delivered: November 2003-present.
IOC: October 2007; 2015 (ER).
Production: 338.
Inventory: 338.
Operator: ACC, AFMC, AFRC (associate), AFSOC, ANG.
Aircraft Location: Cannon AFB, N.M.; Creech AFB, Nev.; Eglin AFB, Fla.; Ellington Field, Texas; Fort Drum, N.Y.; Fort Huachuca, Ariz.; Hancock Field, N.Y.; Hector Arpt., N.D.; Holloman AFB, N.M.; March ARB, Calif.; Nellis AFB, Nev., and deployed locations worldwide. **Planned:** Tyndall AFB, Fla.; Whiteman AFB, Mo.
GCS Location: Cannon AFB, N.M.; Creech AFB, Nev.; Battle Creek ANGB, Mich.; Davis-Monthan AFB, Ariz.; Des Moines Arpt., Iowa; Ellington Field, Texas; Ellsworth AFB, S.D.; Fort Smith Arpt., Ark.; Hancock Field, N.Y.; Hector Arpt., N.D.; Holloman AFB, N.M.; Horsham AGS, Pa.; Hurlburt Field, Fla.; March ARB, Calif.; Springfield-Beckley Arpt., Ohio. **Planned:** Niagara Falls Arpt., N.Y.; Shaw AFB, S.C.; Tyndall AFB, Fla.; Whiteman AFB, Mo.
Active Variants:
▪MQ-9B Reaper Block 1. Air Force version of the General Atomics Predator B.
▪MQ-9B Reaper Block 5. Improved, current production Reaper.
▪MQ-9B Reaper ER. Extended-range MQ-9 with external fuel tanks, longer wings, and other enhancements.
Dimensions: Span 66 ft (79 ft, ER), length 36 ft, height 12.5 ft.
Weight: Max T-O 10,500 lb.
Power Plant: One Honeywell TPE331-10GD turboprop, max 900 shp.
Performance: Cruise speed 230 mph, range 1,150 miles, endurance 27 hr; 34 hr (ER).
Ceiling: 50,000 ft.
Armament: Combination of AGM-114 Hellfire (up to eight), GBU-12/49 Paveway II, and GBU-38 JDAMs.
Accommodation: Pilot, sensor operator (operating from GCS).

Airman 1st Class Emily Kenney

QF-16 FULL-SCALE AERIAL TARGET

Full-scale aerial target

Brief: QF-16 is a manned/unmanned aerial target and threat simulator serving missile/weapons development, testing, validation, and training. QF-16s began replacing the dwindling and obsolescent QF-4 Full-Scale Aerial Target (FSAT) starting in 2015, through the type's retirement in December 2017. QF-16s are capable of manned or "not under live local operator" (NULLO) control operations. The first of 13 LRIP QF-16s was delivered to Tyndall in early 2015. Boeing is under contract to deliver converted airframes in six production lots through April 2025. FY23 funds will procure 10 conversions under a follow-on contract. Recent upgrades include EA pod and software modernization to more accurately replicate adversary capabilities and tactics, ground-control modernization, and threat realism/countermeasure improvements. Boeing and USAF opened a second QF-16 conversion line at Davis-Monthan to augment production at Cecil Field in Jacksonville, Fla., in 2020, which delivered approximately 75 conversions before closing in July 2022. Conversions will continue at Davis-Monthan through the life of the program. USAF is seeking a follow-on supersonic Next Generation Aerial Target (NGAT) to better replicate advanced adversary platforms' performance, radar, IR, and system signatures. The service plans to fund the final QF-16 conversions in FY24.

Contractors: Lockheed Martin; Boeing (drone conversion).
First Flight: May 4, 2012.
Delivered: February 2015-present.
IOC: Sept. 23, 2016.
Production: 126 (planned).
Inventory: 14 (QF-16A); 60 (QF-16C).
Operator: ACC.
Aircraft Location: Holloman AFB, N.M.; Tyndall AFB, Fla.
Active Variants:
- QF-16A. Converted from retired F-16A Block 15.
- QF-16C. Converted from retired F-16C Block 25 and Block 30.

Dimensions: Span 32.8 ft, length 49.3 ft, height 16.7 ft.
Weight: Max T-O 37,500 lb.
Power Plant: Pratt & Whitney F100-PW-200 augmented turbofan, 23,830 lb thrust (Block 15); Pratt & Whitney F100-PW-220 augmented turbofan, 23,830 lb thrust (Block 25); GE Aviation F110-GE-100 augmented turbofan, 29,000 lb thrust (Block 30).
Performance: Speed Mach 2, ferry range 2,000+ miles.
Ceiling: 50,000 ft.
Defensive Systems/stores: Chaff/flares; EA pods: ALQ-188, ALQ-167; Towed Aerial Target Gunnery System.
Accommodation: Safety pilot (optional) on ACES II zero/zero ejection seat.

RQ-4 GLOBAL HAWK

High-altitude reconnaissance

Brief: The Global Hawk is a strategic, long-endurance, high-altitude "deep look" ISR platform complementing satellite and manned ISR. The system consists of the aircraft and sensors, launch and recovery element (LRE), mission control element (MCE), and comms/mission planning cell. The preproduction Block 10 debuted in combat in 2001 and retired in 2011. Block 20 was initially equipped with the Enhanced Integrated Sensor Suite (EISS) for imagery intelligence (IMINT). Five were eventually converted as EQ-4B Battlefield Airborne Communications Node (BACN) relays before being retired in 2021. Block 30 was a multi-intelligence fleet equipped with EO/IR, SAR, and SIGINT sensors. ACC's final Block 30 departed Beale on July 7, 2022, destined for conversion by Northrop Grumman as a telemetry platform to support hypersonic weapons testing. Block 40 is a ground-moving target surveillance platform equipped with the Multiplatform Radar Technology Insertion Program (MP-RTIP) and the last USAF variant remaining in service. Its AESA and SAR simultaneously conduct moving target and cruise missile tracking, as well as stationary imagery collection. NATO operates a pooled fleet of RQ-4Ds based on the Block 40, which declared initial operating capability with the Allied Ground Surveillance fleet in 2021. FY23 funds support Block 40 and Ground Station sustainment through planned retirement in 2027. The Ground Station Modernization Program is currently fielding a completely redesigned "cockpit" that incorporates aircraft control, system and ISR sensor monitoring, data dissemination, and adds automated sensor operations and mission planning.

Contractors: Northrop Grumman; Raytheon; L3Harris.
First Flight: Feb. 28, 1998.
Delivered: August 2003-present.
IOC: August 2011 (Block 30); August 2016 (Block 40).
Production: 45 (USAF).
Inventory: Nine (Block 40); two (Block 30).
Operator: ACC, AFMC.
Aircraft Location: Edwards AFB, Calif.; Grand Forks AFB, N.D. (Block 40); forward operating locations: Andersen AFB, Guam; NAS Sigonella, Italy; Yokota AB, Japan.

Senior Airman Ashley Richards

Active Variants:
- RQ-4B Block 30. Multi-intelligence platform equipped with EO/IR, SAR and SIGINT sensors.
- RQ-4B Block 40. AESA and SAR equipped ground moving target indication (GMTI) and battlefield ISR platform.

Dimensions: Span 130.9 ft, length 47.6 ft, height 15.3 ft.
Weight: Max T-O 32,250 lb; max payload 3,000 lb.
Power Plant: One Rolls-Royce North American F137-RR-100 turbofan, 7,600 lb thrust.
Performance: Speed 356.5 mph, range 14,150 miles, endurance 32+ hrs (24 hrs on-station loiter at 1,200 miles).
Ceiling: 60,000 ft.
Accommodation: LRE Pilot, MCE pilot, MCE sensor operator (operating from LRE/MCE) and/or maintainer at four work-stations (in GSMP-upgraded ground segments).

USAF

RQ-170 SENTINEL

Unmanned surveillance and reconnaissance

Brief: RQ-170 is an unmanned, stealthy, penetrating, day/night tactical ISR platform. Although the RQ-170 was still under development and testing, USAF employed it in Southwest Asia during Enduring Freedom. The RPA was developed in response to DOD's call for additional RPA support for combatant commanders. USAF publicly acknowledged the aircraft after photos appeared in foreign news media of operations over Afghanistan

in 2009. The type is operated by the 432nd Wing at Creech and the 30th Reconnaissance Squadron at Tonopah Test Range. In 2011, an RQ-170 was captured almost intact by Iranian forces. Iran allegedly reverse-engineered a copy of the aircraft, which the Israeli Air Force reported shooting down during an engagement inside Israeli territory on Feb. 10, 2018. The RQ-170 took part in a joint exercise at Nellis in August 2020, testing its ability to accompany a B-2 on penetrating operations aided by SEAD F-35s.

Contractor: Lockheed Martin.
Operator: ACC.
GCS Location: Creech AFB, Nev.; Tonopah Test Range, Nev.
Aircraft Location: Tonopah Test Range, Nev.; deployed worldwide.
Known Active Variant:
▪RQ-170. No data available.
Dimensions: Span 65.6 ft, length 14.75 ft.

STRATEGIC WEAPONS

Airman 1st Class Jacob Wrightsman

AGM-86 AIR-LAUNCHED CRUISE MISSILE (ALCM)

Strategic air-to-surface cruise missile

Brief: The AGM-86 is a low-level, penetrating nuclear strike weapon for use against strategic surface targets. ALCM's small radar signature and low-level flight capability enhance the missile's effectiveness. The nuclear AGM-86B was the first production version with a total of 1,715 delivered through 1986. USAF plans to cut the inventory from its current level to an eventual 528 ALCM. Some ALCMs were modified for conventional use with INS/GPS-guidance and a blast fragmentation warhead and redelivered in 1987 as the AGM-86C CALCM. CALCM was operationally employed for the first time in Desert Storm and widely used in subsequent operations. CALCM was capable of adverse weather, day/night, air-to-surface, accurate, standoff strike at ranges greater than 500 miles. The AGM-86D was CALCM's Block II penetrator version with AUP-3(M) warhead used for standoff strikes on hardened, deeply buried targets in Afghanistan. CALCM was retired in early 2019 and the remaining AGM-186C/D were sent to Barksdale for storage awaiting disposal. ALCM is undergoing SLEP/component remanufacture to stretch its service life to 2030, pending replacement by the Long-Range Standoff (LRSO) missile. USAF awarded technology-maturation and risk-reduction contracts for the LRSO in 2017, resulting in the selection and continued development of Raytheon's AGM-181 Long-Range Standoff Weapon in April 2020. Plans call for fielding the nuclear AGM-181 by the late 2020s, possibly followed by a conventional derivative thereafter.

Contractor: Boeing.
First Flight: June 1979 (full-scale development).
Delivered: 1981-1986.
IOC: December 1982 (B); January 1991 (C); November 2001 (D).
Production: 1,715.
Inventory: Approx. 536 (B).
Operator: AFGSC.
Unit Location: Barksdale AFB, La.; Minot AFB, N.D.
Active Variants:
▪AGM-86B. Nuclear ALCM variant.
Dimensions: Span 12 ft, length 20.8 ft, body diameter 2 ft.
Weight: 3,150 lb.
Power Plant: Williams/Teledyne CAE F107-WR-10 turbofan, 600 lb thrust.
Performance: Speed 550 mph, range 1,500+ miles (B).
Guidance: Inertial plus Terrain Contour Matching (B).
Warhead: W80-1 nuclear warhead (B).
Estimated Yield: W80-1 warhead: five-150 kilotons (preselectable).
Integration: B-52H.

Giancarlo Casem/USAF

AGM-183 AIR-LAUNCHED RAPID RESPONSE WEAPON (ARRW)

Hypersonic air-to-surface weapon

Brief: The AGM-183A is a developmental boost-glide hypersonic missile to provide future, nonnuclear strike against time-sensitive, heavily defended, high-value targets from standoff range. The missile is designed to accelerate to speeds well in excess of Mach 5 before releasing a non-powered glide vehicle that maneuvers a warhead to the intended target. USAF completed a series of seven captive flight-tests utilizing an instrumented test article on a B-52H at Edwards, culminating in an aborted boost-test in December 2020. An attempted boost test over the Point Mugu Test Range on April 5, 2021, failed to leave the aircraft. A third attempt on July 28, 2021, proved safe separation and targeting acquisition but the booster failed to ignite. USAF conducted a series of six ground detonations quantifying the characteristics of the weapon's warhead in early FY22. ARRW achieved safe separation and booster ignition for the first time on May 14, 2022, attaining Mach 5 after release from a B-52. A second successful launch on July 12 concluded booster testing, paving the way for operational testing. An AGM-183 completed the first live-fire test of a full-up weapon on Dec. 9, 2022, successfully flying its planned route before impacting the predetermined target. The second all-up weapon test on March 13, 2023, however, failed to meet all test objectives. USAF plans two additional all-up weapons tests in FY23, and the weapon's currently being evaluated for lethality against intended targets and survivability in an advanced threat environment. Transition to an early operational capability was postponed due to early test setbacks, and USAF now plans to end testing with the final two shots in FY23. ARRW still requires cyber and EW vulnerability assessment, and previously planned operational deployment on the B-52 and B-1, and possibly F-15E/EX are uncertain.

Contractor: Lockheed Martin.
First Flight: May 14, 2022.
Delivered: TBD.
IOC: 2022 (planned).
Production: TBD.
Inventory: N/A.
Operator: AFMC, Planned: AFGSC.
Unit Location: Edwards AFB, Calif.
Active Variants:
▪AGM-183A. Developmental prototype hypersonic boost-glide weapon.
Dimensions: Unknown.
Weight: Unknown.
Propulsion: Solid fuel rocket.
Performance: Mach 5+, range approx. 1,000 miles.
Guidance: Unk.
Warhead: Boost-glide vehicle with explosive warhead.
Integration: Planned: B-1B, B-52H, F-15E, F-15EX.

Airman 1st Class Devan Halstead

B61 THERMONUCLEAR BOMB

Air-to-surface thermonuclear bomb

Brief: B61 is an air-dropped battlefield/tactical nuclear weapon equipping the F-16 and F-15E in the forward-deployed, allied extended deterrent role. It is also the B-2's primary strategic weapon. B61 was first delivered in 1966, and the B61 Mod 11 introduced in 1997 adds a ground-penetrating

capability, enhancing its effect against buried and hardened targets. The weapon incorporates several preselectable yield options tailored to mission requirements. The B61 Mod 12 Life Extension Program (LEP) begun in 2016 is consolidating the B61-3, -4, -7, and -10 into a single, standardized configuration. The LEP refurbishes the warhead to improve the safety, security, and reliability through 2040. B61-12 also adds a guided tail kit, making it the first precision guided weapon of its type, thus permitting higher effectiveness at lower yields. USAF and the National Nuclear Security Administration finished B61-12 qualification flight-testing on June 9, 2018. The 31 inert test drops greatly exceeded performance requirements, validating nonnuclear components such as arming/fire control, guidance, spin-rocket motors, and software. B61-12 was approved for production and completed operational flight-testing on the F-15E and B-2A in 2019. Operational testing included 15 drops, certifying the F-15E on June 8, 2020, as the first aircraft capable of delivering the B61-12. The Department of Energy conducted nine additional drops, culminating in a full-weapon system demo on the B-2A in July 2020. The B-2A conducted a test drop using the Radar Aided Targeting System (RATS) in July 2022, which was a major milestone for full integration on the aircraft. The F-35A dropped an inert B61-12 for the first time in 2020 and completed the final full weapon system drops required toward certification on Sept. 21, 2021. Full integration is planned as part of ongoing Block 4 development. The first production B61-12 emerged in November 2021 ahead of full-rate production ramp-up in October 2022. The full B61 inventory is slated for upgrade to B61-12 through FY26.

Contractors: Los Alamos National Laboratory, Sandia National Laboratory (weapon); Boeing (B61-12 tail kit).
Delivered: 1966; 2022-present (B61-12 mod).
IOC: 1968.
Production: N/A.
Inventory: Approx. 500.
Operator: AFMC, USAFE.
Deployed locations: Aviano AB, Italy; Büchel AB, Germany; Ghedi AB, Italy; Incirlik AB, Turkey; Kleine Brogel AB, Belgium; Volkel AB, Netherlands.
Active Variant:
▪B61. Supersonic-droppable free-fall thermonuclear weapon.
Dimensions: Length 11 ft 8 in., diameter 1 ft 1 in.
Weight: 700 lb; 825 lb (B61-12).
Performance: N/A.
Guidance: None (B61 Mod 1 to 11); unknown, likely INS (B61 Mod 12).
Warhead: One B61 -3, -4, -7, -10, or -11.
Estimated Yield: 0.3 kilotons, 1.5 kilotons, 10 kilotons, 50 kilotons (preselectable).
Integration: B-2A, F-15E, and F-16C/D; NATO: F-16A/B Mid-Life Upgrade (MLU), and Panavia Tornado IDS. **Planned:** B-21, F-35A.

Senior Airman Abbigayle Williams

LGM-30 MINUTEMAN III

Strategic surface-to-surface ballistic missile

Brief: Minuteman is a three-stage, solid-propellant nuclear deterrent ICBM housed in a survivable underground silo. Minuteman III became operational in 1970, providing improved range, rapid retargeting, and the capability to place up to three reentry vehicles on three targets with high accuracy. It is currently the sole operational U.S. land-based ICBM. AFGSC initially deployed 550 missiles, later reducing that number to 400 based at Malmstrom, Minot, and F.E. Warren. Deployed ICBMs were also reduced to a single-warhead configuration in 2014 under limits imposed by the New START agreement. Minuteman III is already more than 40 years beyond its initially planned service life, and USAF expects the system will begin falling below readiness standards as early as 2026 if not replaced. USAF awarded Northrop Grumman the Ground Based Strategic Deterrent (GBSD) development contract in 2019, resulting in the future LGM-35A Sentinel. AFGSC plans to begin replacing Minuteman III in 2027, with Sentinel fully replacing legacy ICBMs by 2036. Current Minuteman III efforts are focused on sustaining the ICBM's critical deterrent capability through the full fielding of Sentinel. Upgrades to guidance and propulsion will extend key systems to 2030, while modernized reentry vehicle and fuzes will serve both Minuteman and Sentinel. Flight-testing of the replacement fuse will culminate with the last of four test launches in 2024. FY23 additionally funds sustainment including Minuteman Essential Emergency Communication Network (MEECN) mods, arm/disarm switch replacement, cryptography updates, generator reliability improvement, security situational awareness upgrades, and access denial system life extension.

Contractors: Boeing; General Electric; Lockheed Martin; Northrop Grumman (formerly Orbital ATK).
First Flight: February 1961.
Delivered: 1962-1978.
IOC: December 1962, Malmstrom AFB, Mont.
Production: 1,800.
Inventory: Approx. 400 deployed.
Operator: AFGSC.
Unit Location: F. E. Warren AFB, Wyo.; Malmstrom AFB, Mont.; Minot AFB, N.D.; Vandenberg SFB, Calif. (test location).
Active Variant:
▪LGM-30G. Current Minuteman III variant.
Dimensions: Length 59.9 ft, diameter 5.5 ft.
Weight: 79,432 lb.
Propulsion: Stage 1: Orbital ATK refurbished M55 solid-propellant motor, 202,600 lb thrust; stage 2: Orbital ATK refurbished SR19 solid-propellant motor, 60,721 lb thrust; stage 3: Orbital ATK refurbished SR73 solid- propellant motor, 34,400 lb thrust.
Performance: Speed at burnout approx 15,000 mph, range 6,000+ miles.
Guidance: Inertial guidance system.
Reentry Vehicle: One Mk 21 RV; one to three Mk 12/12A MIRVs. **Warhead:** One W87 or up to three W78 enriched uranium thermonuclear weapons.

USAF Illustration

LGM-35 SENTINEL

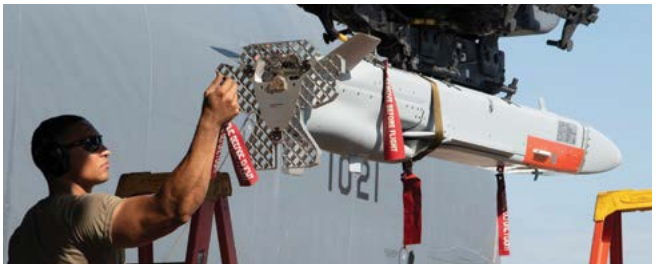
Strategic surface-to-surface ballistic missile

Brief: The LGM-35A Sentinel is a developmental three-stage, solid-propellant, silo-based nuclear ICBM designed to replace the Minuteman III as the land-based element of USSTRATCOM's nuclear triad. Nuclear deterrent modernization is the Defense Department's top priority and USAF exhaustively studied further extending the 50-year-old Minuteman III before determining full replacement would be the most cost-effective investment. USAF awarded Boeing and Northrop Grumman technology maturation and risk-reduction contracts for a future Ground-Based Strategic Deterrent (GBSD) in 2017. Boeing declined to bid on full development in 2019, leaving Northrop Grumman to develop GBSD, which was officially designated LGM-35A Sentinel in April 2022. AFGSC plans to modernize and/or replace existing Minuteman III launch control, alert, and C2 facilities at Malmstrom, Minot, and F.E. Warren to accommodate Sentinel, which is targeted to reach IOC with nine alert missiles by 2029. The overall program will replace the 400 deployed Minuteman IIIs and 450 silos on a one-for-one basis, with the addition of 242 missiles to support developmental testing as well as reliability validation over the life of the program. Sentinel will incorporate modular design and open system architecture to ease both maintenance and future modernization. The service plans to initially deploy Sentinel with a single thermonuclear warhead aligning it to New START treaty limits, though the ICBM's increased performance could permit a multiple-warhead configuration. Sentinel will utilize both the Mk21 reentry vehicle and ICBM fuse, which are already undergoing

modernization and replacement for the Minuteman III. AFGSC projects the LGM-35A will reach full operational capability by 2036, providing land-based strategic deterrence capability through at least 2075. Northrop Grumman conducted the first test firing of the LGM-35A's first stage solid rocket motor at its static-test facility at Promontory, Utah, on March 2, 2023. The successful engine test along with wind-tunnel testing completed in February pave the way for a planned test flight in 2024.

Contractors: Northrop Grumman (prime contractor); Aerojet Rocketdyne (third-stage solid fuel rocket); Bechtel, Clark Construction (launch infrastructure); CAE (training system); Collins Aerospace (training system/C2); General Dynamics (C2, digital engineering, aerospace equipment); Honeywell (guidance and control); Textron (reentry system); Lockheed Martin (payload support); Kratos, HDT Global (transport systems).
First Flight: 2024 (planned).
Delivered: N/A.
IOC: 2029 (planned).
Production: 642 (planned).
Inventory: Zero.
Operator: Planned: AFGSC.
Unit Location: Planned: F. E. Warren AFB, Wyo.; Malmstrom AFB, Mont.; Minot AFB, N.D.; Vandenberg SFB, Calif. (test location).
Variant:
▪LGM-35A. Developmental Minuteman III replacement.
Dimensions: Unknown.
Weight: Unknown.
Propulsion: Stage 1: Northrop Grumman solid-propellant motor, thrust TBD; Stage 2: Northrop Grumman solid-propellant motor, thrust TBD; Stage 3: Aerojet Rocketdyne solid-propellant motor, thrust TBD.
Performance: Speed hypersonic, range 6,000+ miles.
Guidance: Unknown.
Reentry Vehicle: Mk 21 or Mk 21A RV.
Warhead: W87-0 or W87-1 enriched uranium thermonuclear weapons.

LONG-RANGE STANDOFF WEAPONS



Airman 1st Class Celeste Zuniga

ADM-160 MINIATURE AIR LAUNCHED DECOY (MALD)

Aircraft decoy; Close-in radar jammer

Brief: MALD is a programmable, low-cost, modular, autonomous flight vehicle that mimics U.S. or allied aircraft to confuse enemy Integrated Air Defense Systems (IADS). MALD-J adds radar jamming capability to the basic decoy platform and can operate alone or in concert with other EW platforms. The jammer version is designed as an expendable, close-in jammer to degrade and deny an early warning or acquisition radar's ability to establish a track on strike aircraft. It also maintains the ability to fulfill the basic decoy mission. F-16 or B-52 are lead employment aircraft for MALD. USAF capped procurement in FY12, converting Lot 4 to the MALD-J variant. Plans call for 3,000, of which 2,400 are the jammer version. USAF demonstrated in-flight retargeting capabilities and is integrating GPS-Aided Inertial Navigation System (GAINS II) to improve navigational accuracy in GPS-denied environments. An upgraded Jammer variant dubbed "MALD-X" successfully demonstrated future, low-level flight capabilities, improved EW payloads, and enhanced data links in 2018. MALD-X aims to establish USAF's future baseline and serves as the basis of the Navy's developmental MALD-N variant. USAF awarded a MALD-J contract option for Lot 10 production in 2016 and a follow-on Lot 11 contract for 250 weapons in 2018. A-10s demonstrated a MALD stand-off support capability, escorting B-1s during Exercise Iron Thunder near the Philippines in 2022.

Contractor: Raytheon.
First Flight: 1999 (MALD); 2009 (MALD-J).
Delivered: Sept. 6, 2012 (MALD-J).
IOC: 2015 (MALD-J).
Active Variants:
▪ADM-160B. MALD base decoy variant.
▪ADM-160C. MALD-J jammer/decoy variant.
Dimensions: Span 5.6 ft (extended), length 9.3 ft.
Weight: Less than 300 lb.
Power Plant: Hamilton Sundstrand TJ-150 turbojet, 337 lb thrust.
Performance: Range up to 575 miles, endurance 90 minutes (50 minutes on-station loiter).
Guidance: GPS/INS.
Integration: A-10, B-52H, F-16C. **Planned:** B-1B.

USAF

AGM-154 JOINT STANDOFF WEAPON (JSOW)

Guided air-to-surface glide bomb

Brief: JSOW is a joint USAF-Navy family of medium-range, GPS/INS guided, standoff air-to-ground glide weapons. It is used to attack a variety of soft and armored area targets during day and night and adverse weather conditions. The baseline BLU-97 CEM variant is used against soft and area targets. The BLU-108 variant provides anti-armor capability. The AGM-154C incorporates an additional imaging IR seeker and is intended for use against hardened, stationary targets. The new AGM-154C-1 variant adds moving, maritime strike capability to the baseline C variant, which reached IOC with the Navy in 2016. The weapon completed operational flight testing on the F-35C in 2019, clearing the way for ongoing internal integration and testing on the F-35A.

Contractor: Raytheon.
First Flight: December 1994.
Delivered: 2000-2005 (USAF).
IOC: 2000.
Active Variants:
▪AGM-154A. Baseline BLU-97 CEM variant for soft/area targets.
▪AGM-154B. The BLU-108 submunition variant for anti-armor.
▪AGM-154C. Imaging IR-guided variant for hardened tactical targets.
Dimensions: Length 13.3 ft, diameter 13 in.
Performance: Range 13.8 miles low altitude, 73 miles high altitude.
Guidance: GPS/INS.
Warhead: See variants above.
Integration: B-1, B-2, B-52, F-15E, and F-16. **Planned:** F-35A.

Senior Airman Jonathan Ramos

AGM-158 JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)

Air-to-surface cruise missile

Brief: JASSM is a joint USAF-Navy autonomous, precision cruise missile for use against heavily defended or high-value targets at standoff range. It can attack fixed, relocatable, and moderately hardened/buried targets. The base variant is a stealthy, low-cost airframe equipped with GPS/INS guidance and imaging IR terminal seeker. The JASSM-Extended Range (JASSM-ER) version uses the same baseline body but a new engine and

fuel system that increase range to more than 500 miles. The ER was cleared for combat on the B-1B in 2015, reached full operational capability on the F-15E in 2018, and is planned for use on all fighter/bomber platforms. Full-rate production began in 2018 and production shifted to ER-only in FY16. Further development has resulted in the extended range AGM-158B and "extreme range" AGM-158D, which is re-targetable via data link after launch. JASSM-ER production will begin shifting from AGM-158B-2 to the jam-resistant B-3 starting in FY23 and AGM-158D is currently in development. Lockheed Martin is also developing the Long-Range Anti-Ship Missile (LRASM), which reached early operational capability on the B-1B in December 2018 and is planned for additional fielding on the B-52. USAF conducted a proof-of-concept employing palletized JASSM from mobility aircraft in 2020 for massed standoff attack. JASSM and LRASM are USAF's premiere weapons for attacks against advanced targets in a high-end threat scenario. The service increased its JASSM stockpile objective by 47 percent and FY23 funds support maximum-rate procurement of 550 JASSM-ER as well as resuming LRASM procurement with 28 weapons. A B-2A successfully launched JASSM-ER for the first time during an integration test flight in 2022.

Contractors: Lockheed Martin; Raytheon; Honeywell.
First Flight: April 8, 1999.
Delivered: 2001-present.
IOC: September 2003; December 2014 (ER variant); 2018 (LRASM).
Production: 10,000 JASSM (planned); 400 LRASM (planned).
Active Variants:
▪AGM-158A JASSM. Base-variant.
▪AGM-158B JASSM-ER. Extended-Range variant.
▪AGM-158C LRASM. Long-Range Anti-Ship Missile, based on JASSM.
▪AGM-158D JASSM-ER. Developmental extreme-range variant of JASSM-ER (previously XR).
Dimensions: Length 14 ft., diameter approx. 2 ft., wingspan 7.8 ft.
Power Plant: Teledyne Technologies J402 turbojet (JASSM); Williams Intl. F107-WR-105 turbofan (JASSM-ER).
Performance: Speed subsonic, range 200+ miles (baseline), 500+ miles (ER), approx. 1000 miles (XR).
Guidance: GPS/INS and imaging IR terminal seeker.
Warhead: 1,000-lb class penetrator (JASSM); 1,000-lb blast fragmentation (LRASM).
Integration: B-1B, B-2, B-52H, F-15E, and F-16 Block 40-52; **planned:** F-35A (JASSM). B-1B, B-52H, F-15E F-16 Block 40-52; **planned:** F-35A, B-2A (JASSM-ER). **Planned**: B-52 (LRASM).

AIR-TO-AIR MISSILES

2nd Lt. Kayla Fitzgerald

AIM-9 SIDEWINDER

Air-to-air missile

Brief: Sidewinder is an IR-guided short-range, supersonic air-to-air missile. It was developed by the Navy for fleet air defense and adapted for USAF fighters. Early versions were used extensively in the Vietnam War. The AIM-9M is a joint Navy-USAF, all-altitude, all-aspect intercept missile. It has improved defense against IR countermeasures, background discrimination, and reduced-smoke rocket motor. AIM-9X is the newest jointly funded variant. It employs passive IR tracking, jet-vane steering for increased maneuverability and Joint Helmet-Mounted Cueing System (JHMCS) compatibility for high-angle, off-boresight targeting. The enhanced AIM-9X Block II was cleared for full-rate production in September 2015 and adds improved lock-after-launch and maneuverability, new data link for beyond-visual range engagement, enhanced anti-countermeasures, a new fuse, and safer ground-handling characteristics. AIM-9X production includes 67 converted AIM-9Ms, 1,289 Block I, and planned joint-service procurement of 11,635 Block II/II-plus (nearly double the number originally planned). FY23 funds procure slightly more than FY22 for a combined 255 AIM-9X Block II/II+ missiles. An F-22 scored its first kill on Feb. 4, 2023, using an AIM-9X to down a Chinese ISR balloon flying at 60,000 feet off the South Carolina coast.

Contractors: Raytheon; Northrop Grumman (propulsion).
First Flight: September 1953; July 1999 (AIM-9X); 2016 (AIM-9X Block II).
Delivered: AIM-9M 1983; AIM-9X from 2002-2011 (Block I); 2011-present (Block II); 2017-present (Block II+).
IOC: Circa 1983 (9M); November 2003 (9X); September 2016 (9X Block II).
Production: 1,289 (Block I); 11,635 (Block II/Block II+) (planned).
Active Variants:
▪AIM-9M. Early variant.
▪AIM-9M-9. Expanded anti-countermeasure capability variant.
▪AIM-9X. Newest, highly maneuverable, JHMCS compatible variant.
Dimensions: Span 2.1 ft (M), 1.4 ft (X); length 9.4 ft (M), 9.9 ft (X); diameter 5 in.
Propulsion: Mk 36 Mod 11 (9M); Orbital ATK Mk 139 solid-propellant rocket motor (9X).
Performance: Speed Mach 2+, range 10+ miles.
Guidance: Passive IR homing guidance.
Warhead: HE annular blast fragmentation.
Integration: F-15C/D/E, F-16C/D, F-22A (AIM-9X). **Planned:** F-15EX, F-35A.

Staff Sgt. Tristan Truesdell

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

Air-to-air guided missile

Brief: AMRAAM is an active, radar-guided, medium-range, supersonic air-to-air missile. It is a joint USAF-Navy follow-on to the AIM-7 Sparrow with launch-and-leave capability. The AIM-120B is an upgraded, reprogrammable variant of the original missile. The AIM-120C incorporates smaller control surfaces for internal carriage on F-22 and F-35 and a high-angle off-boresight (HOBS) launch capability. AIM-120D offers improved range, GPS-assisted guidance, updated data links, and jam resistance in addition to greater lethality. Ongoing upgrades will further enhance weapon performance and electronic protection. The second phase of the AIM-120D System Improvement Program (SIP II) completed operational testing and was fielded in 2020. SIP III completed operational testing in 2022 and is planned for timely fielding to keep pace with emerging threats. Ongoing development also includes Form, Fit, and Function (F3R) mods and replacing obsolete electronic elements. An F-15E conducted the first of five live-fire tests of the resulting AIM-120D3 on June 30, 2022, paving the way for production and fielding. In 2019, USAF announced it is developing the AIM-260 Joint Air Tactical Missile (JATM) with the Navy to replace AMRAAM with a longer-range, more capable weapon to counter high-end threats. USAF successfully demonstrated an AIM-120 using passive infrared search and track (IRST) in lieu of radar against an airborne target in 2021, and an F-15E fired the first updated F3R AIM-120D3 in a live-shot against a QF-16 on June 30, 2022. FY23 funds procure 271 AIM-120D missiles.

Contractors: Raytheon; Northrop Grumman; Nammo Group (propulsion).
First Flight: December 1984.
Delivered: 1988-present.
IOC: September 1991; July 2015 (120D).
Active Variants:
▪AIM-120B. Upgraded, reprogrammable variant of AIM-120A.
▪AIM-120C. Production variant optimized for the F-22/F-35.
▪AIM-120D. Latest variant with GPS guidance, improved range, lethality, and jam-resistance.
Dimensions: Span 1.7 ft (A/B), 1.5 ft (C/D); length 12 ft; diameter 7 in.
Propulsion: Boost-sustain solid-propellant rocket motor.
Performance: Supersonic, range 20+ miles.
Guidance: Active radar terminal/inertial midcourse.
Warhead: HE blast-fragmentation.
Integration: F-15C/D/E/, F-16C/D, F-22A, F-35A. Planned: F-15EX.

AIR-TO-GROUND MISSILES/ROCKETS

Courtesy illustration

WGU-59 ADVANCED PRECISION KILL WEAPON SYSTEM (APKWS) II

Air-to-surface guided rocket

Brief: APKWS II is a low-cost, semi-active laser-guidance system sized to fit the 2.75-in aerial rocket. It is optimized for precision, low-collateral-damage strike against moving or stationary light vehicle and personnel targets. APKWS can be fitted with HE or penetrating warheads as well as visual and IR illuminating, or white phosphorous rounds for target marking by Forward Air Control aircraft. USAF acquired the system as an urgent operational requirement, and an F-16 employed it in combat for the first time in June 2016. The weapon employs a midbody guidance package to convert the standard rocket into a guided weapon. APKWS was already in service with the three other services and initial weapons were procured from Navy stocks. The rockets are launched from multiround reusable pods. An F-16 successfully destroyed an airborne target using APKWS as part of an anti-cruise missile demo in 2019 and an A-10 tested it against vehicles with advanced reactive armor in 2022. BAE introduced a block upgrade capable of increasing APKWS' range as much as 30 percent in 2021. USAF has nearly fulfilled its required inventory and FY23 does not add additional procurement.

Contractor: BAE Systems.
First Flight: May 2013 (USAF).
Delivered: October 2012-present.
IOC: Circa 2016.
Active Variant:
▪WGU-59B. Semi-active, laser-guided 2.75-in rocket, adapted for fixed-wing use.
Dimensions: Span 9.5 in, length 6.25 ft, diameter 2.75 in.
Propulsion: Solid-propellant rocket motor.
Performance: Subsonic, range 1.2 to 6.8 miles.
Guidance: Semi-active laser.
Warhead: HE, armor-penetrating, white phosphorous, or illuminating round.
Integration: AT-6, A-10, A-29, F-16.

Tech. Sgt. Michael Ammons

AGM-65 MAVERICK

Air-to-surface guided missile

Brief: Maverick is a TV, imaging IR, or laser-guided standoff air-to-surface missile employed by fighter/attack aircraft against tanks, vehicles, and air defenses. It was first employed during the Vietnam War and was used extensively in Desert Storm and Iraqi Freedom. AGM-65B is a launch-and-leave, EO/TV guided missile, equipped with "scene magnification" allowing acquisition of small/distant targets. Fielded in 1986, AGM-65D employs an imaging IR seeker for all-weather day/night use. The AGM-65E is laser guided with a heavyweight penetrator warhead. The AGM-65G fielded in 1989 combines an imaging IR seeker, software to track larger targets, with a heavyweight penetrator warhead, digital autopilot, and a pneumatic actuation system. The AGM-65H is an upgraded B variant that recently completed tracker upgrades. The AGM-65K is a modified G variant that replaces IR guidance with EO TV and is also undergoing a tracker upgrade. The AGM-65L is the newest EO TV/semiactive-laser seeker equipped "Laser Maverick" designed to strike high-speed moving targets. USAF is gradually modifying legacy missiles to Laser Maverick standards but the FY23 budget does not include additional procurement.

Contractors: Raytheon (missile body); Northrop Grumman (propulsion).
First Flight: August 1969.
Delivered: August 1972.
IOC: February 1973.
Active Variants:
▪AGM-65B. A launch-and-leave EO TV seeker variant.
▪AGM-65D. Adverse weather B variant.
▪AGM-65E. Laser-guided version heavyweight penetrator variant.
▪AGM-65G. Imaging IR seeker heavyweight penetrator variant.
▪AGM-65H. Upgraded B variant.
▪AGM-65K. Modified EO TV seeker G variant.
▪AGM-65L. Laser-guided EO TV seeker variant for fast moving targets.
Dimensions: Span 2.3 ft, length 8.2 ft, diameter 12 in.
Propulsion: Two-stage, solid-propellant rocket motor.
Performance: Supersonic, approx. 714 mph, range 20 miles.
Guidance: EO TV guidance system (B/H/K); imaging IR seeker (D/G); laser seeker (E).
Warhead: 125-lb cone-shaped (B/D/H); 300-lb delayed-fuse penetrator (E/G/K).
Integration: A-10C, F-15E, F-16C/D.

Senior Master Sgt. Edward Snyder

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

Air-to-surface anti-radiation missile

Brief: HARM is an anti-radiation, air-to-surface missile highly effective against enemy ground radar. AGM-88 is a joint USAF-Navy weapon carried by SEAD-dedicated F-16CJs. AGM-88B is equipped with erasable and electronically programmable read-only memory, permitting in-field changes to missile memory. The AGM-88C is the current production model with a more lethal warhead. Raytheon began a HARM Control Section Mod (HCSM) in 2013 to convert current models to more precise AGM-88Fs with improved GPS/INS guidance, anti-countermeasure performance, and reduced risk of collateral damage. The Navy is further retrofitting its missiles with advanced networking, digital homing, and terminal millimeter-wave radar seeker resulting in the AGM-88E Advanced Anti-Radiation Guided Missile (AARGM). USAF dropped sole-source plans to pursue the extended-range AGM-88G AARGM-ER as the basis for its next-generation Stand-in Attack Weapon (SiAW) issuing a request to industry in March 2021 for proposals instead. SiAW will give the F-35 the ability to strike advanced threats including theater ballistic missile and land attack/anti-ship missile sites, GPS jammers, and anti-satellite systems. USAF is pursuing Navy-led fielding of AARGM-ER as an interim SEAD capability for the F-35A procuring 42 missiles in FY23 as a bridge to SiAW. AARGM-ER differs significantly from the legacy AGM-88, incorporating a new motor, larger diameter, and blended conformal strakes in place of forward stabilizing fins. A Navy F-18F successfully test-fired the first AARGM-ER over the Point Mugu test range on July 19, 2021, and the sea service plans to reach IOC in 2023.

Contractors: Raytheon (HARM); Northrop Grumman (AARGM).

First Flight: April 1979 (HARM); July 19, 2021 (AARGM-ER).
Delivered: 1982-98.
IOC: Circa 1984.
Active Variants:
▪AGM-88B. Early production variant.
▪AGM-88C. Current production variant.
▪AGM-88E. Next-generation Advanced Anti-Radiation Guided Missile.
▪AGM-88F. Upgraded variant with greater accuracy and precision.
▪AGM-88G. Next-generation Advanced Anti-Radiation Guided Missile Extended-Range variant.
Dimensions: Span 3.7 ft, length 13.7 ft, diameter 10 in.
Propulsion: Thiokol dual-thrust, solid-propellant rocket motor.
Performance: Mach 2+, range 30+ miles.
Guidance: Proportional passive RF broadband via fixed antenna and seeker head in missile nose.
Warhead: HE fragmentation.
Integration: F-16CJ (Block 50); planned: B-21, F-35A (AARGM-ER).

Staff Sgt. Brian Ferguson

AGM-114 HELLFIRE

Air-to-surface guided missile

Brief: Hellfire is a low-collateral damage, precision air-to-ground missile with semi-active laser guidance for use against light armor and personnel. Missiles are employed on the MQ-9 Reaper and the AC-130J gunship. Hellfire is procured through the Army and numerous variants are utilized based on overseas contingency demands. An MQ-1 Predator employed Hellfire in combat for the first time in Afghanistan on Oct. 7, 2001. The latest AGM-114R replaces several types with a single, multitarget weapon and USAF is also buying variable Height-of-Burst (HOB) kits to enhance lethality. The next-generation Joint Air-to-Ground Missile (JAGM) is also procured via the Army and adds a new multimode guidance section to the AGM-114R. JAGM is used against high-value moving or stationary targets in all weather. Recent AC-130J block upgrades added a wing-pylon-mounted Hellfire to the gunship's arsenal.

Contractors: Lockheed Martin (missile body); Northrop Grumman (propulsion).
First Flight: Feb. 16, 2000 (USAF).
Delivered: March 2016-present.
IOC: N/A.
Active Variants:
▪AGM-114. Numerous subvariants, depending on target and mission requirements.
▪AGM-169. JAGM, incorporating a multimode seeker on the advanced AGM-114R.
Dimensions: Span 28 in, length 5.33 ft, diameter 17 in.
Propulsion: Solid-propellant rocket motor.
Performance: Subsonic, range 5+ miles.
Guidance: EO TV guidance system (B/H/K); IIR seeker (D/G); laser seeker (E).
Warhead: Shaped charge and blast fragmentation.
Integration: AC-130J, MQ-9.

AGM-176 GRIFFIN

Air-to-surface guided missile

Brief: Griffin is a light, low-cost, multiservice air-launched weapon with GPS-aided inertial guidance and semi-active laser seeker. The weapon is used for high-precision, low-collateral damage attack against light surface targets. The AGM-176A forms part of the PSP employed on AFSOC's AC-130J Ghostrider gunship, which employs the aft-firing weapon from ramp-mounted common-launch tubes. The forward-firing AGB-176B is employable on RPAs. USAF issued Raytheon a $105.2 million contract

Raytheon

modification to supply additional Griffin missiles in 2018. FY21 SOCOM-wide funds supported production of 226 AGM- 176, including data links. FY22 ended additional procurement as USSOCOM shifts funds to confront future threats by developing small, Standoff Precision Guided Munitions (SOPGM) for use in contested environments.

Contractor: Raytheon.
First Flight: Feb. 16, 2000 (USAF).
Delivered: September 2001.
IOC: N/A.
Active Variants:
▪AGM-176A. Aft-ejecting missile employed as part of the PSP.
▪AGM-176B. Forward-firing variant optimized for light aircraft/RPAs.
Dimensions: Length 43 in, diameter 5.5 in.
Propulsion: Solid-propellant rocket motor.
Performance: Subsonic, range 12 + miles.
Guidance: GPS/INS/semi-active laser.
Warhead: Blast fragmentation.
Integration: AC-130J (A), MQ-9 (B).

AREA WEAPONS

Senior Airman Jonathan Ramos

CBU-105 SENSOR FUZED WEAPON (SFW)

Wide-area munition

Brief: SFW is a tactical area weapon for use against massed stationary or moving armor and ground vehicles. The munitions dispenser contains a payload of 10 BLU-108 submunitions each containing four skeet-shaped copper disks totaling 40 lethal, target-seeking projectiles. The skeet's active laser and passive IR sensors can detect a vehicle's shape and IR signature. If no target is detected, the warhead instead detonates at a preset time. Primary targets are massed tanks, armored personnel carriers, and other self-propelled targets. SFWs can be delivered from high altitude and in adverse weather. It debuted in combat in Iraq in 2003. DOD ceased cluster munition procurement in 2007 and has only employed the weapons in combat once since 2003. CBU-105 was the only standard USAF cluster munition that met the less-than-one-percent failure rate previously mandated by DOD for use beyond 2018. DOD has since reversed course, retaining existing weapons for deterrence on the Korean Peninsula. USAF is now testing the 2,000-lb-class Next Generation Area

Attack Weapons (NGAAW), which replaces explosive submunitions with a high-fragmentation warhead, reducing the risk of unexploded munitions injuring noncombatants.

Contractor: Textron Systems.
First Flight: Circa 1990.
IOC: 1997.
Active Variants:
▪CBU-105. CBU-97 casing with Wind-Corrected Munitions Dispenser (WCMD) tail kit.
Dimensions: Length 7.7 ft, diameter 15 in.
Performance: Delivers 40 lethal projectiles over an area of about 500 ft x 1,200 ft.
Guidance: IR targeting in each warhead; INS (via WCMD tail kit pre-dispersal) and GPS-data (via aircraft, prerelease).
Warhead: Shaped charge and blast fragmentation.
Integration: A-10C, B-1B, B-52H, F-15E; F-16C/D, (tested on MQ-9).

Tech. Sgt. Marvin Lynchard

CBU-107 PASSIVE ATTACK WEAPON

Wide-area munition

Brief: Passive Attack Weapon is a nonexplosive, kinetic penetrating area weapon for use against sensitive targets. The CBU-107's penetrator rods limit collateral damage and do not scatter potentially contaminating debris when used against enemy WMD stockpiles. The weapon glides toward its target after release. Before impact, its inner chamber begins to rotate, and projectiles are ejected in rapid succession by centrifugal force, penetrating targets within a 200-ft radius. The weapon contains various-sized penetrating projectiles, but no explosive. Full production was completed in six months. The weapon was used during Iraqi Freedom.

Contractors: General Dynamics (kinetic energy penetrator payload and canister); Lockheed Martin (WCMD); Textron (tactical munition dispenser kit).
First Flight: 2002.
IOC: December 2002.
Active Variant:
▪CBU-107A. Centrifugally dispersed, armor-penetrating weapon with Wind-Corrected Munitions Dispenser (WCMD) tail kit.
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-inch rods (350), 7-inch rods (1,000), and small-nail size (2,400).
Guidance: INS (via WCMD tail kit) and GPS-data (via aircraft) pre-release.
Warhead: Non-explosive projectiles.
Integration: B-52, F-15E, F-16C/D.

NEXT GENERATION AREA ATTACK WEAPON (NGAAW)

Wide-area munition

Brief: Next Generation Area Attack Weapon (NGAAW) is a blast-fragmentation area weapon designed as an alternative to cluster bomb munitions banned by DOD mandate beyond 2018. DOD ceased cluster munition procurement in 2007 and implemented a less-than-one-percent failure rate mandate on area weapons to prevent civilian casualties from unexploded ordnance. USAF awarded the $60 million NGAAW procurement contract for a compliant family of weapons in 2019. NGAAW is being developed in two increments, the 500-lb Improved Lethality Warhead (ILW) anti-personnel/materiel weapon based on the BLU-134B, followed by the more potent 2,000-lb high-fragmentation warhead. An F-16 conducted initial live-developmental test drops of the 2,000-lb-class BLU-136 at the Nellis Range in July 2020. The 10-weapon series proved the effectiveness of the weapon against light vehicles, structures, and personnel in excess of a 225-ft radius. The 2,000-lb weapon is externally similar to the standard JDAM when fitted with the precision-guided tail kit, requiring little adaptation to existing platforms for operational use. The NGAAW family of weapons will primarily be aimed at replacing the remaining CBU-105/107 stockpile, with potential to replace additional area weapons.

Contractors: Major Tool & Machine; Faxon Machining.
First Flight: 2020.
IOC: N/A.
Active Variant:
▪NGAAW Increment I. Optionally GPS/INS-guided Improved Lethality Warhead area weapon based on the 500-lb-class BLU-134/B.
▪NGAAW Increment II. Optionally GPS/INS-guided 2,000-lb area weapon, based on the BLU-136/B.
Dimensions: Length approx. 12 ft (2,000-lb class with tail kit), diameter approx. 14.5 in.; length approx. 7.8 ft, diameter approx. 10.7 in. (500-lb-class with tail kit).
Performance: Range up to 15 miles (based on JDAM guidance/BLU-136 mass and form factor), 225+ ft effective radius (based on initial testing).
Guidance: GPS/INS.
Warhead: 2,000-lb high-fragmentation area-attack warhead with height-of-burst sensor (BLU-136/B); 500-lb fragmentation area-attack warhead (BLU-134/B).
Integration: N/A.

PRECISION GUIDED WEAPONS

Airman 1st Class Jessi Monte

GBU-10/12/49 PAVEWAY II

Air-to-surface guided munition

Brief: Paveway II is a laser-guided, free-fall bomb for use against surface targets at short to standoff range. The kit is a folding-wing version of the earlier fixed-wing Paveway I with seeker and reliability improvements. The recent Paveway II Plus adds a modernized, more precise guidance package. GBU-10 is the Paveway II seeker and tail kit mounted on a 2,000-lb general-purpose bomb and primarily used against nonhardened targets. It is, however, capable of penetration. The GBU-12 uses a 500-lb bomb body

and is primarily used against stationary armored targets. GBU-49 is also a 500-lb body but adds GPS guidance for all-weather precision delivery from 2,500 ft up to 40,000 ft. GBU-49 currently provides the F-35A an interim moving target capability until its Block 3F software is fully fielded. An F-35 dropped the weapon for the first time in a test at Eglin on Nov. 7, 2018, and operational testing was conducted at Nellis.

Contractors: Lockheed Martin; Raytheon.
First Flight: Early 1970s.
IOC: 1976.
Active Variants:
- GBU-10. Laser/GPS guided 2,000-lb bomb.
- GBU-12. Laser guided 500-lb bomb.
- GBU-16. Laser guided 1,000-lb bomb.
- GBU-49. Laser/GPS guided 500-lb bomb.

Dimensions: Span 5.5 ft, length approx. 14.8 ft, diameter 18 in (GBU-10); span 4.4 ft, length 10.8 ft, diameter 11-18 in (GBU-12/49).
Performance: CEP 29.7 ft, range 9.2 miles (GBU-10); CEP 29.7 ft, range about six miles (GBU-12/49).
Guidance: Semi-active laser.
Warhead: Mk 84 bomb 2,000 lb (GBU-10); Mk 82 500-lb blast/fragmentation bomb (GBU-12/49).
Integration: A-10, B-1B, B-52, F-15E, F-16C/D, F-35 (GBU-49), MQ-9.

Master Sgt. Carl Clegg

GBU-24/28 PAVEWAY III

Air-to-surface penetrating glide bomb

Brief: Paveway III is a laser-guided free-fall bomb for use against surface targets from medium standoff range. The third-generation laser-guided seeker/tail kit package enables greater precision over Paveway II, and its high-lift airframe enables longer glide slopes for greater standoff employment. It can be dropped from low, medium, or high altitude and is effective against a broad range of high-value targets. GBU-24 is fitted to a 2,000-lb bomb body with a BLU-109 penetrating warhead. GBU-28 variants are large 5,000-lb-class air-to-ground penetrators initially developed for use against Iraq's deeply buried, hardened C2 facilities. The GBU-28B adds GPS/INS guidance to the existing laser seeker for all-weather targeting. It entered production in 1999. The GBU-28C adds a more powerful penetrating BLU-122 warhead in addition to the enhanced guidance package. It entered production in 2005 and quantities are purchased as needed to replenish and maintain stockpiles. GBU-28 will eventually be replaced by the JDAM-based GBU-72 "A5K" penetrator currently under development.

Contractor: Raytheon.
First Flight: Early 1980s (GBU-24); Feb. 24, 1991 (GBU-28).
IOC: 1986 (GBU-24); 1991 (GBU-28).
Active Variants:
- GBU-24. Laser-guided 2,000-lb penetrating bomb.
- GBU-28B/B. Laser/GPS/INS-guided 5,000-lb penetrating bomb.
- GBU-28C/B. Laser/GPS/INS-guided 5,000-lb improved penetrating bomb.

Dimensions: Span 6.7 ft, length 14.4 ft, diameter 18 in (GBU-24); length approx. 20 ft, diameter 15 in (GBU-28).
Performance: Range more than 11 miles (GBU-24); range more than 5.75 miles (GBU-28).
Guidance: Semi-active laser.
Warhead: BLU-109 2,000-lb bomb (GBU-24); BLU-113 or BLU-122 5,000-lb bombs (GBU-28).
Integration: B-52, F-15E, F-16C/D (GBU-24); B-2A, B-52, F-15E (GBU-28).

Ilka Cole/USAF

GBU-31/32/38 JOINT DIRECT ATTACK MUNITION (JDAM)

Air-to-surface guided bomb

Brief: JDAM is a GPS/INS-guided, autonomous, all-weather surface attack weapon. The joint USAF-Navy program upgrades the existing inventory of general-purpose bombs by adding a GPS/INS guidance kit for accurate all-weather attack from medium/high altitudes. The weapons acquire targeting information from the aircraft's avionics. After release, an inertial guidance kit directs the weapon aided by periodic GPS updates. JDAM seeker/tail kits can be mounted on general-purpose or penetrating warheads in each weight class. JDAM can also utilize the 500-lb carbon fiber-cased Very Low Collateral Damage Weapon (VLCDW) for sensitive targets. A JDAM kit is under development for the 5,000-lb BLU-113 penetrating weapon slated for integration and flight-testing on the F-15E. The Advanced 2,000-lb (A2K) BLU-137/B weapon is also being developed for integration onto the F-15E and B-2A. A2K will improve both precision and penetration to strike a wider variety of targets, eventually replacing the BLU-109 bunker buster. JDAM-class weapons are the most frequent air-to-ground munition expended in combat. USAF is working to field an upgraded tail kit with anti-jam receiver for use in GPS degraded conditions under an Urgent Operational Requirement. The service is also seeking to develop a lighter-weight successor class of weapons incorporating IR/ GPS guidance, maneuver wings, stealth, and EW capabilities. USAF drastically reduced combat stockpile replenishment in FY22 before slightly increasing procurement to 4,200 tail kits in FY23.

Contractors: Boeing; Textron; Honeywell.
First Flight: Oct. 22, 1996.
IOC: 1998.
Active Variants:
- GBU-31. GPS/INS-guided 2,000-lb GP, or BLU-109 penetrating weapon.
- GBU-32. GPS/INS-guided 1,000-lb GP, or BLU-110 penetrating weapon.
- GBU-38. GPS/INS-guided 500-lb GP, or BLU-140 (prev. BLU-111) penetrating weapon.

Dimensions: Span 25 in (GBU-31), 19.6 in (GBU-32), 14 in (GBU-38); length (with JDAM and warhead) approx 12 ft (GBU-31), 10 ft (GBU-32), 7.8 ft (GBU-38).
Performance: Range up to 15 miles, CEP with GPS 16.4 ft, CEP with INS only 98 ft.
Guidance: GPS/INS.
Warhead: 2,000-lb Mk 84/BLU-109 (GBU-31); 1,000-lb Mk 83/BLU-110 (GBU- 32); 500-lb Mk 82/BLU-111 (GBU-38).
Integration: A-10C, B-52H, B-2A, B-1B, F-15E, F-16, F-22A, F-35A (GBU-31/32), and MQ-9.

GBU-39 SMALL DIAMETER BOMB I

Guided air-to-surface glide bomb

Brief: SDB is a low-yield, all-weather precision guided munition designed to limit collateral damage and strike targets from up to 46 miles away. Experimentation began in 2001 in response to an ACC requirement for a miniaturized precision weapon. Boeing was selected to fully develop and produce the weapon in 2003 and low-rate initial production began in 2005. Its size allows it to be carried in fighter or bomber internal weapons bays or to increase overall loadout for more independent strikes per sortie. SDB I employs advanced anti-jam GPS/INS, and target coordinates are loaded on the ground or received from the aircraft before release. Several SDBs can be simultaneously released against multiple targets. The

William Lewis/USAF

weapon was first employed by an F-15E over Iraq in 2006. The Focused Lethality Munition (FLM) is a low-collateral version employing a carbon fiber case to limit damage to structures. Laser SDB is capable of self-targeting as well as GPS-only modes and is equipped with a selectable height-of-burst fuse to tailor kinetic effects. Current production versions incorporate Strategic Anti-Jam Beamforming Receiver Y-Code (SABR-Y) for use in GPS-denied/degraded environments. USAF reduced combat stockpile replenishment from over 2,000 weapons in FY21 to a total of 356 weapons in FY23, reflecting a shift to advanced standoff weapons to confront more advanced future threats.

Contractor: Boeing.
First Flight: May 23, 2003.
IOC: Oct. 2, 2006.
Production: 24,000 (planned).
Active Variant:
▪GBU-39/B SDB I. GPS/INS-guided 250-lb low-yield bomb.
▪GBU-39A/B SDB I. GPS/INS-guided Focused Lethality Munition.
▪GBU-39B/B SDB I. Semiactive laser/GPS-guided 250-lb low-yield bomb.
Dimensions: Length 6 ft, width 7.5 in; BRU-61/A carriage (four bombs) length 12 ft, width 16 in, height 16 in.
Performance: Near-precision capability at standoff range up to 46 miles.
Guidance: GPS/INS.
Warhead: 250-lb class penetrating and blast fragmentation munition.
Integration: AC-130J, F-15E, F-16, F-22, F-35A. Planned: A-10, B-1, B-52, B-21, MQ-9.

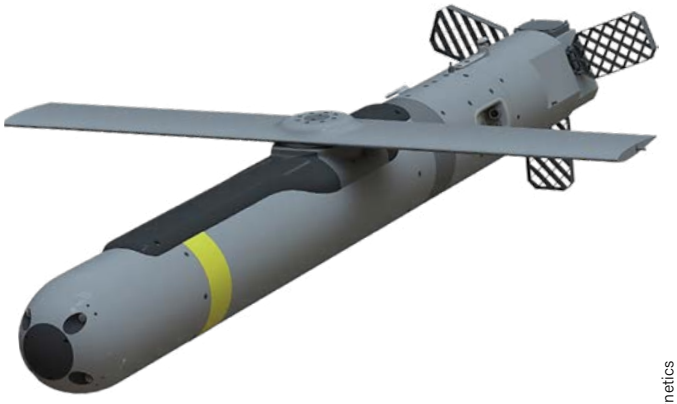
Raytheon Missile and Defense

GBU-53 STORMBREAKER (SMALL DIAMETER BOMB II)

Guided air-to-surface glide bomb

Brief: StormBreaker (formerly SDB II) is a joint USAF-Navy program to develop a low-yield, precision guided munition capable of striking moving targets in all weather from up to 46 miles away. Its size allows it to be carried in fighter or bomber internal weapons bays or to increase overall loadout to enable more independent strikes per sortie. Several StormBreakers can be simultaneously released against multiple targets. SDB II adds a millimeter-wave radar, imaging IR, and semi-active laser packaged into a tri-mode seeker. The bomb is retargetable after release. Improvements over SDB-I include reduced susceptibility to countermeasures and network-enablement through Link 16/UHF data links. LRIP production began in 2015, and USAF awarded the current production Lot 7 on April 30, 2021. SDB II began operational testing in June 2018 and achieved initial fielding on the F-15E on Sept. 23, 2020, followed by IOC in September 2022. Navy testing is underway for fielding on the F-35B/C and F-18E/F, which is expected in 2023. FY23 funding supports production of up to 761 SDB IIs.

Contractor: Raytheon.
First Flight: 2012.
IOC: September 2022.
Production: 21,610 (planned).
Active Variant:
▪GBU-53/B SDB II. Tri-mode guided 250-lb low-yield bomb.
Dimensions: Length 5.75 ft, wingspan 5.6 ft, diameter 7 in.
Performance: Near-precision capability at standoff range up to 46 miles.
Guidance: Tri-mode seeker millimeter-wave radar, uncooled IIR, and digital semi-active laser.
Warhead: 250-lb-class penetrating blast fragmentation munition.
Integration: F-15E. Planned: A-10, AC-130J, B-1, B-2, B-52, F-16, F-22, F-35, MQ-9.



Dynetics

GBU-69 SMALL GLIDE MUNITION

Guided air-to-surface glide bomb

Brief: Small Glide Munition is a standoff precision guided munition specifically tailored to SOF mission requirements. Internally carried GBU-69/B were integrated onto the next-generation AC-103J gunship as part of Block 20+ upgrades following initial operational testing. USSOCOM is currently working to integrate the weapon onto RPA platforms including the MQ-9. The weapon is deployable from the AC-130J's ramp-mounted Common Launch Tubes or dropped conventionally. It is capable of quietly reaching targets from standoff range using its deployable wings to minimize risk to delivery platforms. The weapon utilizes semi-active laser and lattice-type control fins (similar to the GBU-57) for guidance and terminal stability, and is capable of receiving in-flight targeting updates via two-way data link. The weapon was jointly developed between Dynetics and USSOCOM. The company was awarded two contracts in FY18 totaling $104 million for delivery of approximately 1,000 weapons through 2022. Procurement beyond FY21 decreased to align with future priorities such as Stand-Off Precision Guided Munitions (SOPGM) for use in contested environments.

Contractor: Dynetics.
First Flight: Feb. 16, 2000 (USAF).
Delivered: 2020-present.
IOC: 2017 (USSOCOM).
Active Variants:
▪GBU-69. Semi-active laser-guided 36-lb low-yield bomb.
Dimensions: Span 28 in, length 3.5 ft, diameter 4.5 in.
Propulsion: None.
Performance: Near-precision capability at standoff range of 20+ miles.
Guidance: Semi-active laser.
Warhead: 36-lb blast fragmentation.
Integration: AC-130J; planned: MQ-9.

GBU-72 ADVANCED 5,000-POUND PENETRATOR

Massive PGM

Brief: A5K is a GPS/INS-guided next-generation penetrating weapon for striking high-priority hardened and deeply buried targets. The GBU-72 comprises the BLU-138 5,000-lb-class weapon paired with a modified JDAM tail kit. The weapon is being developed as a more survivable, lethal, and

Samuel King Jr./USAF

affordable replacement to the current Paveway-III-based GBU-28. A5K's successful ground detonation test was the largest open-air "Arena" test ever conducted at Eglin, and an F-15E successfully completed the first weapon release over the Eglin Range on July 23, 2021. The drop was the first of a three-flight-test series and demonstrated both safe separation from the aircraft and the JDAM tail kit's ability to guide the weapon. The developmental weapon will continue JDAM integration test flights and proceed to operational testing. Procurement of 125 weapons began FY22, and FY23 funds 80 BLU-138/A5K weapons.

Contractor: Air Force Armament Directorate.
First Flight: July 23, 2021.
Delivered: N/A.
IOC: N/A.
Active Variants:
▪GBU-72. GPS/INS guided 5,000-lb BLU-138 penetrating weapon.
Dimensions: N/A.
Propulsion: None.
Performance: N/A.
Guidance: Semi-active laser.
Warhead: 5,000-lb (BLU-138/GBU-72) penetrating warhead.
Integration: Planned: F-15E.

USAF

GBU-43 MASSIVE ORDNANCE AIR BLAST (MOAB) BOMB

Massive guided bomb

Brief: MOAB is the largest satellite-guided, air-delivered weapon ever employed. It is designed for use against large area targets, deeply buried targets, or targets in tunnels or caves. The conventional HE bomb is GPS-guided, with fins and inertial gyro for pitch and roll. It was developed by the Air Force Research Laboratory Munitions Directorate at Eglin in only nine weeks to be available for the 2003 Iraq campaign. The weapon was designated Massive Ordnance Air Blast (MOAB) but is unofficially known as "Mother of All Bombs." The weapon is designed for deployment from the ramp of an MC-130H without a parachute. A total of 18,700 lb of the weapon's 21,000-lb weight is attributed to the BLU-120/B warhead. It was used operationally for the first time in April 2017 against an ISIS-occupied cave complex in Afghanistan.

Contractors: AFRL; Dynetics.
First Flight: March 11, 2003.
IOC: April 2003.
Active Variant:
▪GBU-43/B. GPS-guided 21,000-lb bomb.
Guidance: GPS/INS.
Warhead: BLU-120/B 18,700-lb HE.
Dimensions: Length 30 ft, diameter 3.3 ft.
Integration: MC-130H.

Tech. Sgt. Alex Fox Echols III

GBU-54 LASER JOINT DIRECT ATTACK MUNITION (LJDAM)

Air-to-surface guided bomb

Brief: LJDAM is a GPS/INS guided, autonomous, all-weather attack weapon for use against fixed as well as moving ground and maritime targets. It is a joint USAF-Navy development that combines a laser guidance kit with the GPS/INS-based navigation of the existing GBU-38 JDAM. Laser JDAM made its combat debut in Iraq in August 2008. The current LJDAM is a dual-mode, 500-lb guided weapon capable of attacking moving targets with precision. It was developed as an urgent operational need, and testing was completed in less than 17 months. It was delivered in May 2008, and deployed in combat in Iraq three months later. Boeing more recently developed the GBU-56 (2,000-lb) variant.

Contractor: Boeing.
First Flight: 2005.
IOC: 2008.
Active Variant:
▪GBU-54 Laser JDAM. Laser/GPS/INS-guided 500-lb GP, or BLU-111 penetrating weapon.
▪GBU-56 Laser JDAM. Laser/GPS/INS-guided 2,000-lb GP, or BLU-109 penetrating weapon.
Dimensions: Length 7.7 ft, diameter 17 in. (GBU-54); length 12.6 ft, diameter 25.3 in (GBU-56).
Performance: Range up to 15 miles (40 + miles with JDAM ER wing set).
Guidance: GPS/INS with laser.
Warhead: Mk 82/BLU-111/BLU-126/BLU-129 500-lb munition (GBU-54); Mk 84/BLU-117/BLU-109/BLU-116 2,000-lb munition (GBU-56).
Integration: F-15E, F-16. Planned: F-35, B-1B (GBU-56).

GBU-57 MASSIVE ORDNANCE PENETRATOR

Massive PGM

Brief: MOP is a GPS-guided, earth-penetrating strike weapon for use against hardened and deeply buried targets. It was developed and tested through a USAF and Defense Threat Reduction Agency partnership in 2004 and is now managed by AFGSC. Flight-testing was conducted from 2008 to 2010, when the program transitioned to USAF. A B-2 successfully test-dropped the GBU-57 in 2014, 2015, and 2016. Several B-2s completed a total of four test drops at White Sands Missile Range in 2017 validating the effectiveness of mods made under the Enhanced Threat Response IV upgrade. MOP proved effective, clearing the way for potential early fielding, though the Air Force's recommendation was classified. The service is currently testing the Large Penetrator Smart Fuse (LPSF) to increase precision and lethality, though delays constructing representative test tar-

509th Bomb Wing

gets have pushed potential fielding of the upgrade to FY25 or beyond. A B-2 employed an LPSF-equipped weapon against a tunnel test target in 2020 to validate the design, followed by a series of three performance test drops between August 2021 and May 2022. FY23 funds jam-resistant GPS for operations against advanced A2/AD targets as well as warheads, guidance kits, and fuses.

Contractor: Boeing.
First Flight: Unknown.
IOC: 2011.
Operator: AFGSC.
Active Variant:
▪GBU-57B. GPS-guided 30,000-lb penetrating weapon.
Guidance: GPS.
Warhead: 5,740-lb HE.
Dimensions: Length 20.5 ft, diameter 31.5 in.
Integration: B-2A (tests also conducted on the B-52).

COMMUNICATIONS SATELLITES

USAF

ADVANCED EXTREMELY HIGH FREQUENCY (AEHF) SATELLITE SYSTEM

Communications

Brief: AEHF provides global, secure, protected, and jam-resistant military communications. It enhances the previous Milstar satellites and operates at a much higher capacity and data rate. It offers secure, anti-jam tactical and strategic communications around the world. AEHF uses cross-linked satellites, eliminating the need for ground relay stations. The program is a collaboration with Australia, Canada, the Netherlands, and the United Kingdom. Launch of SV-4 was originally slated for Oct. 17, 2017, but an issue with the system's power regulator prompted USAF to delay launch a year to enable a hardware fix. SV-4 launched on Oct. 17, 2018, paving the way for full operational capability declared when the vehicle joined the constellation on May 3, 2019. SV-5 launched Aug. 8, 2019, and SV-6 launched from Cape Canaveral on March 26, 2020, marking the newly formed USSF's first launch. SV-6 became operational after completing on-orbit checks on Aug. 22, 2020, completing the constellation. USSF completed the fourth of five planned incremental software upgrades to the mission planning element in May 2021. The final increment was planned for late 2022. USSF plans to begin replacing AEHF with the next-generation Evolved Strategic SATCOM (ESS) for high-end C2 starting in the early 2030s, while developing Protected Tactical SATCOM (PTS) to relive AEHF of providing contested battlefield comms.

Contractors: Lockheed Martin; Northrop Grumman.
Operator/Location: USSF SpOC, Delta 8 (DEL 8), 4th Space Operations Squadron (4 SOPS), Schriever SFB, Colo.
First Launch: Aug. 14, 2010.
IOC: 2015.
Design Life: 14 yrs.
Launch Vehicle: Atlas V.
Constellation: Six.
Active Satellites:
▪AEHF SV-1. Launched in 2010, on orbit and operational.
▪AEHF SV-2. Launched in 2012, on orbit and operational.
▪AEHF SV-3. Launched in 2013, on orbit and operational.
▪AEHF SV-4. Launched in 2018, on orbit and operational.
▪AEHF SV-5. Launched in 2019, on orbit and operational.
▪AEHF SV-6. Launched in 2020, on orbit and operational.
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.
Orbit Altitude: Geosynchronous at 22,000+ miles.
Power: Solar arrays generating 20,000 watts.

USAF

MILSTAR SATELLITE COMMUNICATIONS SYSTEM (MILSTAR)

Communications

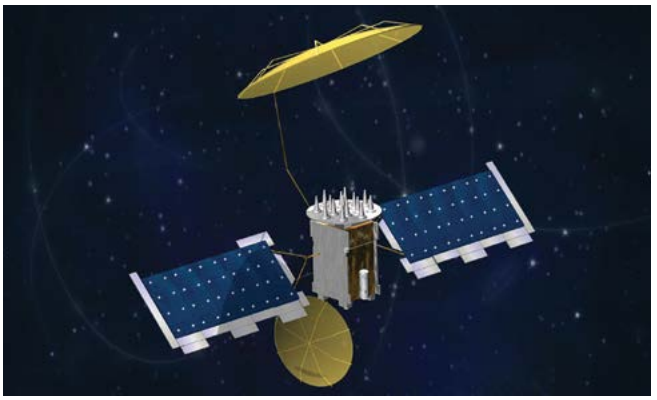
Brief: Milstar is the legacy joint-service backbone of strategic/tactical DOD communications. It provides encrypted, secure, anti-jam communications around the world and uses cross-linked satellites, eliminating the need for ground relay stations. Block I satellites incorporate a low-data-rate payload capable of transmitting 75 to 2,400 bps over 192 EHF channels. Block II satellites carry both the low-data-rate payload and a medium-data-rate payload capable of transmitting 4,800 bps to 1.5 Mbps over 32 channels, allowing larger data to be passed more quickly. Interoperable terminals allow third-party land/sea-based units to upload data in real time to cruise missiles or other compatible weapons. Milstar provides continuous coverage between 65 degrees north and 65 degrees south latitude. The systems utilize multiple-redundant command and control for high survivability. The last of six satellites launched in 2003 and was augmented by the sixth and final AEHF satellite in 2020. AEHF now supplants Milstar as DOD's primary system in the combined, fully back-compatible AEHF-Milstar constellation.

Contractors: Lockheed Martin; Boeing; Northrop Grumman (formerly TRW).
Operator/Location: USSF SpOC, Delta 8 (DEL 8), 4th Space Operations Squadron (4 SOPS), Schriever SFB, Colo.
First Launch: Feb. 7, 1994. **IOC:** July 1997 (Milstar I).
Design Life: 10 yr.
Launch Vehicle: Titan IV/Centaur.
Constellation: Five: two Milstar I; three Milstar II.
Active Satellites:
▪Block I. Milstar I satellites launched 1994-95.
▪Block II. Milstar II satellites launched 1999-2003.
Dimensions: Length 51 ft, width 116 ft with full solar array extension.
Weight: 10,000 lb.
Performance: Milstar I low-data-rate (LDR) payload transmitting 75 to 2,500 bps of data over 192 channels of EHF; Milstar II LDR and medium-data-rate (MDR) payloads, transmitting 4,800 bps to 1.5 Mbps over 32 channels. **Orbit Altitude:** Geosynchronous at 22,000+ miles.
Power: Solar arrays generating 8,000 watts.

MOBILE USER OBJECTIVE SYSTEM (MUOS)

Communications

Brief: MUOS provides next-generation global UHF narrowband and BLOS military SATCOMS. The constellation was originally developed by Lockheed Martin for the Navy, and is designed to replace the legacy UHF Follow-On (UFO) system, enabling a 10-fold increase in capacity as well as interoperability with legacy terminals. Each satellite is equipped with an advanced SATCOM payload that converts 3G cellular-like service to military UHF as well as a UHF payload compatible with UFO terminals. MUOS provides tactical air, land, and sea platforms reliable SATCOMS even in challenging terrain and weather conditions and also extends SATCOMS to the high Arctic. The system utilizes both geosynchronous satellites and ground-station relays to provide mobile phone-type, voice, text, and data to users in the field. MUOS can interface with the Defense Switched Network and DOD's Global Information Grid offering clear voice and videoconferencing over existing networks. The system comprises four



USN

operational satellites, an on-orbit spare, and four ground relay stations in addition to networking and satellite control. USSF aims to procure two additional MUOS satellites targeted for launch by 2030, coinciding with the projected end-of-life of the initial vehicles. Service life extension efforts initiated by the Navy would procure two additional satellites, equipped only with the advanced Wideband Code Division Multiple Access (WCDMA) payload to replace the oldest satellites in orbit by 2030. Full exploitation of MUOS' capabilities has been hampered by the slow modernization of user platforms to date, and many USAF platforms are currently being upgraded with MUOS terminals. The Naval Satellite Operations Center transferred its remaining UHF satellites, including five legacy UHF Follow-Ons, a single remaining UHF FLTSAT, and two range-extending nanosats to the USSF along with control of MUOS on June 6, 2022.

Contractor: Lockheed Martin.
Operator/Location: USSF SpOC, Space Delta 8 (DEL 8), 10th Space Operations Squadron (10 SOPS), Naval Base Ventura County, Calif.
First Launch: Feb. 24, 2012.
IOC: N/A; October 2019 (FOC).
Design Life: 14 yrs. **Launch Vehicle:** Atlas V.
Launch Vehicle: Atlas V.
Constellation: Four (plus one on-orbit spare).
Active Satellites:
- MUOS-1. Launched in 2012, on orbit and operational (CONUS/Americas).
- MUOS-2. Launched in 2013, on orbit and operational (Pacific).
- MUOS-3. Launched in 2015, on orbit and operational (Atlantic).
- MUOS-4. Launched in 2015, on orbit and operational (Indo-Asia).
- MUOS-5. Launched in 2016, on-orbit spare.

Dimensions: Length 21.9 ft, height 12 ft, width 6 ft (with full solar array stowed) 90 ft (with solar arrays deployed); two deployable reflector arrays 17.7 ft (legacy UHF), and 45.9 ft (MUOS).
Weight: 8,405 lb (including 6,450 lb of fuel).
Performance: UHF narrowband/BLOS 3G-equivalent voice, chat, and data 89.5 north to 65 south latitude worldwide.
Orbit Altitude: Geosynchronous at 22,236 miles.

Boeing

WIDEBAND GLOBAL SATCOM (WGS) SATELLITE

Communications

Brief: WGS provides worldwide, high-capacity communications for deployed air, land, and sea forces. The system is designed to augment and then replace DSCS X-band frequency service. It also augments the one-way Global Broadcast Service Joint Program Ka-band frequency capabilities and provides a new high-capacity, two-way Ka-band frequency service. Block I includes: SV-1 (Pacific region), SV-2 (Middle East), and SV-3 (Europe and Africa). Block II satellites are modified to better support the airborne ISR mission and include: SV-4 (Indian Ocean) and SV-5 and SV-6, purchased by Australia in 2013. The U.S. is partnering with Canada, Denmark, Luxembourg, the Netherlands, and New Zealand on Block II follow-on satellites SV-7 to SV-10. The Space and Missile Systems Center conducted tests to field anti-jamming capability for SV-1 through SV-10 starting in 2022. Congress added funds beyond USAF's FY18 request to procure the 11th and 12th satellites, but USSF opted for the single, modernized WGS-11+ platform. USSF issued Boeing a $20.6 million contract modification for the design and launch of WGS-11+ on June 21, 2021. The satellite will offer roughly twice the capability, in addition to stronger, more reliable coverage and is tentatively slated for completion in 2024. Congress again added FY23 funds to procure WGS-12 to ensure depth of coverage, augmenting the future Protected Tactical SATCOM (PTS) which will provide battlefield coverage in contested spectrum environments.

Contractor: Boeing.
Operator/Location: USSF SpOC, Delta 8 (DEL 8), 4th Space Operations Squadron (4 SOPS), Schriever SFB, Colo.
First Launch: October 2007.
IOC: April 16, 2008.
Design Life: 14 yr.
Launch Vehicle: Atlas V, Delta IV.
Constellation: 10 satellites.
Active Satellites:
- SV-1. Block I, launched in 2007; active.
- SV-2. Block I, launched in 2009; active.
- SV-3. Block I, launched in 2009; active.
- SV-4. Block II, launched in 2009; active.
- SV-5. Block II, launched in 2013; active.
- SV-6. Block II, launched in 2013; active.
- SV-7. Block II follow-on, launched in 2015; active.
- SV-8. Block II follow-on, launched in 2016; active.
- SV-9. Block II follow-on, launched in 2017; active.
- SV-10. Block II follow-on, launched in 2019; active.

Dimensions: Based on Boeing 702 Bus.
Weight: 13,000 lb at launch.
Performance: Approx 10 times the capability of a DSCS satellite.
Orbit Altitude: Geosynchronous at 22,000+ miles.
Power: Solar arrays generating 9,934 watts.

METEOROLOGICAL SATELLITES

USAF

DEFENSE METEOROLOGICAL SATELLITE PROGRAM (DMSP)

Space and Earth environmental data collection

Brief: DMSP is tasked with environmental data collection for worldwide, military weather forecasting. It provides timely and high-quality weather information to strategic and tactical combat units worldwide. DMSP uses an operational line-scan sensor to image cloud cover in visible and thermal IR and analyze cloud patterns. It is equipped with microwave imagers and sounders and a suite of space environment sensors that provide critical land, sea, and space data. Block 5D-3 improved spacecraft bus and sensors for longer and more capable missions. Six operational DMSP satellites now survey the entire Earth four times a day. The oldest operational satellite, DMSP-13, suffered an apparent electrical short and exploded, creating a cloud of debris in space in 2015. DMSP-19 most recently launched in 2014. The vehicle subsequently suffered a power failure in early 2016, rendering it uncontrollable. Data from the craft remains usable until its orbit decays. Congress canceled the DMSP program before the final spacecraft (DMSP-20) could be launched. DMSP-20 was stored, awaiting a launch decision to replace DMSP-19. DMSP-17 ultimately assumed the failed satellite's coverage, and DMSP-20 went on permanent display at Los Angeles AFB, Calif. DMSP-14, the last operational Block 5D-2 satellite, was decommissioned Feb. 11, 2020, after 22 years. USAF awarded Ball Aerospace a $255.4 million development contract for the Weather System Follow-On-Microwave (WSF-M) in November 2018, to partially replace DMSP starting in FY24. WSF-M will measure oceanic winds and precipitation and space weather, augmented by the future Electro-Optical/Infrared Weather System (EWS), monitoring cloud cover and other conditions. USSF awarded General Atomics Electromagnetic

Systems and Orion Space Solutions demonstrator contracts. Orion launched its experimental cubesat on Jan 3, 2023, and General Atomics is expected to launch its demo in 2024. USSF estimates the DMSP constellation will reach the end of its useful life by 2026.

Contractors: Lockheed Martin; Northrop Grumman.
Operator/Location: National Oceanic and Atmospheric Administration; NOAA Operations Facility, Suitland, Md.; Schriever SFB, Colo. (backup).
First Launch: May 23, 1962.
IOC: 1965.
Design Life: Five yrs (Block 5D-3). **Launch Vehicle:** Delta IV; Atlas V.
Constellation: Four low-Earth orbit (LEO).
Active Satellites:
▪Block 5D-3. Improved spacecraft bus and sensors for longer, more capable missions.
Dimensions: Length 25 ft (with array deployed), width 4 ft.
Weight: 2,545 lb, incl 772-lb sensor; 2,270 lb with 592-lb sensor payload.
Performance: Polar orbits; covers Earth in about 6 hr; primary sensor scans 1,800-mile-wide area.
Orbit Altitude: Approx 527 miles.
Power: Solar arrays generating 1,200-1,300 watts.

MISSILE WARNING SATELLITES

DOD

DEFENSE SUPPORT PROGRAM (DSP)

Strategic and tactical launch detection

Brief: DSP provides ballistic missile early warning and is a key part of North American and theater early warning systems. It is capable of detecting missile launches and nuclear detonations and was initially meant to watch the Soviet military. It was used extensively in the 1991 Gulf War to detect Iraqi theater missile launches against coalition forces and allies in the region. The 23rd and final DSP satellite launched in December 2007 but malfunctioned and began drifting outside its intended orbit in 2008. Block 5 is the latest variant and is more survivable than predecessors. It includes a medium wavelength IR sensor for more mission utility and accommodates 6,000 detectors. Nine Block 5 satellites were deployed between 1989 and 2007. Control of the constellation was consolidated to the new Block 10 Mission Control Station at Buckley in early 2016. SBIRS is integrated with DSP, augments its role, and is designed to eventually replace the constellation on orbit. The constellations jointly enabled early detection of ballistic missiles launched by Iran against U.S. forces at Al Asad AB, Iraq, on Jan. 7, 2020, reducing casualties.

Contractors: Northrop Grumman (formerly TRW); Aerojet.
Operator/Location: USSF SpOC, Space Delta 4 (DEL 4); Buckley SFB, Colo.
First Launch: November 1970.
IOC: Circa 1972.
Design Life: Three-year requirement and five-year goal.
Launch Vehicle: Titan IV with inertial upper stage; Delta IV Heavy NSSL.
Constellation: 23 deployed/five operational.
Active Satellites:
▪DSP-18. Launched in 1997, on orbit and operational.
▪DSP-19. Launched in 1999, on orbit and operational.
▪DSP-20. Launched in 2000, on orbit and operational.
▪DSP-21. Launched in 2001, on orbit and operational.
▪DSP-22. Launched in 2004, on orbit and operational.
▪DSP-23. Launched in 2007, on orbit and non-operational.
Dimensions: Diameter 22 ft, height 32.8 ft, with paddles deployed.
Weight: Approx 5,200 lb.
Performance: Uses IR sensors to sense heat from missile and booster plumes against Earth's background.
Orbit Altitude: Geosynchronous at 22,000+ miles.
Power: Solar arrays generating 1,485 watts.

SPACE-BASED INFRARED SYSTEM (SBIRS)

Lockheed Martin

SPACE-BASED INFRARED SYSTEM (SBIRS)

Space-based surveillance/missile warning

Brief: SBIRS provides advanced space surveillance and missile warning, battlespace characterization, and technical intelligence gathering. It is the follow-on to the Defense Support Program satellite. The system includes IR sensor payloads on host satellites in highly elliptical orbit (HEO), two IR sensors each on dedicated satellites in geosynchronous Earth orbit (GEO), and ground assets. The HEO sensor detects launch of submarine-launched ballistic missiles (SLBMs) from the North Pole region and can be tasked for other IR detection missions. GEO scanning IR sensor performs the strategic missile warning mission, global technical intelligence, and initial phase for the strategic missile defense mission, providing two times the revisit rate and three times the sensitivity of DSP. GEO-5 and 6 are based on a modernized spacecraft that will begin migration to the next-generation Enterprise Ground Service (EGS), consolidating control of multiple systems. USSF also awarded Raytheon a contract in 2020 to modernize ground data processing. The Future Operationally Resilient Ground Evolution (FORGE) system will serve both SBIRS and the future Next-Generation Overhead Persistent Infrared (OPIR) system. OPIR will comprise three GEO satellites built by Lockheed Martin and two polar HEO sensors from Northrop Grumman. Delivery of the first OPIR GEO satellite is slated for FY25 followed by the first HEO sensor in FY28. The final SBIRS GEO satellite (GEO-6) successfully blasted off from Cape Canaveral on Aug. 4, 2022, and (along with GEO-5) will replace the oldest satellites on orbit.

Contractors: Lockheed Martin (prime contractor); Northrop Grumman (payload); Raytheon (data processing modernization).
Operator/Location: USSF SpOC, Space Delta 4 (DEL 4); Buckley SFB, Colo.
First Launch: GEO 1, May 2011.
IOC: HEO 1, Dec. 5, 2008. (Increment 1, Dec. 8, 2001).
Launch Vehicle: Atlas V (GEO).
Constellation: Six GEO sats, two HEO sensors and two HEO on-orbit reserve (hosted).
Active Satellites/Payloads:
▪SBIRS HEO-1. Payload operational in 2008; on-orbit reserve.
▪SBIRS HEO-2. Payload operational in 2009; on-orbit reserve.
▪SBIRS HEO-3. Payload operational in 2015; active.
▪SBIRS HEO-4. Payload operational in 2017; active.
▪SBIRS GEO-1. Launched in 2011; active.
▪SBIRS GEO-2. Launched in 2013; active.
▪SBIRS GEO-3. Launched in 2017; active.
▪SBIRS GEO-4. Launched in 2018; active.
▪SBIRS GEO-5. Launched in 2021; active.
▪SBIRS GEO-6. Launched in 2022; active.
Dimensions: 49 x 22 x 20 ft (GEO on orbit); 7 x 4 x 3 ft (HEO sensor).
Weight: 5,525 lb (GEO on orbit); 530 lb (HEO sensor).
Orbit Altitude: Geosynchronous (GEO satellites) and highly elliptical (HEO sensors).
Power: Solar array, 2,435 watts (GEO), batteries.

PRECISION TIMING AND NAVIGATION SATELLITES

Courtesy

GLOBAL POSITIONING SYSTEM (GPS)

Worldwide navigation, timing, and velocity data

Brief: GPS supplies space-based military and civil radio-positioning for geolocation, navigation, and timing. It is a fundamental enabler of precision bombing, CSAR, mapping, and rendezvous. It provides accurate and uninterrupted 3D (latitude, longitude, and altitude) position, velocity, and time data. The last of the GPS Block IIA satellites, launched between 1990 and 1997 was decommissioned in 2020. GPS Block IIR and IIR-M (modernized) included 21 vehicles launched between 2005 and 2009. Modernization upgrades included two new signals, enhanced encryption, anti-jamming capabilities, and a second civil signal. GPS Block IIF is a follow-on to IIR-M. Upgrades include extended design life, faster processors, and improved anti-jam and accuracy, a new military signal, and a second and third dedicated civil signal. The GPS Block IIIA, first launched on Dec. 23, 2018, has improved accuracy, availability, and integrity, and incorporates a steerable, high-power, anti-jam capability. Lockheed Martin completed Block IIIA production at SV-10 in 2022. The company was awarded a follow-on contract for Block IIIF SV-11 and SV-12 as well as up to 22 additional vehicles in 2018. USSF executed options for SV-13 and SV-14 in October 2020, SV-15 to 17 in November 2021, and SV-18 through 20 in November 2022. Block IIIF will add a hosted search and rescue payload, as well as geographically targetable high-power military signal. USSF is working to field the delayed Next Generation Operational Control Segment (OCX), which will enable advanced GPS III features. The launch and on-orbit check segment of OCX went operational in 2017, but concurrent Blocks 1 and 2 to enable use of modernized civil, aviation, military signals, and advanced cyber defenses are not expected until late FY23. OCX is currently one of the last key elements to GPS Block III reaching IOC. USSF most recently launched GPS III SV-6 on Jan. 18, 2023, and vehicles 7 and 8 are awaiting launch. The first IIIF is slated to be launch-ready by 2026.

Contractors: Boeing (IIF); Lockheed Martin (IIR, IIR-M, III/IIIF).
Operator/Location: USSF SpOC, Delta 8 (DEL 8), 2nd Space Operations Squadron (2 SOPS), Schriever SFB, Colo.
First Launch: Feb. 22, 1978.
IOC: Dec. 9, 1993.
Design Life: 7.5 yr (IIR/IIR-M); 12 yr (IIF); 15 yr (IIIA).
Launch Vehicle: Delta II, Delta IV, Falcon 9.
Constellation: 31 spacecraft (not including decommissioned or on-orbit spares).
Active Satellites:
- GPS Block IIR. Launched 1997 to 2004; seven active.
- GPS Block IIR-M. Launched 2005 to 2009; seven active.
- GPS Block IIF. Launched 2010 to 2016; 12 active.
- GPS Block IIIA/IIIF. New generation launched in 2018; five active.

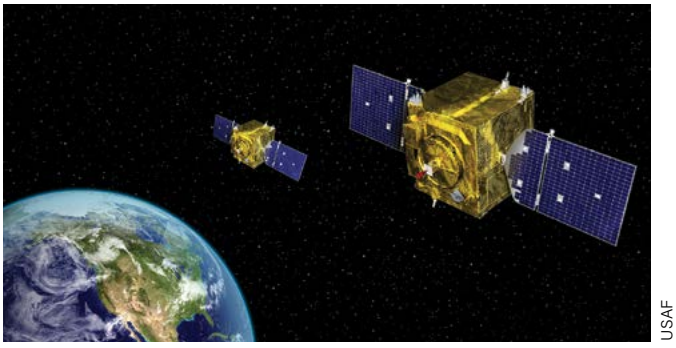
Dimensions: (IIR/IIR-M) 5 x 6.3 x 6.25 ft, span incl solar panels 38 ft; (IIF) 9.6 x 6.5 x 12.9 ft, span incl solar panels 43.1 ft.
Weight: On orbit, 2,370 lb (IIR/IIR-M); 3,439 lb (IIF).
Performance: Orbits the Earth every 12 hr, emitting continuous signals, providing time to within one-millionth of a second, velocity within a fraction of a mile per hour, and location to within a few feet.
Orbit Altitude: Medium-Earth Orbit (MEO) at between 10,988 and 12,550 miles.
Power: Solar panels generating 1,136 watts (IIR/IIR-M); up to 2,900 watts (IIF).

SPACE DOMAIN AWARENESS SATELLITES

GEOSYNCHRONOUS SPACE SITUATIONAL AWARENESS PROGRAM (GSSAP)

Situational awareness/orbital tracking

Brief: GSSAP supplies space-based tracking and characterization of manmade objects in geosynchronous orbit, aiding safety and enabling avoidance. They are the "neighborhood watch" satellites augmenting the legacy Space Based Space Surveillance (SBSS) system. SBSS tracks and classifies manmade objects in low-Earth orbit and GSSAP extends this coverage to geosynchronous orbit. The satellites themselves operate in near-geosynchronous orbit to effectively monitor objects and aid in preventing collisions in space. GSSAP carry EO/IR sensors and are able to maneuver to observe objects at close range or conduct rendezvous. They can track objects without the weather and atmospheric disruptions that affect ground-based systems. Two GSSAP satellites were launched in 2014 and attained IOC in 2015. Two more replenishment satellites launched Aug. 19, 2016, and became operational Sept. 12, 2017. USSF completed a significant overhaul and upgrade of the GSSAP ground system software to enhance the reliability, speed, and security of the system in February



USAF

2020. The upgrades also pave the way for future expansion of the constellation. The fifth and sixth sensors successfully launched aboard the USSF-8 mission from Cape Canaveral on Jan. 21, 2022, and were declared operational several months later.

Contractor: Northrop Grumman Space Systems (formerly Orbital ATK).
Operator/Location: USSF SpOC, Delta 9 (DEL 9), 1st Space Operations Squadron (1 SOPS), Schriever SFB, Colo.
First Launch: July 28, 2014.
IOC: Sept. 29, 2015.
Launch Vehicle: Delta IV, Atlas V (USSF-8).
Constellation: Four spacecraft.
Active Satellites:
- GSSAP 1. Launched in 2014; on orbit, active.
- GSSAP 2. Launched in 2014, on orbit, active.
- GSSAP 3. Launched in 2016, on orbit, active.
- GSSAP 4. Launched in 2016, on orbit, active.
- GSSAP 5. Launched in 2022, on orbit, active.
- GSSAP 6. Launched in 2022, on orbit, active.

Orbit Altitude: Near-geosynchronous at 22,300 miles.
Power: Solar panels.

SPACE-BASED SPACE SURVEILLANCE (SBSS)

Orbital surveillance and object identification

Brief: SBSS is designed to track, characterize, measure, and collect optical signatures of Earth-orbiting objects, including space vehicles and debris. The Missile Defense Agency originally launched SBSS as a technology demonstrator to classify and track ballistic missiles in mid-course flight, before handing it over to AFSPC in 2011. SBSS primarily uses a trainable, ground-controlled Space-Based Visible Sensor to track targets without repositioning. Potential high-end and even kinetic space threats from China and Russia have pushed orbital domain awareness to the top of AFSPC's priority list. AFSPC worked to extend SBSS service life and tasked one of its experimental Operationally Responsive Space satellites to cover a four-year gap in coverage until the newly established Space Force can launch a follow-on spacecraft. ORS-5 launched Aug. 26, 2017, and is equipped with an optical sensor to provide rapid, continuous scanning to detect movement in geosynchronous orbit. The Space Force is seeking funds for a follow-on satellite to ORS-5 to enhance surveillance. SBSS works in concert with an array of networked, ground-based sensors

Boeing

including the Space Fence wide-area search and surveillance system recently commissioned on Kwajalein Atoll in the Marshall Islands. SBSS collision-warning data was made openly available to the public in 2020 to improve domain awareness and orbital safety, and USSF is considering handing off operations to a contracted service provider.

Contractors: Boeing (system integration, ground segment, operations and sustainment); Ball Aerospace (satellite); Orbital ATK (ORS-5).
Operator/Location: USSF SpOC, Delta 9 (DEL 9), 1st Space Operations Squadron (1 SOPS), Schriever SFB, Colo.
First Launch: Sept. 25, 2010.
IOC: Aug. 17, 2012 (SBSS); May 31, 2018 (ORS-5).
Design Life: Seven yr.
Launch Vehicle: Minotaur IV.
Constellation: One LEO satellite; one LEO augmentation satellite.
Active Satellites:
- SBSS Block 10. Launched in 2010; active.
- ORS-5. Experimental satellite launched in 2017 to augment SBSS; active.

Dimensions: Height approx 49 ft; 22 ft x 20 ft (SBSS on-orbit); 5 ft x 2.5 ft (ORS-5).
Weight: Approx 5,525 lb (SBSS on orbit); approx 250 lbs (ORS-5).
Orbit Altitude: 390 miles, sun-synchronous orbit (SBSS); 372 miles, geosynchronous orbit (ORS-5).
Power: Solar arrays and batteries generating 750 watts (SBSS); solar array and batteries (ORS-5).

Aaron M. U. Church is a freelance aviation writer and Active-duty officer stationed at Beale Air Force Base, Calif. He is a former Air and Space Forces Magazine senior editor.

Senior Airman Thomas Sjoberg

A SpaceX Falcon 9 rocket carrying the GPS III SV06 payload launches from Space Launch Complex-40 at Cape Canaveral Space Force Station, Fla. GPS III provides positioning, navigation, and timing service to civilian and military users worldwide.

GLOSSARY OF ACRONYMS & ABBREVIATIONS

A non-exhaustive list of acronyms and abbreviations found in the 2023 Almanac.

A2/AD	Anti-access, area-denial
AA	Active associate: ANG/AFRC-owned aircraft
AAB	Army Air Base
AAF	Army Airfield
AATTC	Advanced Airlift Tactics Training Center
AB	Air Base
ABG	Air Base Group
ABW	Air Base Wing
ABMS	Advanced Battle Management System
ACC	Air Combat Command
ACG	Air Control Group
ACS	Air Control Squadron
ACTS	Air Combat Training Squadron
ACW	Air Control Wing
ADS-B	Automatic Dependent Surveillance-Broadcast
AE	aeromedical evacuation
AEHF	Advanced Extremely High Frequency
AESA	active electronically scanned array
AETC	Air Education and Training Command
AFB	Air Force Base
AFDW	Air Force District of Washington
AFGSC	Air Force Global Strike Command
AFLCMC	Air Force Life Cycle Management Center
AFMC	Air Force Materiel Command
AFNWC	Air Force Nuclear Weapons Center
AFRC	Air Force Reserve Command
AFRL	Air Force Research Laboratory
AFS	Air Force Station
AFSC	Air Force Specialty Code
AFSOC	Air Force Special Operations Command
AFSMO	Air Force Spectrum Management Office
AFSPC	Air Force Space Command
AFTC	Air Force Test Center
AG	Airlift Group
AGM	air-to-ground missile
AGOW	Air Ground Operations Wing
AGS	Air Guard Station
AGS	Alliance Ground Surveillance
AIM	Air intercept missile
ALC	Air Logistics Complex
ALCM	Air-Launched Cruise Missile
ALCF	Airlift Control Flight
ALCOM	Alaskan Command
ALTV	Approach and Landing Test Vehicle
AMC	Air Mobility Command
AMOG	Air Mobility Operations Group
AMOW	Air Mobility Operations Wing
AMRAAM	Advanced Medium-Range Air-to-Air Missile
AMS	Air Mobility Squadron
AMW	Air Mobility Wing
ANG	Air National Guard
ANGB	Air National Guard Base
ANGS	Air National Guard Station
APO AP	Army/Air Force Post Office Pacific
APO AE	Army/Air Force Post Office Europe
AOC/G/S	Air and Space Operations Center/Group/Squadron
APS	Aerial Port Squadron
ARB	Air Reserve Base
ARG	Air Refueling Group
Arpt.	Airport
ARS	1) Air Refueling Squadron 2) Reserve Station
ARW	Air Refueling Wing
AS	1) Air Station 2) Airlift Squadron
ASIP	Airborne Signals Intelligence Payload
ASOS/G	Air Support Operations Squadron/Group
ASTF	Aeromedical Staging Flight
ATCS	Air Traffic Control Squadron
ATKW	Attack Wing
ATP	advanced targeting pod
AW	Airlift Wing
AWACS	Airborne Warning and Control System
BACN	Battlefield Airborne Communications Node
BLOS	beyond line of sight
BLU	Bomb Live Unit
BM	battle management
BMEWS	Ballistic Missile Early Warning System
BW	Bomb Wing
C2	command and control
C3	command, control, and communications
C3I	command, control, communications and intelligence
C4	command, control, communications, and computers
CACS	Command and Control Squadron (Space)
CALCM	Conventional Air-Launched Cruise Missile
CAS	close air support
CBCS	Combat Communications Squadron
CBU	cluster bomb unit
CC	combat communications
CCG	Combat Communications Group
CCW	Command and Control Wing
CEF	civil engineering flight
CEM	combat effects munition
CEP	circular error probable
CENTCOM	U.S. Central Command
CFIN	combat flight inspection
CFAC	combined force air component commander
CFT	conformal fuel tank
CG	Communications Group
CNS/ATM	Communications, navigation, surveillance/air traffic management
COMINT	Communications intelligence
CONECT	Combat Network Communications Technology
CSO	combat systems officer
CONUS	Continental U.S.
COS	Cyberspace Operations Squadron
CRF	Centralized repair facility
CRG	Contingency Response Group
CRTC	Combat Readiness Training Center
CRW	Contingency Response Wing
CSAR	combat search and rescue
CTOL	Conventional Takeoff and Landing
CTS	Combat Training Squadron
CW	1) Cyberspace Wing 2) Combat Weather
DAF	Department of the Air Force
DCGS	Distributed Common Ground System
DMOC	Distributed Mission Operations Center
DMSP	Defense Meteorological Satellite Program
DOD	Department of Defense
DSCS	Defense Satellite Communications System
DSP	Defense Support Program
DSRP	Defense Space Reconnaissance Program
DTOC	Distributed Training Operations Center
DV	distinguished visitors
EA	electronic attack
ECG	Electronic Combat Group
ECM	Electronic countermeasures
EELV	Evolved Expendable Launch Vehicle
EHF	extremely high frequency
EIS(G)	Engineering Installation Squadron/Group
EISS	Enhanced Integrated Sensor Suite
ELINT	Electronic intelligence
ENG	Engineering/Engineer
EO	electro optical
EOD	explosive ordnance disposal
ER	extended range
EW	electronic warfare

EWO	electronic warfare officer
FAB-T	Family of Advanced Beyond Line-of-Sight Terminals
FAC-A	forward air controller airborne
FG	Fighter Group
FLIR	forward-looking infrared
FLTS	Flight Test Squadron
FMV	full-motion video
FTG	Flying Training Group
FTU	Formal Training Unit
FTW	Flying Training Wing
FW	Fighter Wing
FY	fiscal year
GA	Guardian Angel (pararescuemen, combat rescue officers, and survival, evasion, resistance, and escape specialists)
GATM	Global Air Traffic Management
GBU	Guided Bomb Unit
GCS	ground control station
GEODSS	Ground-based Electro-Optical Deep Space Surveillance System
GPS	Global Positioning System
GSSAP	Geosynchronous Space Situational Awareness Program
HARM	High-speed Anti-Radiation Missile
HE	high explosive
HUD	head-up display
Helo	helicopter
IADS	integrated air defense system
IBS	Integrated Battle Station
ICBM	Intercontinental ballistic missile
IFF	identification, friend or foe
IIR	imaging infrared
INS	inertial navigation system
IOC	initial operational capability
IOF/S	Information Operations Flight/Squadron
IOW	Information Operations Wing
IR	infrared
IS	Intelligence Squadron
ISR/G/W	Intelligence, Surveillance, and Reconnaissance Group/Wing
IVEWS	Integrated Viper Electronic Warfare Suite
IW	Intelligence Wing
IWS	Information Warfare Squadron
JADC2	Joint All-Domain Command and Control
JASSM	Joint Air-to-Surface Standoff Missile
JB	Joint Base
JBSA	Joint Base San Antonio
JDAM	Joint Direct Attack Munition
JMS	Joint Mission System
JNGB	Joint National Guard Base
JRB	Joint Reserve Base
JROTC	Junior Reserve Officers' Training Corps
JSOW	Joint Standoff Weapon
JSpOC	Joint Space Operations Center
JSTARS	Joint Surveillance Target Attack Radar System
JSUPT	Joint Specialized Undergraduate Pilot Training
JTIDS	Joint Tactical Information Distribution System
LAAR	Light Attack/Armed Reconnaissance
LAD	Large Area Display
LANTIRN	Low-Altitude Navigation and Targeting Infrared for Night
LCD	liquid crystal display
LDM	Loadmaster
LGB	laser-guided bomb
LJDAM	Laser Joint Direct Attack Munition
LO	low observable
LOS	line of sight
LRASM	Long-Range Anti-Ship Missile
MAFFS	Modular Airborne FireFighting System
MALD	Miniature Air-Launched Decoy
MASINT	Measurement and signature intelligence
MCB	Marine Corps Base
MCE	mission control element
MDG	Medical Group
MDW	Medical Wing
MFD	Multifunction display
MILSATCOM	Military Satellite Communications
MISS	Mission/s
MOH	Medal of Honor
MSG	Mission Support Group
MW	Missile Wing
N/A	not available
NAF	Naval Air Facility
NAS	Naval Air Station
NAOC	National Airborne Operations Center
NAV	Navigation/Navigator
NGAAW	Next Generation Area Attack Weapons
NORTHCOM	U.S. Northern Command
NOSS	network operations security squadron
NSSL	National Security Space Launch
NVG	night vision goggles
O&M	Operations and Maintenance
OPS	Operations/Operators
OT&E	operational test and evaluation
PACAF	Pacific Air Forces
PACOM	U.S. Indo-Pacific Command
PAR	Presidential Aircraft Replacement
PARCS	Perimeter Acquisition Radar Attack Characterization System
PEO	Program Executive Officer
PGM	precision guided munition
PSP	Precision Strike Package
RAMP	Reliability, Availability, and Maintainability Program
RAOC	Regional Air Operations Center
RATO	Rocket-Assisted Take Off
RATS	Radar Aided Targeting System
R&D	research and development
RDT&E	research, development, test, and evaluation
RED HORSE	Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers
RG	Reconnaissance Group
RPA	remotely piloted aircraft
RQG	Rescue Group
RQS	Rescue Squadron
RQW	Rescue Wing
ROTC	Reserve Officer's Training Corps
ROVER	Remotely Operated Video Enhanced Receiver
RS	Reconnaissance Squadron
RSC	Resource/s
RSG	Regional Support Group
RW	Reconnaissance Wing
RWR	radar warning receiver
SACU	Situational Awareness Capabilities Upgrade
SAR	synthetic aperture radar
SATCOM	satellite communications
SBIRS	Space-Based Infrared System
SCMS	Supply Chain Management Squadron
SCMG	Supply Chain Management Group
SCMW	Supply Chain Management Wing
SCOW	Supply Chain Operations Wing
SDB	Small Diameter Bomb
SEAD	suppression of enemy air defenses
SERE	survival, evasion, resistance, and escape
SHF	superhigh frequency
shp	shaft horsepower
SiAW	Stand-in Attack Weapon
SIGINT	signals intelligence
S-L	sea level
SLEP	Service Life Extension Program
SMC	Space and Missile Systems Center
SOCOM	U.S. Special Operations Command
SOF	Special Operations Forces
SOG	Special Operations Group
SOPS	Space Operations Squadron
SOW	Special Operations Wing
SPADOC	Space Defense Operations Center
SPC	Specialist
SPCS	Space Control Squadron
SPOS	Space Operations Squadrons
START	Strategic Arms Reduction Treaty
STOL	short takeoff and landing
STRATCOM	U.S. Strategic Command
STS	Special Tactics Squadron
SUPT	Superintendent
SW	Space Wing
SWS	Space Warning Squadron
SYS	System/s
T&E	test and evaluation
TACAN	tactical air navigation
TACC	Tanker Airlift Control Center
TACP	tactical air control party
TAI	total active inventory
TBD	to be determined
TF/TA	terrain-following/terrain-avoidance
TG	Test Group
T-O	takeoff
TRANSCOM	U.S. Transportation Command
TRG	Training Group
TRW	Training Wing
TTP	tactics, techniques, and procedures
TW	Test Wing
UAV	unmanned aerial vehicle
UHF	ultra-high frequency
USAFA	U.S. Air Force Academy
USAFE	U.S. Air Forces in Europe
USAG	U.S. Army Garrison
VHF	very high frequency
VLF	very low frequency
WCMD	Wind-Corrected Munitions Dispenser
WEG	Weapons Evaluation Group
WGS	Wideband Global SATCOM
WF	Weather Flight
WPS	Weapons Squadron
WSO	weapon systems officer
WXF	Weather Forecast/Weather Flight

Welcoming Heroes Home, 50 Years Later: AFA Gathers to Remember Vietnam

Photos by Mike Tsukamoto/staff

AFA leaders, including a number of veterans of the war in Southeast Asia, gathered in the AFA tent on the National Mall. AFA sponsored a series of panel discussions and talks on the war. Left to right: Tech. Sgt. Lloyd Swede; Col. Jim Hannam, USAF (Ret.); Senior Master Sgt. John Pighini, USAF (Ret.); Brig. Gen. Dale Stovall, USAF (Ret.); Len Vernamonti, AFA Vietnam 50th Steering Committee Chair; Maj. Larry Barbee, USAF (Ret.); Col. Darrel Whitcomb, USAF (Ret.); Mark Tarpley, AFA National Director at Large; Linda and Brian McMahon; Mike Maxwell; AFA President & CEO Lt. Gen. Bruce Wright, USAF (Ret.); AFA Chairman Brig. Gen. Bernie Skoch, USAF (Ret.).; and Priscilla Maxwell.

The west end of the National Mall in Washington, D.C., transformed into "Camp Legacy" for three days in May in honor and remembrance of those who served in Vietnam 50 years ago. The public event included museum exhibits, opportunities for photos in static Vietnam-era helicopters, a chance to meet Vietnam veterans from all branches of service, and—most importantly—offer them a proper welcome home.

More than 90 organizations, including the Air & Space Forces Association, contributed to the national event planned by the United States of America Vietnam War Commemoration, but of the dozens of exhibit tents at Camp Legacy, AFA's was one of the busiest.

AFA's Vietnam 50th Steering Committee, a volunteer task force comprised of AFA Field and Committee Leaders, assembled three full days' worth of interactive panel discussions featuring firsthand accounts from Vietnam-era veterans and family members on topics ranging from "Wild Weasel" war stories and lessons in airpower to the effect the Vietnam War had on family life. For those on stage, the event offered an opportunity to reconnect and share their stories—for those in the audience, it was an exclusive glimpse into the legacies and sacrifices of Airmen who were denied a fitting hero's welcome when the war ended 50 years ago.

"The saddest day in my military career occurred in February of 1977, when I reported to the White House for duty on the presidential staff," said Len Vernamonti, AFA's National Treasurer who also served as Chairman of AFA's Vietnam 50th Steering Committee. "As I was completing my in-processing, the guy looks at me and says,

Colleen Shine, daughter of former MIA Lt. Col. Anthony Shine, left, Vietnam War ace Col. Charles DeBellevue, USAF (Ret.), and Air & Space Forces Association Vice Chairman for Aerospace Education Col. Jim Hannam, USAF (Ret.), at the Air & Space Forces Association tent during the Vietnam War Commemoration.

'Major Vernamonti, there's one more thing … while you're assigned to the White House, you will not wear your uniform in the District of Columbia. It is too disruptive.' And I can still feel that today, 46 years later. And so I said, 'We're gonna do something about that.'"

When it came to combat experience, there was no shortage on stage. During a panel on special operations, the packed AFA booth heard firsthand from a pararescue jumper, an HH-53 "Jolly Green" helicopter commander, a forward air controller, and an AC-119K Stinger sensor operator. Another panel featured Charles "Chuck"

DeBellevue, the last Active-duty American ACE and the leading ACE of the Vietnam War, who related how he scored six air-to-air victories in 1972. Yet another panel hosted four Airmen who flew dozens of combat missions during Operation Linebacker II.

But the stories weren't only about fights from the cockpit—a panel of Vietnam veterans' family members also shared their perspective of the war from the homefront, particularly during a time when protests over America's involvement in Vietnam were so vitriolic. Sally DeBellevue explained how she would lie that her husband was waiting for her at home so she wouldn't have to explain she had no idea where in Southeast Asia he was. Debbie Barbee told her story of moving to Bangkok in 1972 to be closer to her husband, Larry, who was flying Stingers at Da Nang.

Two of the panel's speakers are relatives of Airmen who went MIA in Vietnam and are now the namesakes of Air Force awards. One was Janine Sijan-Rozina, who was 13 when her older brother Lance P. Sijan was shot down over Laos in 1967. Gravely injured, he spent 45 days surviving the jungle before he was captured by the North Vietnamese. After enduring nearly a month of abuse and torture at Hỏa Lò Prison (the "Hanoi Hilton"), he eventually died—but the complete story of his heroism was yet untold.

"The first time I heard the words 'emaciated,' 'interrogated,' 'tortured,' was when he received the [posthumous] Medal of Honor in the White House and I was sitting as a 22-year-old, I believe, listening to the citation. Nobody had told us his story," Sijan-Rozina said. She has since taken it upon herself to be the "gatekeeper of his story," and spent 10 years creating a documentary about her brother and his service in Vietnam, which was screened at AFA's tent.

The other speaker was Colleen Shine, whose father Anthony C. Shine was shot down on the border of North Vietnam and Laos in 1972. His fate was unknown for 24 years, and although officials were looking for his remains, it took his family to discover the true story.

"While the Air Force might love these men, and the Department of Defense might love them, they don't love him as much as we do. So we got vocal. We got active," Colleen Shine said. She also emphasized her involvement in Air Force Families Forever, a continuing care program that connects the families of fallen Airmen and Guardians to foster a community of resilient survivors. In fact, Shine introduced Sijan-Rozina to the program just two days before the Vietnam 50th Commemoration—just one example of how the gathering helped salve 50-year-old wounds.

"The personal connections made during this engagement were astounding," said Linda McMahon, a member of AFA's Field Council who is serving as the Vietnam 50th Steering Committee's Chief of Staff. "I feel privileged and humbled to have been a part of this mission to our fellow veterans."

On the second day of the event, AFA moved to the big stage for an all-service panel of retired four-star officers—all Vietnam veterans—assembled by AFA's Steering Committee and moderated by Vernamonti. The panel included the 15th Chief of Staff of the Air Force Gen. Ronald R. Fogleman; the 26th National Guard Bureau Chief and former AFA President Gen. Craig R. McKinley; the 33rd Chief of Staff of the Army Gen. Dennis J. Reimer; Navy Adm. Michael G. Mullen, the 17th Chairman of the Joint Chiefs of Staff; and the 23rd Commandant of the Coast Guard Adm. Thad Allen.

"I was honored to serve. I am still honored to come to meetings like this and look at young men and women, and people who are our age, and thank you for what you do," said McKinley, who also serves on AFA's Senior Leader Advisory Group. "I think Jim Mattis may have said this, there's no God-given right that this country will survive. We have to fight for it. We have to want to win. And we have to do our part, and I commend everyone in here who has done their part."

"AFA was honored to have been associated with such an outstanding event honoring our Vietnam veterans," said AFA's Chairman of the Board Bernie Skoch. "The panels we hosted were without exception moving and tremendously informative. On occasions like this we are reminded that America owes these brave men and women a debt we can never fully repay."

While the historic event on the National Mall has ended, the commemoration of the 50th anniversary of the Vietnam War's end is continuing throughout the year. The Air & Space Forces Association is commemorating the 50th anniversary throughout its two main conferences, the AFA Warfare Symposium held in Colorado in March and the upcoming Air, Space & Cyber Conference this September.

AFA Chapters around the world are also gathering to honor and remember the heroes, memories, and sacrifices made in Vietnam. To read about their events, learn about upcoming gatherings, and submit your own stories, visit www.AFA.org/Vietnam50.

Vietnam veterans and former service chiefs assembled before speaking at the Vietnam commemoration. From left to right, former National Guard Bureau Chief Gen. Craig McKinley; 15th Air Force Chief of Staff Gen. Ronald Fogleman; former Chairman of the Joint Chiefs. Adm. Mike Mullen; former Coast Guard Commandant Adm. Thad Allen; and former Army Chief Gen. Dennis Reimer led a panel discussion on the legacy of their war experiences. The panel was organized and moderated by retired Col. Len Vernamonti, who chaired AFA's volunteer Vietnam commemoration planning committee.

WHEN PILOTS EJECT, THEY ENTER A NEW FIGHT - SURVIVAL.

NEXT GENERATION SURVIVAL RADIO

During future high-end combat operations, isolated pilots will need to be located and connected with rescue forces immediately. And if incapacitated, pilots will benefit from our Next Generation Survival Radio's automatic activation upon ejection and water entry.

Small, light-weight, rugged, and easy to use with long battery life, Elbit America's Next Generation Survival Radio provides secure, low probability of detection and reliable two-way communication in contested, degraded environments.

The future of survival radios is here.

EVOLVE WITH US | tacticalcommunications@elbitsystems-us.com

Elbit**America.com**

Elbit Systems of America

MISSION READY MEANS

PREPARING WARFIGHTERS FOR ANY SITUATION

The ability to rapidly update and deploy live, virtual, constructive (LVC) solutions that deliver global, persistent, cross-domain training networks and simulation frameworks ensures warfighters are prepared for any situation. HII's enterprise LVC synthetic training environments deliver high-fidelity, next-gen technology, enabling warfighters to train like they fight.

HII

HII.com