

The New National Defense Strategy 08

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AIR & SPACE FORCES

November 2022 Vol. 105, No. 11 airandspaceforces.com

Staff Sgt. Dave McLeod via National Archives

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U.S. Air Force Chief of Staff Gen. Larry D. Welch, left, talks with enlisted personnel during a visit to Charleston Air Force Base, S.C., July 17, 1986.

ON THE COVER



Illustration by Eric Lee/staff

Moving data from and through satellites for moving targets and other uses is one of the key objectives of joint all-domain command and control. See "The Way Ahead for JADC2," p. 48.

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Maneuver Space

The unclassified version of the Biden administration's long-awaited National Defense Strategy released Oct. 27 doesn't contain any great revelations, but change is there in subtle ways. The language of defense is changing.

"Strategic competition" is out, appearing just once. China as "the pacing threat" is in. So is Russia as an "acute" threat, the terminology seeking to capture the currency and intensity of the threats posed by Russia's ongoing war in Ukraine and its spillover effects in Europe and across global food and energy economy.

"Space domain," entirely absent in the 2018 document, appears five times. "Integrated" appears 21 times compared to just once in 2018; "joint" 35 times vs. 21; and "resilient" and "resilience" 28 times combined in 2022, nearly triple the 2018 usage.

Focus changes the way we see things.

In Ukraine, SpaceX's Starlink satellite network has proven crucial to that nation's resilience under attack by bigger, better-equipped Russian forces. Starlink is every bit as important as U.S.-made HIMARS precision artillery systems. Starlink has kept Ukraine's command and control, communications, and intelligence operating even in the face of intense cyber attacks. Those videos we see of precision bombing runs over forests in Eastern Ukraine, or HIMARS strikes against Russian forces are made possible by satellite communications.

No surprise, then, that the NDS mentions threats posed by Russian and Chinese counterspace capabilities four times.

Both China and Russia have proven they can destroy things in space, and neither seems particularly concerned that such acts threaten to turn space into a swirling junkyard of wayward projectiles slinging their way about Earth at 17,000 miles per hour. We can hope for and strive for a rules-based order of international norms to keep space safe and peaceful. But we can't bet our future on that hope.

Thus, the Space Force enters a very critical period. As it concludes the incubation phase under its founding father, Gen. John "Jay" Raymond, it is launching into its first stage of maturity under the second Chief of Space Operations, Gen. B. Chance Saltzman. Just 53, Saltzman moves up from his role as Deputy CSO for Operations, Cyber, and Nuclear. He is a career operator, Weapons School grad, and former Combined Force Air Component Commander at U.S. Central Command, a planner experienced in both the field and the Pentagon.

He will have to grow the Space Force into a full-fledged military service, while still holding to its entrepreneurial roots and objective: to be a 21st century service component unconstrained by 75 to 250 years of history, tradition, doctrine, and structure. He will also have to articulate for the public—loudly, clearly, and with less constraint—the purpose of an independent Space Force.

Most Americans still don't understand why we have a Space Force; many don't realize the service exists. Too much talk about the Global Positioning System and how the Space Force tracks space junk diminishes the message. Those missions could be assigned anywhere.

Given his experience, the CSO is well-armed to make the case for the reasons we have a Space Force, which is about the requirement to be able to operate—*fight*—from, in, and through space. America didn't create an Air Force to get troops and gear from Point A to Point B. We don't have a Navy to ferry people across oceans. These

are important warfighting missions—the Army can't operate without airlift and sealift—but the Air Force's *raison d'être* is to fight in the air, from the air, through the air. Having that capability is key to deterring war in the skies. Having a Space Force is crucial to deterring war in space.

Saltzman inherits the foundational work Raymond did to establish the form and cultural norms of the new service: organizations, ranks, uniforms, the song, and a unique patching ceremony that connects new Guardians to others who have come before them. That means he's free to focus on next stage projects, especially empowering the Space Force to operate as an equal partner at every level of the defense establishment.

The Space Force needs the scale and means to assert authority. This is not just about money, though that is important. And it's not about numbers of people. It's about establishing world-leading expertise. Here we can draw on a lesson from former Air Force Chief of Staff Gen. Larry D. Welch. In a recent interview, Welch recalled being a member of the mid-1990s Commission on Roles and Missions of the Armed Forces. The question arose: Did the nation really benefit from establishing an independent Air Force or might it have done just as well had the component remained part of the Army?


The Roles and Missions panel was a cross-service group, with every military service represented, and their conclusion was unequivocal, Welch said. "It would have been a disaster. If you didn't have a service, a professional corps that was focused on

operating in, through, and from that domain, we never would have developed anything like the range of capabilities that now are available—not just to the Air Force—but to the other services."

That is why we have a Space Force. To achieve that won't take a whole lot more people than currently planned, about 11,000. But who those people are, and what's on their shoulders will be key. The Space Force needs more clout. Rank and tenure are real currency in the Pentagon, and without them you are a bit player. As long as the Space Force lacks enough senior officers to match up with the other services in joint meetings and the like, it will be a poor stepsister.

If the Space Force sends a colonel to a meeting of two-star generals, the message is it's not a serious player. And with too many leaders double, and even triple-hatted and stretched too thin, the Space Force leadership may lack the bandwidth to stay in synch with its sister services. This is not sustainable. The Space Force needs a force structure that looks like its Delta logo, tall and narrow; the Army needs a pyramid that's wide and squat. These are the structures right for the domains and challenges each service has.

An Army Brigade Combat Team has 4,500 people and is commanded by a colonel. A Navy Carrier Strike Group might have 7,500 people under the command of a one-star rear admiral. The Space Force might have units with a few dozen or maybe a few hundred people headed by a one-star. So be it. That's what technology and automation can do. Amazon Web Services and Microsoft operate data centers as large as car factories, processing enough data to let whole cities stream Netflix at once, but they employ just dozens in each center. Car factories have more touch labor and employ thousands. But both models make sense for the mission.

Free the Space Force. Give it the maneuver room to build a leadership structure that works. 

The Space Force needs the scale and means to assert authority.

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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.

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Risky Space

The article ["Targets in Space," September, p. 36] spoke to kinetic and nonkinetic risks to military and commercial satellites and called for international cooperation on a number of fronts. Sadly, author Amanda Miller missed a great opportunity to discuss a prime example of such cooperation in space by failing to mention NASA's DART mission to the double asteroid system known as Didymos with its orbiting moonlet, Dimorphos. While the asteroid was no immediate threat to the earth, the DART mission was a proof of concept experiment to gather data useful in possible future intercepts of asteroids on collision paths with the earth.

On Sept. 26, 2022, the 10-month mission resulted in a spectacular kinetic strike upon the moonlet. The last three photos sent by the 1,345-pound impacting probe were absolutely stunning! Further, the 31-pound LICIACube satellite (which had hitched a ride upon DART until it separated 15 days prior to impact in order to establish itself in a relatively safe 600-mile orbit around Didymos) followed up with even more stunning photos of the impact. The LICIACube was manufactured by Italy. What better example of international cooperation could there be?

Capt. S. John Facey,
USAF (Ret.)
San Antonio

"Targets in Space" by Amanda Miller raised an interesting thought. According to Britannica.com, "As of 2021, the United States Space Surveillance Network was tracking more than 15,000 pieces of space debris larger than 10 cm (4 inches) across. It is estimated that there are about 200,000 pieces between 1 and 10 cm (0.4 and 4 inches) across and

that there could be millions of pieces smaller than 1 cm. ... Objects below 600 km (375 miles) orbit several years before reentering Earth's atmosphere. Objects above 1,000 km (600 miles) will orbit for centuries." Every time a satellite reaches orbit, more "orbital buckshot" is generated, and when satellites collide either with each other or with pieces of this debris, the number of objects traveling at 17,000 miles per hour-plus increases dramatically.

This poses a problem for both manned and unmanned space ventures. Orbiting debris has already collided with the International Space Station, and as the density of debris increases there only be more such potential disasters.

The Space Force could play a crucial role in reducing this space trash. Light carries momentum, and when it is absorbed by or reflects off objects some of that momentum is transferred to the object. A powerful laser in orbit could therefore de-orbit a lot of the smaller junk. The Space Force could markedly reduce the amount of space trash while honing its skills in tracking and illuminating objects for tomorrow's space conflicts while doing a truly useful task today. Yes, there are those who would claim that the real intent was to introduce a satellite-blinding weapon into space, and while it's true that the same laser that could illuminate a piece of space junk to de-orbit it could also be used to blind a spy satellite. But, so be it. The Space Force should not miss an opportunity to prepare for tomorrow's space conflicts while doing a truly useful task for all spacefaring nations today.

Col. Terrence Jay O'Neil,
USAF (Ret.)
Johnson City, Tenn.

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.

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Democratic Republic?

I have been an AFA life member since 1976 and like the new AFA magazine title. It supports reporting air & space operations to the membership. Well done.

And Tobias Naegele's "National Treasure" [September, p. 2] is on point except for one thing, mentioning "our democratic republic." Our federal government is a democratic nothing. It is a pure republic, or at least it is supposed to be.

When the founders organized the original United States, they knew the average citizen did not have enough <fill in the blank> to legislate the Union's actions effectively. Those that did would be chosen to represent the state's citizens in federal matters. And it was thought that they would not be elected but selected by the state leadership for the citizens of that state.

Over time, and especially since the mid-1890s, the democratic party has commandeered the use of democracy to represent our federal system of government. I discovered this while researching a book I wrote on War Department Technical Manual 2000-25. The title of my book is "Citizenship 1928."

You could argue semantics, but I know the truth. We are a republic at the federal level. That we have morphed into a democratic anything is the result of years of effort by the democratic party.

Please stop using any modifier to describe our national government. It's time to go back to the republic.

Maj. James L. Tippins,
USAF (Ret.)
Rockledge, Fla.

Slow Burn

For several reasons, I kept getting angry while reading your recent issue ["Raptor Rebellion," September, p. 40].

I got to pondering why the solution to the fact of the F-22 fleet being too small to efficiently upgrade is to retire more of them. Something has been "not right" about the treatment of the F-22 program for decades now.

I got to revisit the lamentable days of the Moseley/Wynne firings by acclaimed Secretary of Defense Robert Gates over "Next-war-itis." Well, whatever that term means, it looks like we're nearly there 14 years later in the Taiwan Straits with a too small fleet of fifth-gen fighters. Remind me again why Gates is so acclaimed.

Finally, I was left again to wonder why there's not a boomer "lying face down in the rear and looking out the back" of the KC-46. That video system sure is going

great, huh?

I haven't even mentioned the whole sequestration fiasco.

MSgt. Bill Brockman,
USAF (Ret.)
Atlanta

Help for Ukraine

In 2014 when Russia annexed Crimea the U.S. thought it would be able to persuade Russia to give it back to Ukraine, whose nukes were snatched by the U.S. (which has emboldened Russia to invade Ukraine) and whose territorial integrity's protection is the responsibility of the USA under 'Budapest Memorandum 1994.' On the contrary after eight years after recognizing the independence of Donbas (Donetsk & Luhansk) on Feb. 21 and after entering Ukraine militarily on Feb. 24 (killing many innocent Ukrainians) now Russia is the assimilating Donetsk, Luhansk, Zaporizhzhya and Kherson regions of Ukraine through referendum under coercion of Russian military.

If the people of the U.S. are left with any sense of sanctity and responsibility toward international political commitments of the U.S., then in the 2022 congressional elections they should send only those political parties to both the houses of the U.S. Congress that will authorize the U.S. President to wage war (assisted by U.S. allies) against Russia under the War Powers Act for protecting the territorial integrity of Ukraine (by getting all Ukraine's territory back from the possession of Russia).

Hem Raj Jain
Shakopee, Minn.

Remembering Korea

I'm pleased—and honored—to share my birth anniversary with the USAF, although I do predate it by a few years.

I'm 93.

I was privileged to serve on Active duty with the 131st Fighter Bomber Wing during the Korean conflict at Bergstrom Air Force Base, Texas, and George Air Force Base, Calif.

I found Doug Birkey's article "Air War Over Korea: Lessons for Today's Airmen" [August, p. 86] most interesting—probably because I was quite close to it. The aircraft photos on p. 86 and 87 are those our pilots flew when MOANG was activated in 1951 and what we then used after deactivation. Formidable aircraft!!!

G.B. (Jerry) Ketcherside,
USAF (Ret.)
Phoenix

More on Chiefs

Just finished the September issue. Although I really enjoyed "Chiefly Speaking," [p. 52], it did give me some pause in two areas. It's fair assessment that the Air Force was not a fan of then Secretary of Defense Gates, which is clear in the article. The other issue (for me) is that while part of my job was assisting with AEF rotations of Reserve Aeromedical Evacuation personnel, I kept seeing stories in the open press about how well the Air Force was supplying the deployed troops via airlift.

At the same time, my then-Active duty son (also in the Air Force) was driving convoys in Iraq. The practice of vehicle operators began under Gen T. Michael Moseley and continued under Gen. Norton A. Schwartz. Just my opinion, but this is a textbook example of "mission creep."

Col. John M. Starzyk,
USAF (Ret.)
Summerville, S.C.

Gen. Mike Ryan should go down in our Air Force history as the top Chief in the 20th century!

In 2001, Mike led the charge in the Joint Chiefs of Staff and on the Hill to fix the TRICARE program and create the TRICARE for Life program. Not a one-year budget fix ... an entitlement health care program for life!

Working closely with Sen. John Warner on the Senate Armed Services Committee, Mike championed the TRICARE for Life entitlement program, which covers all retired service retirees for life. One can talk about how the former Chiefs worked hardware issues, F-15s vice F-35s, but Mike was the JCS champion that made a lifetime change for the entire military establishment! Thanks General Ryan!

Col. Alex "Zak" Zakrzewski Jr.,
USAF (Ret.)
Satellite Beach, Fla.

Plane Talk

I know that navigators have been replaced by technology as USAF aircrew members, but thousands of us were trained in the T-29A Flying Classroom and its replacement the T-43, and these aircraft were omitted from the trainers section of your August issue ["75 Years of Innovation in Flight," p. 62].

In addition to being used by the Air Training Command to train Navigators, the the T-29 was also used at Maxwell Air Force Base, Ala., and at other places back when we all had to get at least four

hours flight time to get our flight pay.

Lt. Col. Paul O. Kronbergs,
USAF (Ret.)
Austin, Texas

Like it or not, the F-35 is the replacement F-16. We may still be buying them in 2030 ["World: Modernization: Air Force Keeping F-16s, For Now," September, p. 25].

If USAF tries to simultaneously develop the NGAD and an MR-X, there will be no NGAD. The supposedly cheaper, foreign-military-sales candidate will usurp the real air-superiority fighter—as the F-16 did the F-15 and the F-35 did the F-22.

Col. Ron Andrea,
USAF (Ret.)
Glen Allen, Va.

On p. 80 of the August issue ["75 Years of Innovation in Flight"], the name associated with the C-32A is "Air Force Two." This is incorrect. When I was the C-32 Acquisition Program Manager at Andrews Air Force Base, Md., in 1997, we held a basewide naming contest for the upcoming new aircraft. The 89th AW/CC, Brig. Gen. Arthur "Art" Lichte and the 89th OG/CC, Col. Randy Larson went through all of the entries and they chose the appropriate one for this airframe. They named it the "AMBASSADOR." The "Air Force Two" call sign one applies to only one of the aircraft's many potential passengers. Like Air Force One, the call sign stays with the passenger on whatever Air Force Aircraft the VPOTUS flies on; whether it is an C-21, C-32, or a B-2. This aircraft today, as noted in your article, is routinely used as "Air Force One."

Also, the date associated with the C-32A is wrong. I flew the first C-32A, tail# 98-0001, from Boeing Field to Andrews on June 22, 1998, on its delivery flight to the Air Force. Just six weeks later, on Aug. 4, 1998, I flew the first "Air Force Two" mission on a C-32A on that same tail number. Our passenger was Vice President Al Gore, and we flew him from Andrews to Allentown, Pa., then to Philadelphia, and then back to Andrews on the same day. So the year of the C-32A Acquisition was 1998—the same year as it's IOC with the 89th AW.

The base model airplane, the Boeing 757-200, went operational in 1982 so I don't know where your "1975" year came from. For the technical geeks out there, the USAF C-32A is a Boeing 2G4 aircraft and four of them were produced on the

contract with the Air Force.

Lt. Col. Karl Blackmun,
Former 89th AW
USAF (Ret.)
Minden, Nev.

Joint Powers

I agree totally with Lt. Gen. Deptula, USAF (Ret.) and Col. Mark Gunzinger, USAF (Ret.) in their article entitled "Rebuilding America's Air Power," [September p. 60], on how Congress and DOD should fund and rebuild the Air Force. The problem with Congress is politics; the problem with DOD is parochialism; and the problem with the Air Force is leadership acquiescence. So how do you achieve the goals identified by the authors?

I think all of the goals the authors list are attainable through the joint system rather than just a purely service system. In my 44.5 years doing Air Force planning through the joint operations planning system, I often saw other service officers support Air Force weapons systems while I saw Air Force officers kill off air force systems. Granted, aircraft that carry more air-to-ground weapons survive better than purely air defense aircraft. But, that's nothing the air defense folks cannot handle with dual purpose aircraft and munitions.

Basically, I would suggest DOD be encouraged to reinstate a joint operation planning system, whereby intelligence determines the threat, operations determines the weapons systems to fight the threat, and planners establish the execution. Shortfalls in weapons, munitions and personnel should be identified in the joint theater plans where funding should be programmed and allocated as required.

To accomplish the goals stated in this article, when COCOMs do not have an Air Force four-star commander, I suggest the Air Force assign four-star generals as deputy commanders of the major COCOMs. Some of the "non-warfighting" Air Force majcoms would have to do with three-star commanders, but that has been done before. If the Air Force cannot perform its assigned missions for any given joint operation plan due to a lack of Air Force resources, it's on the joint command system, Congress or the DOD, and not the Air Force. Not a cop-out, just fact.

Lt. Col. Russel A. Noguchi,
USAF (Ret.)
Pearl City, Hawaii

Khobar Towers and More

I spent 34 years on Active duty and

since my blood flows Air Force blue I have been a member of the AFA for all that time and in retirement, so I look forward to the AFA posts on the Internet and the magazine.

I am going to really vent later so first I will complement on this issue (August 2022). I liked the pictures of the airplanes since I flew many of them. I liked the tracing of USAF Chiefs of Staff. Tony McPeak was a contemporary. He was "different." But I want to skip ahead to Ron Fogleman and the Khobar Towers.

I flew with the RSAF in both the F-5 and the F-15. They did a lot of ACM down over the Southeast part of the country known for many years as the Empty Quarter. No problem with air traffic control.

The Saudi Royal family had to find a slick way to transfer money from the government to them and it worked very well. The government would give them land in half dozen cities and they would hire a contractor with a large kickback to build high rises for the Bedouins. The Bedouins didn't want to move in because there was no second elevator for the women or their goats so we referred to them as "The Empty Quarters."

When I was asked to confer on U.S. loads to Saudi if we were needed, I said why bring tents and stuff since there were perfectly good quarters with water, electricity and all, which I thought would be available if we were invited to come, but this was a sensitive issue as they worried that we might try to take over the oil fields as a safety concern and we were still considered to be an enemy because of the Jihad declared against Israel and its allies. We had to take the role of a contractor to satisfy the religious folks.

So that's why Khobar Towers came on the scene. The attack occurred many years after I left, but I sympathize with Brig. Gen. Terryl J. Schwalier, who was made the scapegoat for political purposes. Ron put in for early retirement as Chief and no matter how he calls his action, the Air Force folks respect him for it.

Lt. Gen. Spence M. Armstrong,
USAF (Ret.)
Fort Belvoir, Va.

Correction:

The August Editorial, "Milestones" incorrectly characterized the risk faced by Airmen flying in the Vietnam War. More than twice as many Airmen were killed in Vietnam—2,580—compared to the Korean War, which cost 1,180 Airmen their lives. The error has been corrected online. Thank you to alert reader Lt. Gen. Spence M. Armstrong for alerting us to the mistake.

Hear, See, Shoot



Ukraine Ministry of Defense/Twitter

"There was very little time to make a decision. We heard it, we saw it, then we opened fire."

—Sgt. Oleksandr Kravchuk, Ukrainian police shooting instructor, one of three policemen who used AK-47 rifles to shot down an Iranian-made kamikaze drone in Ukraine [The New York Times, Oct. 23].

WAR STORIES

"You can just turn on any news channel of choice and see the company name Maxar when the broadcaster is giving us an update on Ukraine. And there are several other companies there as well. We are learning from this crisis that commercial companies are in it—they are in the fight. I mean, they are not turning tail. When we first started talking about how commercial could be integrated with the military or defensive operations, you know, the thought was, gosh, will they still be there when the bullets start flying? You bet. You bet they will be because just look around—they are today."

—Space Force Lt. Gen. Nina Armagno at the AIAA ASCEND Conference [Oct. 24].



China National Space Administration

The Threat from China

"It's serious, and they're really good. It's not a good situation. Anybody who thinks 'it's fine,' you're wrong. It's not fine. It's bad. It's bad in space, it's bad in cyber, it's bad in [electronic warfare]. ... For the last 20 years, China's been gaining on us in all these areas...We have to take the gloves off, and we are taking the gloves off. We can't just deal with this on the margins.... [What the Ukraine experience tells us] is, we can't just think of this stuff as something that might happen five or 10 years from now. Think about what if something happens next year? Or next month? ... [China] can do the kill chain. They've figured that out...We have a lot to do."

—William A. LaPlante, undersecretary of defense for acquisition and logistics, at a Potomac Officers Club acquisition seminar, Oct. 25, 2022

.... Oops



CNA

"It's very disturbing, because the bottom line is that technology that can be used for military hypersonics was funded by U.S. taxpayers, through the U.S. government, and ended up in China."

—Iain Boyd, Director, Center for National Security Initiatives, University of Colorado at Boulder, commenting on U.S. technology being used to advance China's military hypersonics program [Washington Post, Oct. 22].

HANDLE WITH CARE ...

"When it comes to technology, the politically motivated actions of the Chinese state is an increasingly urgent problem we must acknowledge and address. ... That's because it's changing the definition of national security into a much broader concept.

Technology has become not just an area for opportunity, for competition, and for collaboration, it's become a battleground for control, for values, and for influence."

—Jeremy Fleming, director of Government Communications Headquarters, Britain's cyber-intelligence agency, accusing China of trying to "rewrite the rules of international security" [APNews, Oct. 12].

Give it All You've Got



Mike Tsukamoto/istaff

"Some of our satellites are the fat kids in gym class. We need to make sure that we have a resilient force and not so many fat kids—although those are really capable fat kids."

—Maj. Gen. Douglas A. Schiess, Commander, Combined Force Space Component Command, U.S. Space Command; and Vice Commander, Space Operations Command, comments in a discussion about space operations [ASC22, Sept. 19].



SpaceX

A LITTLE GOES A LONG WAY

"How many Starlink satellites have the Russians shot down? ... Zero."

—Derek Tournear, director of the U.S. Space Force's Space Development Agency, on the advantages of a proliferated network of small satellites over conventional "Battlestar Galactica" satellites, while speaking at AFA's Mitchell Institute's first Spacepower Forum, Oct. 25, in Arlington, Va.

By John A. Tirpak and Chris Gordon

The New National Defense Strategy

China openly aims to be the world's greatest military superpower by mid-century, and the new National Security Strategy explains how the U.S. should counter that ambition. These Chinese JH-7A fighter-bombers are quickly being eclipsed by more modern types.



Ge Shuwei/China Ministry of Defense

The new, public version of the National Defense Strategy, unveiled by Defense Secretary Lloyd J. Austin III on Oct. 27, calls out China as the U.S. military's "pacing threat," offers no force-sizing construct nor specifics about numbers of forces the U.S. needs, and focuses attention on NATO, coalition building and partnerships, and deterrence of further aggression by Russia in Europe.

One of the biggest differences between the 2022 National Defense Strategy and the 2018 version put out by the Trump administration is that the new document specifically names China as the main threat against which U.S. forces must prepare, Austin said, with Russia a secondary but "dangerous" concern. The previous NDS referred to engaging in "great power competition" with near-peer nations.

The People's Republic of China "is the only competitor out there with both the intent to reshape the international order and, increasingly, the power to do so," Austin told reporters Oct. 27 at the Pentagon. Russia is labeled an "acute" threat, a word Austin said was chosen carefully to explain that while "Russia can't systemically challenge the United States over the long term," its "reckless war of choice" against Ukraine "does pose an immediate and sharp threat to our interests and values."

The Pentagon also unveiled updated nuclear and missile defense strategies, both of which indicate growing unease about nuclear threats and a fundamental shift in strategic direction for this administration. Unclassified versions of the documents state nuclear weapons underpin U.S. strategic defenses and that America will continue to invest in its nuclear forces.

In his 2020 presidential campaign, President Joe Biden said he would work toward a policy in which the U.S. nuclear arsenal's "sole purpose" would be to deter or respond to a nuclear attack. But his Nuclear Posture Review (NPR) does not take such a step, holding to a policy that suggests nuclear weapons are there to deter and even to respond to non-nuclear attacks, such as by conventional, biological, chemical, or even cyber weapons.

"The NPR affirms the following roles for nuclear weapons: deter strategic attacks; assure allies and partners; and achieve U.S. objectives if deterrence fails," the document states. It does not define a "strategic attack."

According to DOD's new strategies, the U.S. must retain a strong nuclear arsenal and improve its missile defenses.

THE UKRAINE WAR

Austin characterized the Ukraine war as "the worst threat to Eu-

ropean security since the end of World War II," which has made the danger posed by Russia "very clear for the whole world."

Unlike previous strategies, the new NDS contains no pithy force-sizing construct summary, such as the ability to fight "two medium regional contingencies," "win-hold-win," concepts that have been used in the past. The strategy sets no goals for numbers of Air Force bombers, Navy ships, Army divisions, or other benchmarks of military capability. Defense officials, however, said there are "strong linkages" between the strategy and the fiscal 2023 defense budget request and future investments.

A senior defense official briefing the press ahead of the rollout said the department continues to wrestle with how deterrence will work in a world with three major nuclear and conventional powers. The old models of deterrence in a bi-polar world were developed over decades of study involving academia, he said, so the new model will take some time to develop.

"This is new territory for us," he said.

As for a force structure model, the official would only say the strategy seeks to answer the question: "How do you successfully fight one adversary while having enough reserve to hold the other at bay?"

Another official said force sizing is being shaped by the Joint Warfighting Concept activities and cited the Marine Corps' "Force Design 2030" study as an example of "creative" work to envision future requirements.

Austin said there are "incremental adjustments from time to time to that force posture," but that he is satisfied with the services' "ability to rapidly deploy capability to Europe—and you saw that exercise at the very beginning of this conflict, as we deployed ... heavy forces from the United States to Europe very, very quickly."

That was possible thanks to the European Defense Initiative, he said. "We're confident that we'll have ... the force to be able to execute our strategy."

The long delay between the "interim" NDS released in 2021, the classified version sent to Congress in March, and the unclassified version released Oct. 27 was attributed to "assessing the calculus" of how things have changed due to the Ukraine conflict, senior defense officials told reporters on background. However, they also said that analysis "validated" the assumptions and concepts developed before the Ukraine war started, and that the NDS has remained largely intact despite it.

The text of the NDS also says that while the U.S. is structuring for deterring China and Russia, it will also be able to undertake smaller

military actions without degrading overall deterrence capability.

Austin said the classified version of the NDS “has been our North Star” since it was delivered to Congress and that it provided the foundation for the fiscal 2023 budget. The Pentagon has been “laser focused” on the China threat “since Day One,” and Austin noted that he set a China Task Force early in his tenure to “produce a range of recommendations to focus the entire department on the China challenge.”

THREATS

The NDS is also “very clear-eyed about other serious threats,” Austin said.

“That includes North Korea’s expanding nuclear and missile capabilities. And meanwhile, Iran is moving ahead on its nuclear program, supporting dangerous armed proxies and even exporting drones that Russia is using to terrorize Ukrainian civilians.”

The Pentagon also remains “vigilant against the ongoing threat from global terrorist networks as well as from climate change, pandemics, and other dangers that don’t respect borders,” Austin stated.

Broadly, the strategy aims, in order, to defend the U.S. homeland; deter strategic attacks against the U.S. and its allies; “prepare to prevail in conflict when necessary;” and “build a resilient joint force and defense ecosystem,” Austin explained.

In service of those goals, the NDS touts “integrated deterrence,” referring to integration among the services, with other parts of government, and with allies and partners.

The strategy calls for investments in capabilities and technologies that “strengthen the 21st century combat-credible U.S. military” by making it “ready to tackle the full range of threats,” Austin said.

Austin also said the NDS “emphasizes the day-to-day work of ‘campaigning,’” which he defined as “conducting and sequencing military activities that, over time, shift the security environment in our favor.” Such activities include U.S. exercises, deployments, and wargames held with allies and partners to cement relationships with them and to develop joint strategies.

The “seamless integration” of U.S. capabilities “across all domains ... and theaters ... [and] the full spectrum of conflict should make it “crystal clear to any potential foe” that “the costs of aggression against the United States, our allies, and partners far outweigh any conceivable gains,” Austin said.

NUCLEAR FORCES

The Nuclear Posture Review makes this much plain: “As long as nuclear weapons exist, the fundamental role of U.S. nuclear weapons is to deter nuclear attack on the United States, our allies, and partners. The U.S. would only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its allies and partners.”

To achieve its objectives, the U.S. will modernize its nuclear forces the review promises, noting DOD will “fully fund” and field the Long-Range Standoff weapon, B-21 Raider nuclear-capable stealth bomber, and Sentinel intercontinental ballistic missile. The stealth F-35A Lightning II will become a “dual-capable” aircraft that can carry nuclear or conventional weapons.

The Long-Range Standoff weapon (LRSO) will be introduced and be able to be deployed from F-35s. The LRSO will replace the AGM-86 air-launched cruise missile.

The LGM-35A Sentinel, formerly known as the Ground Based Strategic Deterrent (GBSD), will replace the current Minuteman III ICBM “one-for-one” to “maintain 400 ICBMs on alert.”

The B-21 Raider stealth bomber will replace the B-2 Spirit, and the review promises the Air Force will acquire at least 100 B-21s and upgrade its fleet of decades-old B-52 Stratofortress bombers.

The U.S. will field the updated B61-12 nuclear gravity bomb and invest in its aging nuclear infrastructure. “Although the U.S. nuclear

arsenal remains safe, secure, and effective today, most systems are operating beyond their original design life, risking system effectiveness, reliability, and availability,” the Defense Department said in a fact sheet accompanying the release. “Today, much of the U.S. nuclear stockpile has aged without comprehensive refurbishment even as the geopolitical environment has deteriorated.”

But the nuclear-armed Sea-Launched Cruise Missile-Nuclear (SLCM-N) program is to be canceled, a reversal from the Trump administration position. The U.S. also plans to retire the B83 nuclear gravity bomb along with the B-2.

ALL IN ONE

The NDS, NPR, and Missile Defense Review were released “for the first time” as a fully integrated package, Austin said.

The Defense Department sees nuclear weapons threats from China and Russia as problematic, given their substantial missile capabilities. Since DOD last issued a Missile Defense Review, also known as the MDR, in 2019, “threats have rapidly expanded in quantity, diversity, and sophistication.”

DOD says ballistic missiles, cruise missiles, hypersonic weapons, and uncrewed aircraft systems represent a significant threat to America’s security interests. China and Russia, and to a smaller extent North Korea, represent a risk to the U.S. homeland.

The Missile Defense Review says any attack on the U.S. territories would not be distinguished from strikes on American states. The U.S. island of Guam is a major military hub in the Western Pacific that may be within range of Chinese missiles.

“Within the context of homeland defense, an attack on Guam or any other U.S. territory by any adversary will be considered a direct attack on the United States, and will be met with an appropriate response,” the document says.

DOD acknowledges that its current missile defense is not comprehensive enough and that the U.S. must develop improved integrated air and missile defense systems. The threat from cruise missiles is particularly acute, the MDR says.

“Gone is the primary focus on rogue state ballistic missiles that defined the 2010 review and programs and budgets for years following,” Tom Karako of the Center for Strategic and International Studies said in an interview.

A VIEW TO 2030

Much of the NDS is oriented around the world as it will look in 2030. In the introduction, Austin echoes President Joe Biden’s National Security Strategy comment that this is a “decisive decade.” Asked how the NDS is gauged to react to nearer-term threats—particularly the threat of an invasion of Taiwan by 2027, or even next year—a senior defense official said, “we really tried to look across time periods” and to develop a strategy across three successive Future Years Defense Programs, which are five years long. The NDS sets a framework for “evolving” forces and capabilities with new investments, the official said.

“We’ve really tried to balance our approach to risk across all of those and across the entire joint force,” he asserted. “And I think if you look through the ... President’s budget submission from last March, I think you’ll see this is pretty nicely done, right? You see a really big emphasis on building a combat-credible force. You also see an emphasis on readiness, for example,” with \$135 billion earmarked for readiness accounts.

The fiscal 2023 budget request “included more than \$56 billion for air power platforms and systems,” Austin said, “and more than \$40 billion to maintain our dominance at sea, and almost \$13 billion to support and modernize our forces on land,” with another \$34 billion “to sustain and modernize our nuclear forces.” He touted the \$130 billion the administration sought for research and development, “the largest R&D budget number in DOD history.”

External aircraft fuel tanks are arranged on the vertical tank storage system in an 18th Component Maintenance Squadron fuels building at Kadena Air Base, Japan. The high-density storage system requires approximately 88 percent less space per tank than horizontal storage.



Cadet First Class Tatum Boldt participates in the Commandant's Challenge at the U.S. Air Force Academy in Colorado Springs, Colo., in October 2022. The challenge is an annual event at the Academy focused on military training, warrior ethos, and teamwork. Women make up a substantial portion of Academy enrollment; the Class of 2026 is 28.5 percent women, down from 29.7 for the Class of 2025.

The Aero Spacelines "Super Guppy" made a VERY rare stop at Tinker Air Force Base, Okla., on Oct. 18, 2022, for some gas on its way to Florida. The NASA aircraft was delivering an Orion Heatshield for a mission expected a few years from now. The Super Guppy's enormous cargo bay, with 39,000 cubic feet of usable space, is 26 percent larger than that of the C-5 Galaxy.



Mark Hybers/USAF

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- Mobile nuclear power



INNOVATING FOR FREEDOM

Expanding Partnerships



Staff Sgt. Drake Layman

Lt. Gen. Alexis G. Grynkeiwich at Al Udeid Air Base, Qatar. Grynkeiwich feels that partnerships are key to the CENTCOM region.

Lt. Gen. Alexis G. Grynkeiwich leads Air Forces Central (AFCENT), a post he assumed in July 2022 following a two-year stint as Director of Operations at U.S. Central Command (CENTCOM). While global attention has shifted away from U.S. wars in the Middle East, Grynkeiwich's forces support the ongoing fight against ISIS as part of Operation Inherent Resolve. He spoke to Air & Space Forces Magazine in late September during a visit to the Washington, D.C., area to participate in the International Air Chiefs Conference and AFA's Air, Space & Cyber Conference.

Q: You've stressed the importance of partnerships since taking command. What steps are you taking to expand and further those partnerships?

A: I would argue CENTCOM writ large, and AFCENT as part of CENTCOM, is in this transition phase from a lot of combat operations to some combat operations.

As we start to look at partnerships, it becomes more of a campaign approach outside of combat in terms of how do we stitch together a series of exercises, a series of subject-matter exchanges by our experts, and other partnering events where we might not have an exercise, or maybe it's some other kind of training even on a smaller scale.

There's a campaign plan that we are in the process of fully fleshing out that will define, country by country—multilaterally and bilaterally—here are the things that we would want to accomplish over the next while. We already have a fair amount of that.

We have a couple of different areas that we're focusing on.

One is in the counter-UAS [unmanned aircraft systems] area. ... We do a series of exercises across the region with almost every regional air force, particularly in the Arabian Peninsula and in the Levant [Eastern Mediterranean], where we launch small UAS, and we go out and try to find them as a team, stitching together U.S. capabilities, other coalition capabilities in the area, and then host nation capabilities.

Q: Are you including more partner participation at your headquarters at Al Udeid Air Base, Qatar?

A: We are always encouraging our partners to not just be at Al Udeid, but then looking at how we integrate those partners when they do show up at the CAOC [Combined Air Operations Center]. Some partners are better integrated than others, I would argue, and that's usually not a partner nation issue. It's usually a how we're running the CAOC issue. So I have challenged the team to increase the participation so that we don't just have liaison officers. We certainly need liaison officers and national representatives in the AOC [Air Operations Center]. But we also need people who are fulfilling AOC functions and are fully integrated into the battle room. So that's a key part of it.

Q: Are there any specific exercises that you can point to as a good example of collaboration?

A: A great example is Eager Lion, which we just concluded. It's a joint exercise, but a CENTCOM exercise. Our participation in it was fairly robust. We had JTACs [Joint Terminal Attack Controllers] on the ground, we had a Bomber Task Force mission come in and we expended live ordnance. So a huge

success from an exercise perspective. There's a whole bunch of joint aspects in it. It was focused on a wide range of mission objectives. ... There are few exercises that really have as broad of a swath of objectives and as many participants.

We also do bilateral exercises from time to time. ... We might take off and go fly a mission with the Qataris, let's say, and meet in the airspace and come back down and debrief that exercise, that mission. I flew a sortie out of Saudi Arabia about a month ago, where I was talking to Saudi controllers. It was a counter-UAS exercise. They were practicing vectoring me toward a UAS-threat, and I was practicing trying to find the UAS threat and doing those sorts of geometries. So there's a really robust set of them both bilaterally and multilaterally.

Besides counter-UAS and just these exercises, another big focus is going to be regional air and missile defense and stitching together the awareness that each of the countries have and trying to get shared situational awareness on ballistic missile threats and air-breathing threats, including counter-UAS, but this is not an exercise, this is building an integrated structure where we're sharing radar data across nations and whatnot. It's a really powerful construct, or it has a potential to be, because everyone faces kind of the same 360-degree threat from ballistic missiles that can come out of Iran, they could come out of Yemen, they could come out of Syria, they can come from any direction, same with UAS. So that's a key place. And then the last place is we're standing up a new detachment called Detachment 99. It's going to look at applying unmanned digital and emerging technologies in order to solve some problems about air-domain awareness and integrating joint fires. And that's a collaborative space as well.

Q: What does AFCENT's footprint look like today?

A: I can't go into specifics on the exact numbers. ... I'll tell you how we've tried to define our footprint and what our requirement is. ... Our baseline requirement is to cover Inherent Resolve and make sure that the combat air power is over there for defensive purposes. ... We would like to have some excess capacity to do other partnering events. So we'd like to do high-end training exercises, like those UAS exercises. If someone's flying a defensive CAP [combat air patrol] over Syria, they're not available to go do a counter-UAS exercise, so we need a little bit of additional capacity for that sort of thing.

Q: Do you have that ability?

A: We do. I would say it kind of ebbs and flows as to how much we have. And sometimes we are forced to make trade-offs. ... OK, what's the priority right now? Is it to have a little excess coverage up in the combat area? Or does the situation allow us to not have that coverage.

Q: Israel was recently added to CENTCOM's AOR. How is your relationship there?

A: The AFCENT relationship with the Israeli Air Force is really good. ... They've escorted our Bomber Task Force missions and things of that nature. We look forward to continuing to deepen that relationship. There is a fair amount of crosstalk, a fair amount of strategic level crosstalk, at the CENTCOM level and below too about how do we perceive common threats in the region.

Q: How well have other countries interacted with Israel?

A: Most of the countries in the region look to the east when they think of the threat of Iran and its threat network. I won't go into specifics about which country has what kind of rela-

tionship, but I'll just say that there's a lot of opportunity.

Q: You've kept a close eye on Iran for a while, and you've been in this area for a while. Are you seeing an increased Iranian threat? And without a nuclear deal, will that threat continue to increase?

A: Honestly, I think whether we have a deal or not, the Iranians value the threat network that they've created. The increased threat is related to the increased capabilities that they've provided to these proxy and partner forces. It's related to the training that they've provided them, and the imperfect Iranian control over these groups. So now you have a bunch of very well-armed, well-provisioned groups that could—either under Iranian direction or for their own reasons—decide to lash out in some way. So that's where I see the increase. ... Certainly, the nature of the threat, the strategic threat changes at the nuclear level, but the threat network threat remains. The Iranians will continue to pressure us in the region, continue to pressure our partners, irrespective of a nuclear agreement.


Q: Where do you see your command in a year?

A: Where I would like us to be in terms of our partnerships in the region: to have not just the general officer or air chief level agreement that we're going to cooperate, but then make that into real substantial cooperation and collaboration with our partners. That requires not just the generals getting together, but it requires the majors and lieutenant colonels doing kind of hard technical work on what are the standard operating procedures. How do we make different systems communicate, machine to machine, that different countries own? How do we integrate the air defense picture so we all see the same thing and have a common understanding of threats that different nations are facing? My nirvana would be to have made a ton of progress on that.

Q: You mentioned at the CAOC, the obstacle is sometimes the U.S., not the partner nations. What does that mean?

A: This is a common issue that many other senior leaders have talked about over the years, which is we have a tendency to stamp everything 'no foreign' right off the bat, meaning no foreign national can have access to this without really thinking through the implications, or if that stamp is really appropriate. ... In a situation where you're trying to draw people together and share information and gain common understanding, the moment I stamp 'no foreign' on it, I can't share with anybody.

Q: And the CAOC is 'Combined?'

That's right. The CAOC is the Combined Air Operations Center. Right now, I've got a Canadian who's serving as the CAOC director. I've embedded officers from a whole host of our partners from outside the region and inside the region that are embedded in the CAOC. Every time we put the wrong classification marking on something, I say the wrong one, either because we over classify it by mistake, an error of omission, or because some policy restriction says if you talk about this, you can only about it with these countries. ... That's what I mean by it's kind of us. It's a cultural thing and a policy thing most of the time. ... What I'd say is when you go to the person who has the authority to change that rule, and explain it, they usually do. So you've just got to work through those things. That's almost the easy part. The hard part is, OK, let's get in a culture of sharing. ... How do we make it so we think about working with our partners first? 



What the B-52 Will Look Like After Engine, Radar Upgrades

By John A. Tirpak

The first images of the updated B-52 Strato-fortress, featuring new Rolls-Royce engines, new radar, and a new, streamlined cockpit emerged in October, changes that are significant enough to warrant re-designating the B-52H configurations as the B-52J or K.

Exterior images were rendered from a digital prototyping model, but should closely resemble the final version. The larger-diameter fans in the new Rolls-Royce North America F130 engines are prominent, set higher and farther forward in their nacelles than are the legacy Pratt & Whitney TF-33s that have powered B-52s since 1962. The new engines are set higher to provide more ground clearance. Flight-testing will seek to determine precisely how the new engines and their positioning will change the way the wing and flap system performs.

The aircraft's nose will also be streamlined, losing the blisters that house its forward-looking infrared/

At least some of the B-52 fleet will be operational with both new radars and new engines by the end of the decade.

electro-optical viewing system. The new radar is a variant of the AN/APG-79 in the Navy's F/A-18E/F SuperHornet. The radar will assume some of the functions formerly provided by the FLIR/EO system, while others will be supported by either a Litening or Sniper targeting pod, which the B-52 can carry on a wing pylon.

Inside, the B-52 is getting an updated cockpit, a "hybrid" analog-digital engine control system, communications and navigation enhancements, and the deletion of one crew member station. A digital image of the planned cockpit shows a streamlined appearance with four 8-by-10-inch multi-function color displays and a range of conventional analog gauges.

The center console will feature an updated throttle station to control the new engines, which will be digitally managed.

Boeing described the new throttle system as "hybrid mechanical-to-digital," and listed components including "new data concentrators units (2x), a new engine fault maintenance recorder, new engine air



B-52H's likely future cockpit, after radar and engine modifications have been made to the 60-year-old bomber, as shown in a Boeing graphic.

data system [and] modified system panels, as well as structural, electrical, pneumatic and hydraulic updates associated with this modernization effort."

On the exterior, two large humps on top of the fuselage, near

the wing roots seem larger than any fairings or blisters now in that area, which house GPS and other comm/nav equipment. A Boeing spokesperson declined to comment on the apparent change, but the location and size suggest the potential for a larger, anti-jam GPS antenna.

Given the combined engine/radar upgrades, the changes represent "the largest modification in the history" of the B-52, noted Air Force Col. Louise Ruscetta, senior materiel leader for the B-52, in August. There may be an interim designation because the radar will be installed before the engines and will drive a change in operating and maintenance manuals and documentation. Manuals would change again once the engines are replaced.

The Air Force and Air Force Global Strike Command are still deciding how to define those distinctions, Ruscetta said.

The new radar is an active electronically scanned array type as used by fighters. It will take up far less room than the old mechanically scanned system, so the change will create growth space for electronic warfare functions, Ruscetta noted. At least some of the B-52 fleet will be operational with both new radars and new engines by the end of the decade.

B-21 Bomber Roll Out Set for Dec. 2

Success will determine how soon B-1s, B-2s are retired

By John A. Tirpak

The Air Force and Northrop Grumman will roll out the B-21 Raider, the Air Force's first new bomber since the B-2 Spirit emerged from the same facility in 1988, in December.

The invitation-only event will include Air Force and political dignitaries and a limited number of media. Photography will be permitted, but restricted; both the size of lenses and viewing angles will be limited.

The B-21 must come out of its high-security production

facility to begin outside engine runs and taxi tests in preparation for its first flight, meaning aircraft will be visible from outside the plant in the coming months. First flight is anticipated in mid-2023. The Air Force has previously said six B-21s are in various stages of construction.

When the Air Force awarded the contract for the program—then known as the Long-Range Bomber—in 2015, the service said it would have at least one article ready for operational use in "the mid-2020s." It has not wavered from that prediction. Air Force Global Strike Command

has voiced a requirement for as many as 150 B-21s, but officially, the Air Force's requirement is for "at least 100" of the aircraft.

Meanwhile, plans to retire the B-1 and B-2 bombers hinge largely on how fast the B-21 can be fielded.

"The approach we're taking," said Brig. Gen. (select) William S. Rogers in a recent interview, is to maintain "our current capability and readiness in terms of our near-peer adversary."

Air Force Global Strike Command is "really focused on maintaining that readiness, availability, survivability, and operational capability" of its B-1s and B-2s, he said, "while we get ready for the B-21 fielding."

The Air Force disclosed plans to retire the B-1 and B-2 in its 2018 Bomber Roadmap, targeting the 2031-2032 time frame. USAF has not publicly updated those plans since. At the



The B-21 Raider, here in an artist rendering, is designed to perform long-range conventional and nuclear missions and to operate in tomorrow's high-end threat environment.

time, the Air Force acknowledged a short-term capacity gap; changing security circumstances could easily alter those plans.

The Rapid Capabilities Office, which manages development of the B-21, is taking an “events-based approach” to fielding the new aircraft, Rogers said. “Divestiture planning” must consider “unplanned delays on the B-21 or if things just change.”

He noted that “Congress gets a say in our divestiture plans, but at this point, we’re looking at multiple ... avenues, to make sure the Air Force has the flexibility needed” and to provide as many options as possible for the Secretary of Defense and the President.

Both the B-1 and B-2 suffer from supply chain challenges, and the Air Force Life Cycle Management Center is “working with the primes on parts obsolescence,” Rogers said. In some cases, subcontractors “went out of business.” When that happens, the Air Force must seek form, fit, and function replacements “that may be out there” in the marketplace or new sources if parts must be custom-ordered.

The B-1 and B-2 are doing well in terms of aircraft availability rates—the preferred metric over mission capability rates—and are hitting their goals, Rogers said. B-1 aircraft availability is 42 percent and B-2 availability is 55 percent, he said.

When the Air Force retired 17 B-1s last year, availability surged because incapable aircraft were no longer in the count and more maintainers and parts were available for each remaining airplane.

Results of a B-1B carcass physical teardown as well as a fatigue test on another carcass and the creation of a “digital twin” of the airplane are expected to yield benefits in availability over the long term, as the Air Force moves toward a predictive maintenance model.

Early discussions have taken place about what to do with the B-2 after it’s retired. Due to its sensitive and secret materials, if the aircraft are to be stored, they will need a special

climate-controlled and secure facility for that purpose. The bomber PEO shop is watching to see what the Air Force decides to do with the 33 F-22s it is trying to retire, pending congressional approval. Whatever approach is taken will likely set the stage for B-2 storage, Rogers said.

The B-1 and B-2 have largely completed their modernization programs, but Rogers said the term “modernization through sustainment” summarizes the approach to be taken, which means software updates will take an open approach to make improvements easy to add. AFGSC may yet need improved communications in “a highly contested environment” or advanced weapons.

“Any upgrades [or] mods are really focused on keeping it viable and operationally relevant as needed, until the Air Force makes final decisions on divestiture,” Rogers noted. Major upgrades of aircraft destined for mid-term retirement aren’t affordable right now, so the goal is to only make “wise choices” for inexpensive improvements that can add significant capability “without a lot of development.”

For the B-2, the only new weapon in process is the B61-12 nuclear bomb. There is “not currently a requirement” to outfit the B-2 with capabilities to direct numbers of collaborative combat aircraft—uncrewed, re-usable, or “attributable” air vehicles likely to make up a big part of the 2030s USAF force structure.

For the B-1, however, new weapons are likely, but Rogers couldn’t give details due to classification.

“Anything additional at this time is classified and early in planning. ... At this point, I can’t discuss it,” he said. However, AGFSC has said it plans to fit the B-1 and B-52 with hypersonic weapons. Both aircraft will carry the weapons externally, and the B-1 will carry the AGM-183 Air-launched Rapid Response Weapon (ARRW) on external hardpoints once used for nuclear cruise missiles, when that aircraft had a nuclear mission. ✪

RUSSIA & UKRAINE

NATO, Russia to Hold Nuclear Exercises Despite Tensions

By Chris Gordon

Russia and NATO will go ahead with large-scale nuclear exercises in the coming weeks despite concern over Russian President Vladimir Putin’s hints that the Ukraine war might prompt him to turn to his nuclear arsenal, U.S. and NATO officials said.

The NATO exercise, called Steadfast Noon, involves American nuclear-capable B-52 bombers and fighter jets, which will not carry live munitions, White House National Security Council strategic communications coordinator John Kirby told reporters Oct. 13.

The upcoming NATO exercise involving 14 countries has been long planned, and NATO Secretary General Jens Stoltenberg said delaying or canceling

“We expect Russia to conduct its annual strategic nuclear exercise—they call it GROM—as early as this month.”

—John Kirby, White House, NSC strategic communications coordinator

the exercise would send the wrong message about NATO’s resolve in the face of Russian aggression.

“It would send a very wrong signal if we suddenly now canceled a routine, long-time planned exercise because of the war in Ukraine. That would be absolutely the wrong signal to send,” Stoltenberg said. “NATO’s firm, predictable behavior, our military strength, is the best way to prevent escalation.”

The U.S. twice put off routine tests of its Minuteman III missile this year, the first time to avoid inflaming tensions with Russia during the Ukraine crisis and the second time to avoid any miscalculation on China’s part as the Chinese military engaged in a show of force near Taiwan. A Minuteman III test launch eventually took place Aug. 16.

U.S. officials predicted that Russia would soon go



Senior Airman Michael Richmond

A U.S. Air Force B-52H Stratofortress, two German Air Force Panavia Tornados followed by two German Air Force Eurofighter Typhoons, and one Belgian Air Force F-16 Fighting Falcon during a Bomber Task Force mission in August. The preplanned operations are conducted with NATO partners and allies to demonstrate and strengthen our shared commitment to global security and stability.

ahead with its own large-scale nuclear exercises. The Russian drills would be the second since February 2022. Putin oversaw the February exercise that tested sea, land, and air-based ballistic and cruise missiles and other weapons.

“We expect Russia to conduct its annual strategic nuclear exercise—they call it GROM—as early as this month,” Kirby added.

The Western officials cautioned that the Russian exercise was expected and did not appear to be linked to Putin’s suggestions that Moscow might resort to nuclear weapons in the face of setbacks in Ukraine

In a national address Sept. 21, Putin warned that “Russia will use all the instruments at its disposal to counter a threat against its territorial integrity.” He added, “This is not a bluff.”

“We will monitor that as we always do,” Stoltenberg said of the upcoming Russian exercise. “And, of course, we will remain vigilant, not least in light of the veiled nuclear threats and the dangerous rhetoric we have seen from the Russian side.”

Some nuclear policy experts expressed concern that Russian and NATO nuclear exercises might heighten apprehensions as each side seeks to determine what options might be tested.

“The events are normal,” said Hans Kristensen of the Federation of American Scientists in an interview. “But we don’t know, of course, what’s being exercised, whether that is also normal.”

The Russians, for their part, might portray the NATO exercise as an ominous development and use it as pretext to escalate their activities in the region

“That is definitely a danger,” Kristensen added.

The Western officials stressed that the NATO exercise will take place more than 600 miles away from Russia and does not involve a Ukraine scenario. “This exercise is not linked to any real-world events or what Russia is doing,” Kirby said. 🇺🇸

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An image posted on the Army of Ukraine Facebook page shows Ukrainians inspecting a downed Russian Ka-52 attack helicopter March 19, 2022.

US, Allies Pledge Improved Air Defenses for Ukraine

By Chris Gordon

The United States and allies will help Ukraine build a more comprehensive air defense system to protect key targets from Russian attacks by cruise missiles, ballistic missiles, and aircraft, U.S. officials said Oct. 12.

“What Ukraine is asking for and what we think can be provided is an integrated air and missile defense system,” Gen. Mark A. Milley, Chairman of the Joint Chiefs of Staff, said as representatives from about 50 nations met in Brussels. “That doesn’t control all the airspace over Ukraine. But they are designed to control priority targets that Ukraine needs to protect.”

Russia launched a barrage of missiles and airstrikes against a variety of civilian targets in Ukrainian cities, including its capital, Kyiv, on Oct. 10 in retaliation for the bombing of a key bridge linking Russia to the occupied Crimean Peninsula.

“These attacks killed and injured civilians and destroyed targets with no military purpose,” President Joe Biden said in a statement, calling the Russian strikes “utter brutality.”

Ukraine renewed its plea for better air defense systems to protect the population following the attacks, and the so-called Contact Group countries responded favorably.

U.S. Secretary of Defense Lloyd J. Austin III said help will come soon. “The systems will be provided as fast as we can physically get them there,” Austin said at his news

conference with Milley. “We’re going to do everything we can, as fast as we can to help the Ukrainian forces get the capability they need to protect the Ukrainian people. That’s very, very important to us.”

The allied officials did not say when such defenses might be put in place and acknowledged connecting different pieces from a myriad of nations would be a technical and logistical challenge and would require training of Ukrainian forces

“The task will be to bring those together, get them deployed, get them trained because each of these systems is different,” Milley said.

Ukraine would also have to develop a detection and command and control system and link all the components together.

“It’s quite complicated from a technical standpoint,” Milley said. “It is achievable, and that’s what we’re aiming at.”

The U.S. leaders detailed several specific systems they said could help form the basis of Ukraine’s new air defenses, in addition to systems such as Soviet-era S-300 systems already in use that have “been very effective,” according to Milley. Advanced systems, such as the National Advanced Surface-to-Air Missile System (NASAMS) are already in the pipeline but will take years to be fully deployed.

For example, Milley noted the I-HAWK, a legacy U.S. Army medium-range surface-to-air system which he said the Ukrainian government has specifically asked for. Milley

and Austin also mentioned Germany's InfraRed Imaging System Tail (IRIS-T) system, which is now being delivered. The possibility of U.S.-made Patriot batteries and Israeli defenses was floated by Milley, though he acknowledged such systems were among those that could be used rather than concrete offers from a particular country. Ukraine has repeatedly asked for Patriot systems and Israel's Iron Dome.

Some experts cautioned that it would be difficult to build an exhaustive air defense system for Ukraine and that an ad-hoc system would have to be adopted in practice.

"It may be something closer to interoperability, or frankly, it may just be instead of integration, aggregation," Tom Karako of the Center for Strategic and International Studies said. "But it's the right aspiration. The threat makes it necessary to think imaginatively about these things."


Neither side has been able to control the skies over Ukraine with their air force, despite Russia's overwhelming relative advantage as one of the world's biggest air forces. U.S. leaders have noted that Ukraine's ability to deny Russia air superiority has prevented Russia from making sweeping gains on the battlefield by taking out the Ukrainian military from the air and allowing Russian ground forces to operate unmolested.

Much of the world's attention had shifted to the war of attrition occurring in the east and south of the country as Ukraine fights to regain control of its territory using artillery and ground forces.

Russia, however, possesses long-range weapons, primarily air-launched cruise missiles that it can fire from bombers inside Russian airspace, as well as ballistic missiles.

These missiles can make it through to targets inside Ukraine due to the lack of a comprehensive air defense system Ukraine's allies now say they will work to help provide. Some defenses the U.S. supplied early in the war, such as man-portable Stinger missiles that can be fired at low-flying planes and helicopters, are useless in the face of the standoff weapons Russia is implementing. According to the U.S. and Ukraine, thousands of Iranian-made drones have also been ordered by Russia, though Ukraine has had better success against those weapons due to their slow speed and low attitude.

In the future, Ukraine wants a system that can defend against both planes and missiles at low, medium, and high altitude.

"It's a mix of all these that deny the airspace," Milley said. "You're trying to create a defensive system." 

F-16s Intercept Russian Bombers Near Alaska

By Greg Hadley

A pair of U.S. Air Force F-16s intercepted two Russian bombers flying near Alaska on Oct. 17, NORAD announced. The bombers never entered U.S. or Canadian airspace. Officials said they did not see the Russian planes as a threat or provocation.

"No indication that there was any unsafe, unprofessional behavior," Pentagon Press Secretary Brig. Gen. Pat Ryder told reporters. "They did not pose a threat."

The Tu-95 Bear-H bombers were tracked entering the Alaskan Air Defense Identification Zone or ADIZ. An ADIZ can include international airspace to help identify approaching aircraft early. The Alaskan ADIZ covers a large area over the Pacific.

The Alaskan NORAD Region detected, tracked, and positively identified the bombers entering and operating in the ADIZ before dispatching two F-16s to intercept them. NORAD's press release did not specify which units the F-16s belonged to.

The 354th Fighter Wing at Eielson Air Force Base operates F-16s. RED FLAG-Alaska 23-1, the latest installment in the regular Red Flag series of exercises, took place Oct. 16-21, with F-16s from the 35th Fighter Wing at Misawa Air Base, Japan, flying in the area.

In its release, NORAD officials stressed that the Russian bombers flying in the ADIZ "is not seen as a threat nor is the activity considered provocative."

"NORAD tracks and positively identifies foreign military aircraft that enter the ADIZ" and "routinely monitors foreign aircraft movements and, as necessary, escorts them from the ADIZ," the statement added.

In September, NORAD announced it had identified and tracked "two Russian maritime patrol aircraft" in the Alaskan ADIZ. Similar incidents occurred in March and January of 2021.

None of those instances, however, involved Russian bombers, and no fighters were sent to intercept those aircraft. The last time NORAD announced that it had identified any Russian bombers in the ADIZ was in September 2020, and the last time




Senior Airman David Phaff

U.S. Air Force F-16s are extremely maneuverable, tactical fighters designed to permit the Air Force to gain and maintain air supremacy and also provide protection against threats.

it announced that it sent fighters to intercept any aircraft was in August 2020.

This most recent incident comes amid increased tension between the U.S. and Russia. Moscow's invasion of Ukraine has sparked international outrage. America has imposed severe sanctions on Russia and sent billions of dollars in military aid to Ukraine.

Early in October, Russia and NATO said they would proceed with large-scale nuclear exercises in the coming weeks, even as Russian President Vladimir Putin has engaged in nuclear saber-rattling that has raised fears he might use his arsenal. The NATO exercise, called Steadfast Noon, is centered at Kleine Brogel Air Base, Belgium. 

Airmen support the Advanced Battle Management System (ABMS) On-ramp 2 in September 2020 at Joint Base Andrews, Md. ABMS aims to achieve Joint All-Domain Command and Control (JADC2), meant to accelerate the speed of the kill chain by connecting sensors to shooters.



Senior Airman Daniel Hernandez

SPACE

Mitchell Institute: USSF Must Take Lead Role in JADC2

By Chris Gordon

The Space Force must be given leadership over disparate elements of the U.S. military's Joint All-Domain Command and Control (JADC2) effort, according to a new policy paper from AFA's Mitchell Institute for Aerospace Studies. JADC2 seeks to increase sharing of command and control and targeting data across the services, but the individual services are each developing their own JADC2 concepts.

The Chief of Space Operations should have "the primary responsibility for overseeing the integration of the entire JADC2 system," said Tim Ryan, senior fellow for Spacepower Studies at Mitchell. Without better coordination among the services' efforts, JADC2 programs risk being neither joint nor all-domain, he said.

Space Force satellites will be part of the JADC2 "transport layer" that will underpin future operations, Ryan said. The Space Force therefore needs more precise strategic guidance about its mission, along with more responsibility, training, and funding to support its role, Ryan added. The goal would be to empower the Space Force to help make JADC2 a reality, as well as to ensure it has the means to protect its assets.

"This sounds very expensive," Ryan said during a roundtable with reporters to preview the paper. "It sounds very complex. I understand that. And I agree that it is."

China's People's Liberation Army's Strategic Support Force wants to be able to disrupt an enemy's command and control networks in space. Ryan argues building the architecture now with an empowered Space Force will make later decisions and choices easier.

"It is much, much cheaper to do it right the first time because, quite frankly, I don't think we're going to get a second chance on this," said Ryan. "The second chance is we lose."


U.S. military leaders, inside and outside of the Space Force, fear fundamental capabilities like GPS navigation and global communications for command and control could be disrupted by an attack. The Biden administration wants to establish global norms in space, such as an international ban on satellite weapons testing and stricter rules on how nations should de-orbit defunct satellites. But China and Russia have histories of ignoring such agreements, especially nonbinding ones.

Ryan's paper argues that DOD needs to invest in the means to defend space assets critical to JADC2. With space increasingly contested, senior Space Force leaders have begun to float the concept of "space superiority."

"What that really means is the ability to take a punch and to continue to fight," said Lt. Gen. Nina M. Armagno, the director of staff of the Space Force, at AFA's Air, Space, & Cyber Conference in September.

Missing from that statement is an explicit ability for America to fight back directly when it is attacked in space, as it does in other domains.

Ryan, a retired Air Force lieutenant colonel who served in a variety of space roles and also worked as a civilian on the Space Force staff at the Pentagon, recommends the Space Force receive authorization and funding to "develop space-based weapons systems that are specifically designed to defend the JADC2 space transport layer against kinetic and nonkinetic acts of aggression."

"Any current increase in the current Space Force budget [has] been primarily done through stand-up actions and being able to integrate the other services' capabilities into the Space Force," Ryan said. "At the end of the day, quite frankly, the money has not been equal to the demands that are being placed on the Space Force and the increased demands that it will have with JADC2." 

Improved Space Situational Awareness Needed

By Amanda Miller

The effects of Russia's 2021 anti-satellite (ASAT) weapon test on just one commercial satellite constellation illustrate the urgency of just one aspect of space safety.

On Oct. 19, the Aerospace Corp.'s Space Safety Institute released its 44-page book, "2022 Space Safety Compendium,"—the first of its kind—which examines not only how the ASAT test's resulting debris brought about problematic orbital conjunctions in the thousands but also how future constellations, planned in droves over the coming decade, are likely to affect the space environment.

A "dominating commercial space market" is expanding the scope of space missions to include the likes of commercial human spaceflight and even industrial activities such as mining. But all that new activity is also shining a light on the limitations of "current safety measures and norms," according to the report.

Its authors make 35 recommendations on themes including space situational awareness—in part to try to model the effects of debris. "Some recommendations are broad outlooks for the future," according to the report, while "others are concrete next steps that the space sector can take. The variety of scope and scale ... reflects the diverse set of space safety challenges."

Debris from Russia's 2021 ASAT weapon test, which struck a nonworking Soviet satellite with a ground-launched missile, forced SpaceX's Starlink to maneuver 1,700 times "in the first months" afterward, and on a single day this August, about a third

of the constellation passed closely to one or more pieces of debris several thousand times in what's been termed a "squall."

Aerospace Corp.'s Center for Orbital and Reentry Debris Studies has worked on software tools to analyze "potential collision and explosion scenarios," but the report concludes that more such tools "should encompass a vast array of space operations," such as simulating the breakup of debris and predicting the subsequent risk to spacecraft.

Since SpaceX's Starlink constellation has proven itself effective for the Ukrainian military, Russian officials have said commercial satellites could become military targets.

More recommendations in the report include:

Space situational awareness: A "holistic" approach with enhanced data handling; and reducing the uncertainties in tracking so satellite operators don't have to be notified as often about close calls.

Space operations: Actively removing debris from orbit while creating regulatory processes and ways for stakeholders to collaborate.

Launch and re-entry: A "comprehensive national airspace system" and taking disposal into consideration when designing a spacecraft.

Cyber and spectrum: Getting "cyber intrusion detection and prevention applications" onboard spacecraft—something the Space Force has said the service's existing satellites are lacking.

Human spaceflight safety: Addressing "the in-space rescue capabilities gap" with rescue plans included in launch plans. ✪

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Master Sgt. Jeremy Farson

“The common theme across the services ... is one of force degradation caused by many years of underinvestment,” the Heritage Foundation wrote in its recent report on U.S. military strength. F-15s like this jet at Sumpter Smith Joint National Guard Base, Ala., exemplify the trend: old, flown hard, and limited in current capability.

READINESS

Air Force Strength Now ‘Very Weak’

By Greg Hadley

The Air Force’s readiness has hit new lows due to pilot shortages, low flying hours, and aging aircraft, the Heritage Foundation’s 2023 Index of U.S. Military Strength found—leading the conservative think tank to give the service its lowest possible rating of “very weak.”

The Space Force, meanwhile, still needs more assets to cope with rapid growth in the domain, the report found. That, coupled with a lack of publicly known offensive and defensive weapons systems and capabilities, led to a rating of “weak” for the second year in a row.

Overall, the U.S. military’s strength was rated as “weak” on a five-point scale of very weak to very strong, the lowest score Heritage has given the military since it began the index in 2015. Of the individual services, the Air Force scored the lowest, with only the Marine Corps and the overall nuclear enterprise getting ratings of “strong.”

“The common theme across the services and the U.S. nuclear enterprise is one of force degradation caused by many years of underinvestment, poor execution of modernization programs, and the negative effects of budget sequestration (cuts in funding) on readiness and capacity in spite of repeated efforts by Congress to provide relief from low budget ceilings

imposed by the Budget Control Act of 2011,” the index’s executive summary states.

AIR FORCE

In Heritage’s inaugural 2015 index, the Air Force was the only service given a rating of “strong,” buoyed by positive marks in capacity and readiness.

For many years, the service maintained at least a “marginal” rating. That changed in the 2022 index as a continued decline in readiness led to its first-ever “weak” assessment, even as capacity and capability were still judged to be “marginal.”

That trend continued in the latest report, with capacity and capability holding steady but readiness declining even further in the authors’ eyes.

“Like a three-legged stool, success or failure is determined by the weakest leg,” senior research fellow John Venable, a 25-year Air Force veteran, wrote in explaining the overall “very weak” grade.

Specifically, Venable cited the Air Force’s failure to reverse shortages of both pilots and flying time for those pilots.

“The summer of 2022 should have found the Air Force all but fully recovered from the effects of COVID-19. Readiness levels as measured by operational sortie rates and flying hours should have been well above the historic lows reached during the

pandemic; instead, they have grown only marginally,” Venable wrote. “The service’s ability (or willingness) to fund and then generate sorties and flying hours for training has now spiraled well below the hollow-force days of the Carter administration with equally dismal readiness levels.”

The index cites the average flying hours per month for fighter pilots, which increased from 8.7 to 10 between 2020 and 2021 but is still well below prior years.

Broadly speaking, flying hours actually declined across the board from 2020 to 2021, according to Air Force data previously provided to Air & Space Forces Magazine, as airlift, bomber, and tanker pilots all got less time in the air.

Air Force leaders have acknowledged fewer flying hours for pilots is a problem. At a Heritage Foundation event in June, Air Force Secretary Frank Kendall said he was “not happy with where we are” and noted the decline began with budget sequestration in 2011.

The Heritage index argued that “the current generation of fighter pilots, those who have been actively flying for the last seven years, has never experienced a healthy rate of operational flying.”

“Those numbers are so low in a high-performance fighter that pilot competence levels drop to the point where even excellent pilots begin to question their execution of very basic tasks and where the execution of complex mission tasks can become overwhelming,” Venable wrote.

The amount of flying hours is not the only issue that is hurt-

ing readiness. With mission capable rates declining, and fleets getting older, the overall numbers of combat-capable aircraft ready to rapidly deploy indicate the Air Force would “struggle to respond to a regional contingency, much less hold the readiness levels, competence, and confidence levels required to square off against a peer competitor,” Venable wrote. From a personnel standpoint, the service has yet to close a persistent shortage of pilots.

SPACE FORCE

The Heritage report praised the Space Force’s integration of units and assets from across the Department of Defense since its founding and the importance of the GPS satellite constellation. But analysts argued that the young service has yet to show improvement in capacity, capability, or readiness, giving each category a rating of “weak.”

In particular, the report dings the Space Force’s space situational awareness capabilities and capacity, warning that as private industry and other state actors build out their presence in space, the service will be challenged to keep track of bad actors.

When it comes to defensive and offensive weapon systems, the report acknowledged that it is limited because so many of the Space Force’s capabilities remain classified. But based on publicly available information, “there is little evidence that [the Space Force] is ready for the threat envisioned by Congress when it authorized creation of the Space Force,” the report states. ★

TRANSCOM Unveils Agile Strategy to Deter China, Defend Logistics

By Chris Gordon

The United States can no longer assume its logistics are safe from harm and must develop a more agile approach to contend with China’s growing ability to disrupt American and allied shipping and airlift, the head of U.S. Transportation Command Gen. Jacqueline D. Van Ovost said Oct. 17.

“None of us want logistics to cause failure on the battlefield,” Van Ovost said. “We cannot do things the same way.”

She presented the new plan for TRANSCOM in a speech to the National Defense Transportation Association in St. Louis. It reflects the new approach for dealing with future adversaries that will be soon be rolled out in the Pentagon’s new National Defense Strategy.

“The ability to generate and sustain operational momentum in compressed timelines, to more destinations, with a limited capacity will be an imperative,” she stated.

Van Ovost said the vastness of the Pacific and China’s long-range strike capabilities have prompted the new approach. In the 1991 Gulf War, the U.S. built up its forces for months before driving Iraqi troops out of Kuwait at a time of its choosing. In the wars in Iraq and Afghanistan in the 2000s, TRANSCOM could airlift massive amounts of troops and materiel without any interference.

In the new age of conflict, the enemy will get a vote on when and where U.S. forces operate, possibly risking their ability even to leave the homeland, Van Ovost said.

“Over 85 percent of the joint force is stationed in the United States, and our competitors are on a trajectory that will present persistent threats across multiple domains including throughout



Gen. Jacqueline Van Ovost, TRANSCOM commander, says the joint command must become more agile to address current threats.

North America,” the TRANSCOM strategy reads. “If these threats are left unresolved, our power-projection capability will be put at risk and will force us to ‘fight to get to the fight.’”

TRANSCOM has already been forced to adjust to rapidly changing events. During the U.S. withdrawal of Afghanistan in late summer of 2021, Air Mobility Command, part of TRANSCOM,

evacuated over 100,000 people from the country with little notice and planning as part of Operation Allies Refuge. Since the renewed Russian invasion of Ukraine, TRANSCOM has delivered billions of dollars in U.S. military assistance to Europe, as well as U.S. forces, including the Army's 82nd Airborne Division.

Those operations, while successful, exposed weaknesses in handling data that slowed the effort, according to Van Ovost.

"Change is hard," she said.

TRANSCOM's efforts in Europe and Afghanistan pale in comparison to the effort that might be required to support a U.S. military operation in the Pacific, such as a defense of Taiwan. In the future, and especially in the Pacific, TRANSCOM will need to anticipate threats before they arise.

Van Ovost wants to use commercial planes and ships more

to fill gaps in the U.S. military's fleet. In Europe, two-thirds of TRANSCOM's airlifts of aid to Ukraine have been operated by contracted airlines, not military aircraft and crews. Part of TRANSCOM's new strategy entails building the capability to operate more nimbly by employing commercial assets, drawing on increased overflight access, and using a wider array of seaports, railways, and airfields.

"We must expand and strengthen our global transportation networks to facilitate our ability to aggregate force packages to fight and then disaggregate to survive during brief periods of domain superiority," states TRANSCOM's strategy.

"We must adopt the mentality that challenge is not synonymous with impossible and contested is not the same as impenetrable," Van Ovost said. ✪

PEOPLE

Bronze Star with Valor Device for Airman

By Greg Hadley

An Air Force security forces squadron flight sergeant received the Bronze Star Medal with Valor on Oct. 12 in recognition of his heroism in defending against a terrorist ground attack in Kenya in 2020.

Tech. Sgt. Jordan Locke, now a member of the 51st Security Forces Squadron at Osan Air Base in South Korea, engaged in an hours-long fight with the terrorists as they attacked Cooperative Security Location-Manda Bay, according to an Air Force press release.

Holding his ground under fire, Locke helped to conduct overwatch security, which allowed other service members to continue the fight, the release added.

"That fight had lasted four to five hours, and within those four to five hours, we were fired upon multiple times," Locke said in a statement. "Bullets were impacting right next to me."

Al-Shabab terrorists launched the attack on Manda Bay on Jan. 5, 2020, killing a U.S. Soldier and two American contractors in the terrorist group's first-ever attack on a U.S. military base in Kenya. However, U.S. and Kenyan forces were able to repel the terrorists and secure the base.

In the aftermath of the attack, service members were "so mentally and physically exhausted," Locke said, leading him to check on his teammates.

"There's a huge difference between saying, 'Are you OK?' and actually sitting down and having that conversation with them



Col. Joshua Wood presents Air Force Tech. Sgt. Jordan Locke, 51st Security Forces Squadron flight sergeant, a Bronze Star with Valor Device.

to make sure that they're OK and to see if there's anything that I can do on my end to help them," Locke said.

Locke is just the latest of several Airmen to earn decorations for their actions during the attack. Master Sgt. Mathue B. Snow, now at Robins Air Force Base, Ga., was recognized with a Bronze Star Medal earlier this month, and Senior Master Sgt. Jeremy D. Mapalo received a Bronze Star with Valor in August. Both Snow and Mapalo are also security forces Airmen.

Staff Sgt. Colleen F. Mitchell, an aerospace medical technician, was recognized as one of the Air Force's 12 Outstanding Airmen of the Year in 2021 for her actions during the attack. She helped establish a casualty collection point and activated and led a team of four augmented medical personnel to provide immediate triage and assessment; and provided emergent prolonged field care for

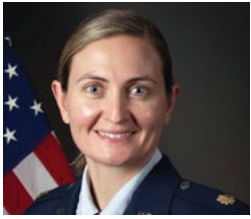
more than 16 hours.

Three Kenyan service members were also recognized by U.S. Africa Command and given U.S. Joint Service Commendation Medals.

The Bronze Star Medal is the U.S. military's fourth highest decoration. According to the Air Force, roughly 3 percent of Bronze Star Medals are awarded with Valor—given when the service member is in direct combat and demonstrates heroism "above what is normally expected while engaged in direct combat with an enemy of the United States, or an opposing foreign or armed force, with exposure to enemy hostilities and personal risk." ✪

Senior Airman Trevor Gordmier

FACES OF THE FORCE



USAF

Maj. Samantha Slinye, an Air Force judge advocate, was honored by the Women in Government Relations organization for her work in advocacy. Slinye, in particular, was recognized by with the "Advocate on the Rise" award and was part of a group of six connected to the Air Force's Women's Initiatives Team (WIT) that were recognized in the "Women Serving Women Campaign" category. She and the rest of the WIT team have advocated for changes to antiquated Air Force policies that limit women in the service, such as Female-Specialized Health Care Programs, and more.



Senior Master Sgt. Ted Daigle

Master Sgt. John Slaughter, quality assurance chief inspector of the 307th Maintenance Group, and another maintenance Airman, Senior Master Sgt. John Donelson, created the Pylon Loading Fixture, making it easier and less risky to mount pylons on the wing of a B-52. Donelson had noted the job often took four Airmen. Using his background as a toolmaker, Slaughter crafted a modification to the Munitions Handling Unit-83 aerial lift truck that makes the task of mounting pylons a three-Airman job. Now, Air Force Global Strike Command officials, as well as other units, have expressed interest in the modification.



Maj. Angela Wajz/ANG

Tech. Sgt. Alex Tamayo, of the Arizona Air National Guard, normally works as a security manager for the 162nd Wing, recently utilized his passion for coding as part of a hackathon hosted by Corsair Ranch, the Air Force Reserve's software factory, and the Air Reserve Component's ARCWERX. The inaugural 'Hack the Ranch' event challenged coders to design modern solutions and efficiencies for the Barry M. Goldwater Range, where many aircrews train. "I've taken classes before, but I saw this as an opportunity to potentially integrate a personal hobby into my career," Tamayo said.



Beyond the Ultimate Race Series/courtesy

Over five days and 143 miles across the wide-open wilderness of Eastern Africa, **Senior Master Sgt. Jeff DeLorey** of the New Hampshire ANG's 157th Air Refueling Wing, beat out runners from across the world to win the For Rangers Ultramarathon, a race in Kenya dedicated to raising money for the welfare of wildlife rangers to combat the rise of poaching. With the race spread out over five stages, DeLorey was more than 41 minutes ahead of the second-place finisher. "It was challenging, the heat we were in, the environment, the mental grit, all of it," said DeLorey. "I was emotional."



Staff Sgt. Coville McFee

Tech. Sgt. Kevin Flanagan of the 410th Test and Evaluation Squadron at Beale Air Force Base, Calif., first began testing the accuracy of U-2 and RQ-4 Global Hawk sensors with cardboard and aluminum foil prototypes that were cheaper and more sustainable than the existing radar ranges. Now, two years later, he has built up a radar range of 28 metal targets that saves the Air Force nearly \$493,000 and 23 flight hours annually. He has also designed and developed a USB cable that enables Airmen to charge equipment during long-duration operational test flights.



Christine Mimoda/USAF

Senior Airman Andrew Melis, 60th Security Forces Squadron military working dog handler, was driving home in Vacaville, Calif., one morning when he saw retired Master Sgt. Bridgette Fargo in a panic because her dog, Nemo, had been attacked and bitten by another dog, which wouldn't let go. Utilizing his training, Melis quickly coaxed the attacking dog to release its bite, and tried to keep it calm until its owners came. Melis recently completed the military working dog handler's course at the 341st Training Squadron, JBSA, Texas.



Maintainers from the **755th Aircraft Maintenance Squadron** recently achieved a feat rarely seen across the entire Air Force when one of their 49-year-old EC-130H Compass Call aircraft received Black-Letter status after an inspection—meaning there were no flyable or non-flyable discrepancies annotated in red ink. Airmen credited Staff Sgt. Jeffrey Faaborg, a hydraulics craftsman who was recently appointed as a dedicated crew chief for the aircraft, for leading the team and accomplishing many goals maintenance crews work their entire careers to achieve.



Staff Sgt. Kristine Legate

Tech. Sgt. Jordan Locke, a security forces Airman now with the 51st Security Forces Squadron at Osan Air Base in South Korea, received the Bronze Star Medal with Valor in recognition of his heroism in defending against a terrorist ground attack in Kenya in 2020. Locke engaged in an hours-long fight with the terrorists as they attacked Cooperative Security Location-Manda Bay—holding his ground under fire, Locke helped to conduct overwatch security, which allowed other service members to continue the fight.



Michael Mead/USAF

Twin brothers **Lt. Gen. Charles "Buck" Pattillo** and **Maj. Gen. Cuthbert "Bill" Pattillo**, along with their wives, were laid to rest this September in Arlington National Cemetery. The two Air Force legends helped to found the Thunderbirds aerial team in 1949. As founders and inaugural members of the team, the Pattillo brothers helped pioneer some of the maneuvers that make the Thunderbirds famous, such as the "Bomb Burst," and they also flew alongside record-breaking pilot Brig. Gen. Chuck Yeager. The Thunderbirds flew their first-ever dual 'missing man' formation in their honor.

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



Gen. Larry D. Welch

Out of the Cold War, Into the Fire

BY TOBIAS NAEGELE



Gen. Michael J. Dugan

When I embarked on this series of interviews and articles, I imagined writing a single package of short articles in a single issue of the Magazine. But once I had begun the process, it was obvious that would be impossible. Each interview ran more than an hour, and some ran two or more. The stories and insights built on each other, like pieces of a puzzle, and the whole—10 former Air Chiefs whose collective tenure ran from 1987 through 2020—matched up almost exactly with my own career as a military journalist. History I had lived through and helped tell now came into focus in different shades of blue.

This final installment goes back to the beginning: Two Chiefs I hadn't originally expected to interview, Gens. Larry D. Welch and Michael J. Dugan.

PART 4 OF A 4-PART SERIES

Welch is a key figure, the last of the Cold War Chiefs. Goldwater-Nichols passed months after he took office, as Welch noted in our interview, the changes wrought by Goldwater-Nichols were not immediate. Dugan was the true transitional Chief, the first Chief to come to office in the post-Goldwater-Nichols era, and the first to serve in the modern media era, at the dawn of the perpetual, 24-hour news cycle. The confluence of these two were, in fact, the twin factors that led to his untimely relief.

In his column in the Washington Post days after that relief, Richard Cohen wrote that “Dugan got what he deserved.” With the benefit of hindsight, that seems unfair. Dugan spoke to reporters on the record and with apparent clarity. While unguarded, he violated no laws, divulged no national secrets, was not insubordinate. Dugan spoke as an Airman and failed to make clear that in espousing Air Force doctrine, he did not and could not speak for the war planners, the Joint Chiefs, the Secretary or the President. His abrupt departure changed the course of Air Force history.

It seems oddly fitting, therefore, to conclude the series there and to ponder, after reading these last two installments, a simple but provocative question. How might the Air Force have evolved had then-Defense Secretary Richard B. Cheney chosen a different course, had he opted for humility, as opposed to humiliation; had he asked Dugan to apologize to his fellow Joint Chiefs for his carelessness and cavalier talk. Cheney's decision was decisive and Operations Desert Shield and Desert Storm were a great success. Yet the wound inflicted on the Air Force that September day had consequences far beyond that war, consequences that lasted well into the decades that followed.

Gen. Larry D. Welch, CSAF No. 12 (1986-1990)

Last of the Cold War Chiefs

Larry D. Welch never planned to stay in the Air Force, let alone become Chief of Staff. Having enlisted in 1951, Welch was a one-striper, temporarily marching new recruits around Lackland Air Force Base, Texas, when he led a group to a briefing about the aviation cadet program. When it was over, interested recruits were asked to put a card in the basket.

Welch, who was standing in the back of the room waiting to escort the recruits to their next stop, put his name on a card and dropped it in the basket. Soon after, he was summoned to a captain's office; the captain praised his scores and sent him for further testing. “At the end of that, I had two choices,” Welch said. “I could go into a program that would make me a second lieutenant and a pilot, or a program that would make me an Airman First Class electronics technician.”

It wasn't a hard decision.

Time after time over the course of the next three-plus decades, Welch came to a fork in the road and found another opportunity waiting for him. He served in fighter units in Europe, the continental United States and Alaska, deployed to Vietnam,



U.S. Air Force Chief of Staff Gen. Larry Welch is briefed on parachute delivery systems.

and held a series of leadership posts at Tactical Air Command. He shepherded President Ronald Reagan's strategic programs through the budget and approval process—the B-1 and B-2 bomber programs, the M-X intercontinental ballistic missile, and two cruise missile programs—as deputy chief of staff for programs and resources, and in July 1984 he was promoted to Vice Chief of Staff, replacing Gen. Jerome O'Malley.

Welch hoped to finish his career leading Strategic Air Command, and Air Force Chief Gen. Charles Gabriel already

envisioned his succession plan. “I don't think I'm breaking any confidence here,” Welch said. “The plan was that Jerry O'Malley was supposed to be Charlie Gabriel's replacement, but Jerry didn't have any real fighter time. So Jerry would go to command [Tactical Air Command] for a couple of years, I would take SAC for a couple of years, and then when Jerry became Chief, I would go to TAC.”

Tragically, however, O'Malley died on April 20, 1985. The CT-39 Sabreliner executive jet he had taken to a Boy Scout event landed flawlessly that day in Wilkes-Barre, Pa., but when the pilot applied his breaks, nothing happened. A hydraulic valve in the landing gear had broken, and the airplane overshot the end of the runway, and then down a 110-foot embankment, where it burst into flames—killing everyone on board.

“That threw everything up in the air,” Welch said. “Jerry O'Malley would have been a great Chief. I'm sorry that he didn't get to do that.”

Welch was an obvious candidate to replace O'Malley at TAC, but the nuclear enterprise was a primary focus for President Reagan and Secretary of Defense Caspar “Cap” Weinberger. The Air Force put forward one three-star after another for promotion to four-stars and command of SAC. “The SecDef turned down all three nominees,” Welch recalled. “Secretary Weinberger was having no part of that. He wanted someone he knew, and that someone was me.”

So Welch got to command SAC, the job he'd envisioned as his last in uniform, what he calls now “the pinnacle of my career.” And not many months later, Secretary of the Air Force Donald

Rice came out to visit him, asking questions that in retrospect were about the Chief's job. “It was certainly clear to everyone that I was sure as hell not campaigning to be Chief,” Welch said. But not long after, Rice let him know he was putting Welch's name forward to succeed Gabriel.

GOLDWATER-NICHOLS

Welch became Chief July 1, 1986. Almost exactly three months later, Congress passed the Goldwater-Nichols Department of Defense Reorganization Act on Oct. 4, a revolutionary and sweeping measure that reformed the leadership structure of the armed forces and changed the future of career and assignment policy. The new law elevated the Chairman of the Joint Chiefs and redefined the operational chain of command, which now flowed from the President, through the Secretary, and down to the uni-

“Being an Airman is not just about operating in the domain. The Army, Navy and Marine Corps combined operate in the domain more than we do. They have 8,500 aircraft, we have 5,300. ... Years ago, I was the vice chair on a congressionally directed study on roles and missions, and a serious question was asked: Did we really need an independent Air Force? Would we have done just as well to stay in the Army? The answer from the study group, which is very broad, a lot more than just Air Force, was: ‘That would have been a disaster.’ If you didn't have a service, a professional corps that was focused on operating in, through, and from that domain, we never would have developed anything like the range of capabilities that now are available—not just to the Air Force—but to the other services, operating in the domain where we provide the most expertise. That's what it means to be an Airman.”

fied Combatant Commands—bypassing the service chiefs. Air Force and Army Chiefs of Staff, the Chief of Naval Operations, and the Marine Corps Commandant now became responsible solely for manning, training, and equipping the force. They were no longer in the business of executing war plans.

But change came slowly.

“Goldwater-Nichols didn't change much of anything for a significant period of time,” Welch recalled. “So during the four years, ... the principal effect was that they added authority to the combatant commanders. It didn't relieve the service chiefs of any responsibility for that period of time. Well, just for example: In order to respond to Goldwater-Nichols, the combatant



Staff Sgt. Guido Locati via National Archives

U.S. Air Force Chief of Staff Gen. Larry Welch checks right side clearance while taxiing a C-141B Starlifter aircraft for takeoff.

commanders were invited to the big high-level reviews. There used to be only the secretaries and some of the assistant secretaries and service chiefs. [Now the combatant commanders] attended those meetings—they were invited—[but] they didn't say anything. They just observed. Because they were supposed to have a new role, but they were totally unprepared to fulfill it."

Welch said that three of the four service chiefs were very supportive of the new law, and that in his view there was only one major flaw in the legislation: its requirements for joint tours. "It was unreasonable and unexecutable," he says now. "But we worked around that."

Changing the culture across the services, however, was not automatic. When the commander of the U.S. Navy's Pacific Fleet, Adm. James A. "Ace" Lyons Jr. declined to follow the orders of his regional combatant commander, U.S. Pacific Command's Adm. Ronald J. Hays, Lyons was forced to resign. "The issue was over sending PACFLEET ships into CENTCOM's area of operations," Welch said. It was the summer of 1987, and "PACFLEET absolutely defied it. And in order to correct that, the Joint Chiefs went to the Secretary of Defense, who went to the President." Lyons' career ended with his retirement that Oct. 1.

"I don't think that ever would have happened without Goldwater-Nichols," Welch said. "That was an interesting lesson to people, that—Hey! The authority of a combatant commander is a serious thing, and you had better pay attention to it."

The impact on the service chiefs and how they operated as the Joint Chiefs of Staff was greater. "The first real effect of Goldwater-Nichols was a sort of a too-rapid move to the Joint Staff," Welch said. "The relationship to the Joint Staff changed faster and more dramatically. In the first place, the Joint Staff began to exercise a lot more authority on service programs. And that caused a lot of angst, and it didn't work very well."

Suddenly more officers from other services, with less experience, were asking questions and getting involved in programs that they didn't necessarily understand. The balance of power was now shifting, moving away from the service chiefs and

their domain expertise to a joint staff whose priorities were not necessarily the same. This involvement only grew over time.

"When I was a service chief ... maybe 5 percent of our program had issues with ... the highest-level meeting, with the SECDEF and the undersecretaries," Welch said. Today, however, "a service chief would probably tell you 50 percent of his program is seriously affected by the Joint Staff and OSD [Office of the Secretary of Defense]. I don't know if that's good or bad," Welch said, "I just know that the service chief is the leading expert in that domain, and the service chief's staffs are the real experts in that domain. ... And I think that remains a problem."

Welch says the net effect of these extra layers of review has not been effectiveness, but inefficiency. He notes that in his day, "our criteria was five to seven years to field an increment of new capability." There was logic to that, because "Five to seven years was about as far as we could see geopolitically, it was certainly as far as we could see technologically, and it was probably as far as we could see in terms of tactics and strategy. Well, now the average time has doubled, while the horizons have shortened."

The longer timeline for programs is not the fault of the services, Welch said: "The reason for that is all the other people who have a say in those decisions."

The world was more predictable during the Cold War.

The Chiefs also began to lose clout with the White House. Another change that made a big difference, "which surprised us," Welch said, was the elevation of the Chairman to be the principal military adviser to the Secretary and President. Prior to that time, the Chiefs had acted together, an organizational design that required the Chairman to be first among equals, rather than plainly first among all. "I didn't think that was a big deal while I was there," Welch said. But it became a big deal later.

In Welch's time, the Chiefs and then-Chairman Adm. William J. Crowe had an understanding, which came about this way: "Bill Crowe came into the tank one day and reported on a meeting he had just been to in the White House," he recalled. Immediately after that meeting, the Army Chief of Staff went into Bill Crowe's office and said, 'OK, Mr. Chairman, if you don't need to consult us before you go to the White House—if you don't need our best advice before you go to the White House—then we'll just send our vice chiefs to tank, and we'll do what we really like: that is, run the Air Force and the Army.' Bill said, 'Whoa, whoa, whoa, whoa. I apologize.' And that never happened again with Bill Crowe."

As members of the JCS rotated, however, that understanding faded. "Fast forward to the next Chairman and new members of the Joint Chiefs," Welch said. "It became a reality then that the Chairman kept the service chiefs informed. ... Let me tell you, we never would have accepted that."

Indeed, the supremacy of the Chairman over the Joint Chiefs would play a decisive role in the fate of Welch's successor.

When Welch took office in July 1986, at the very the height of the Cold War, he brought with him expertise accumulated over a career that had included a tour as vice chief of staff and as commander in chief of Strategic Air Command—CINC SAC. The security dynamic was largely bipolar in those days: East-vs.-West, USA-vs.-USSR. But now that was changing.

"By the time I became Chief, it was fairly obvious to the Joint Chiefs that the Cold War was winding down," Welch said. Soviet Premier Mikhail "Gorbachev was making speeches about the Soviet economy. Now, I can't say any of us thought that the Soviet Union would disappear in 1991. But it was very clear the Cold War was winding down."

The Chiefs were convinced the services would have to pay a "peace dividend"—a budget cut as the reward to taxpayers

for footing the bill for Cold War defense. But they were also convinced that the future would be unpredictable.

"We faced up to the fact that we were going to be in a new world, and we were not going to be in a world where we would have 50 years to learn to deal with things," Welch said. "We didn't oppose a modest decrease in the defense budget, because our logic was, there's going to be a demand for a peace dividend, so let's do three years of modest sacrifice to give us time to figure out this brave new world."

It would take far longer than that, of course. "Here we are, 35 years later, and we still haven't figured out this brave new world," he says today. Indeed, the point illustrates something that Welch has very much on his mind today: "The fact is the service chief's job is really far more complex today than it was when we had a single adversary that were really understood."

The job was simpler in those days too because Americans were more united. "We had strong support on the Hill," Welch said. "It wasn't Republican versus Democrat. There was hardly a person on the Hill that I couldn't get help from on some issue. They might not be any help on other issues, but Congress, OSD, the Joint Staff—everybody came together in ways that helped service chiefs do their jobs." And where there was opposition, he said, there was nevertheless respect, especially for the system.

"The Joint Chiefs were totally at odds with Cap Weinberger on Arms Control," Welch said. "We were totally in charge of it. Cap Weinberger hated it. ... [But] he accepted the fact that we had a different view, that we were going to present our view to Congress. He disagreed with us, but he honored our view. That kind of attitude really helped the service chiefs do their job."

As the three-star on the Air Staff responsible for programs and resources, Welch had worked with his colleagues in operations and requirements to develop a system for getting things done in the Pentagon. First they laid out their concepts of operations and the means by which the Air Force would accomplish its missions. "Then we laid out roadmaps for how we developed the set of capabilities required to do [those missions]: We had the fighter roadmap, the airlift roadmap, the bomber roadmap, the munitions roadmap. And the Air Staff tied into those roadmaps."

Chief of Staff of the Air Force Gabriel rallied behind their effort, setting it in motion, and when Welch became Chief, he supported it, as well. The second process component Welch saw as valuable was the decision structure.

"This decision structure let the right people make the inputs at the right time," Welch said. "The one-star level dug into great detail and they sent them to the Air Staff Board, and the Air Staff Board was the two-star level. And the two-star level examined this topic and brought their expertise, and then it went to the Air Council, and the Air Council was chaired by the Vice Chief. Then we put all that together and then it went to the secretariat. And so we had this process that was very well developed. It was very effective. And it was fast."

Welch estimated that the Air Force could move a program from the Air Force Secretary level to the Secretary of Defense in a matter of days. "The result was we always went forward with a very solid Air Force position." Over the years, however, some of those decision points migrated out of the service and into the Joint Staff or OSD, removing service control and slowing down decisions.

While Welch is loath to criticize successors—"I never second-guess the Chief because the only way you can do that is if you know everything the Chief is dealing with at the time, and there's no way to know that"—he sees flaws in some choices since he was in charge. Among the larger mistakes, he said: The elimination of Air Force Systems Command in 1990, soon

after his departure.

"I was very much opposed to doing away with Systems Command," Welch said. "The Secretary [of the Air Force Don Rice] wanted for two years to do that, and I absolutely refused to go along with it. And of course, that happened one month after I retired."

Welch saw a fundamental flaw in combining the Air Force's sustainment operations with its weapons development experts. "Systems Command's mission was about the future," Welch explained. "Logistics Command's mission was about today. So if you look at the inbox of the commander of Materiel Command, it's full of today problems: I've got to get all this stuff delivered, I've got to get all this stuff where it needs to be. ... That's part of the reason why things started taking longer."

Systems Command was also tightly linked to its customers: the four-star Tactical Air Command, Strategic Air Command, and Military Airlift Command. Welch recalled how he was the plans chief at TAC, and how the commands worked so well together. "Four times a year, the commander of Systems Command and commander of TAC would meet at Langley [Air Force Base, Va.], and go over all of the primary Air Force programs to ensure that Systems Command and TAC and the Air Staff—the Air Staff was there too—were in lockstep. That's pretty powerful."


But the real tragedy of giving up Systems Command was that it blurred the Air Force's vision. "Doing away with Systems Command did away with the central focus on building a future force," Welch said. "Not sustaining the force. Not supporting the force. But building the force. That went away."

LEARNING FROM AIRMEN

Because he began his career as an enlisted Airman—the only Air Force Chief to do so—Welch is often asked if that made a difference in his leadership. He is quick to say it did not. "I never served enough time as enlisted to gain much from that," he said. "I can claim having close contact with senior NCOs that really made my career possible, and that had an enormous influence on me as Chief. But I really can't claim having been a real enlisted man."

Two NCOs in particular changed his career. The first was in France, where Welch was sent as a new captain to help convert four National Guard squadrons into an Air Force wing. Welch wanted to get checked out in the F-34, but his commander wanted him to build a combat operations center. "Within six months in this whole new mission, we have to pass the NATO TAC eval," his commander told him. "You build that combat operations center, we pass that TAC eval, and you can pick any squadron you want."

Welch went through a door and found a field desk, a telephone, and a senior master sergeant—little else. "I'll tell you: I got credit for building the COC and a lot of credit for us passing the TAC Eval. All the credit really goes to that senior master sergeant, who taught me that I was responsible. He would not make a decision. He would give me advice. I had to make the decision. And I always took his advice."

Later, Welch was pressed into duty as a squadron operations officer as a major, just as his unit was deploying to Alaska with the then-brand-new F-4 Phantom. "We had to arrange everything," Welch recalls. "What made that possible was the senior master sergeant who worked for me. He just knew how to do everything. ... So as a captain, I had this great reputation because of a senior master sergeant, and as a major I acquired this reputation largely because of a senior master sergeant. And I never forgot that." 

Gen. Michael J. Dugan, CSAF No. 13 (July 1990-September 1990)

Unlucky 13: The Invisible Chief

Gen. Michael Dugan, Chief of Staff, U.S. Air Force, speaks with military personnel while having breakfast at the 56th Tactical Air Command dining facility during Operation Desert Shield.



USAF via National Archives

Gen. Michael J. Dugan liked the Air Force he inherited from Gen. Larry D. Welch in July 1990. He had no intention of reinventing it; rather, he wanted to polish it like a treasure, to make it even better. The U.S. Air Force in 1990 had the world's greatest fighters and bombers, the most lethal nuclear arms, the most flexible and capable airlift. Its Airmen, both enlisted and officers, were the best trained, most ready, most effective in the trade. They were the victors of the Cold War, a national treasure.

By the summer of 1990, however, the Cold War was over. Poland was the first of the Eastern Bloc nations to shake off the bonds of communism in June 1989. When East Germany opened up the Brandenburg Gate and the Berlin Wall collapsed that November, the remaining communist states fell like dominoes: Czechoslovakia, Hungary, Romania, Bulgaria. The Warsaw Pact was no more; only the Soviet Union remained, impotent to stop the democratic surge.

In Washington, leaders of the world's lone superpower contemplated funding cuts and peace dividends. But peace was not yet on the horizon. Iraq, in the wake of a protracted eight-year war with Iran, was saddled with debt and addled by falling oil prices. Its leader, Saddam Hussein, sought debt relief from neighbors and, once rebuffed, found solace in long-dormant border disputes with Kuwait. If it couldn't get terms from its bankers, it could exact revenge. On Aug. 2, 1990, Iraq invaded Kuwait.

No one knew if Saddam would stop there. Iraq had 63 battle-tested ground divisions, and 27 of them already in Kuwait. If they pivoted to the south, into Saudi Arabia, the Saudis would be ill-equipped to stop them. And if that happened, Saddam Hussein would control more than half of the world's oil supply.

The invasion of Kuwait "will not stand," President George H.W. Bush declared. On Aug. 8, less than a week after the invasion, U.S. forces, including an airlift control element, F-15s from Langley Air Force Base, Va., and elements of the Army's 82nd Airborne Division were in Saudi Arabia, preparing for what came to be known as Operation Desert Shield. The United States was suddenly headed for war.

Gen. Mike Dugan was just 32 days on the job as Air Force

Chief of Staff when Saddam launched his invasion, and he would remain in office less than seven weeks more. Dugan's tenure as Chief would go down as the shortest in Air Force history, rivaled only by three "Acting Chiefs," none of whom filled the post for more than 41 days. Yet Dugan, an affable ambassador for air power would have an important and lasting effect on the conduct of a war that would make heroes of those who chose to cut his tenure short.

Dugan's first contribution to the war effort came on his first day in office after Air Force Secretary Don Rice swore Dugan in privately.

Soon after, Dugan took a phone call from Gen. Robert D. Russ, commander of Tactical Air Command. The two knew each other well, their tours having overlapped at TAC not long before. Russ wanted to put something on the new Chief's radar. "Chuck Horner had been the star commander at 9th Air Force and the Air Component Commander for [Gen. Norman] Schwartzkopf in the desert for three years," Dugan said. "He was ripe for movement. Russ wanted me to know that he thought Horner ought to stay in place for a while longer."

Did Russ know trouble was coming to the CentCom AOR? Perhaps. But what he wanted to do was pre-empt any plans Dugan might have to move Horner quickly, as a new Chief might want to do. Dugan understood.

"I reckoned that I was not yet ready to do a big shuffle of new faces in old spaces," Dugan said. Leaving Horner in place for what might be an unprecedented fourth year might be unusual, but he agreed with Russ that it "would probably be a good thing."

Horner went on to lead the most successful air war in history just a few months later, a 37-day bombing campaign that effectively beat the fight out of the Iraqi army long before the 100-hour ground war finished Operation Desert Storm. "That worked out well," Dugan says now.

Dugan's other contribution came soon after the invasion. As Air Force units began arriving in theater, Schwartzkopf put in a call to Dugan, but the Chief was traveling. In those days before cell phones, the call was routed to the Vice Chief in his absence, Gen. John Michael Loh. Schwartzkopf said he needed help. Horner was absorbed with receiving and bedding down

Air Force units all across the desert. Meanwhile, Schwartzkopf needed to build an air operation to blunt further Iraqi incursions. He wanted “somebody to come up with an operational scheme that is big enough for the President to look at and complete enough for us to think about how large the forces ought to be on the air side.”

Dugan didn’t want this assignment to get lost in the staff. He wanted it in the hands of Col. John Warden III, a controversial but visionary officer who was running the Checkmate planning division. Checkmate had been established by then-Chief of Staff David Jones some years before as “an analytical thinking organization that was not constrained by our current guidelines and would come up with novel ways to think about how to deal with whatever operational problems came up,” Dugan said.

When Dugan told Loh not just to find someone to handle the task, but to give the job to Warden and Checkmate, it was a breach of organizational etiquette. Tasking a subordinate to deal with an operational requirement should have left that decision with that subordinate. “So that was a rude intervention on my part,” Dugan admits, “to pick out one particular office ... and say, ‘Give this unique planning problem from Schwartzkopf to John Warden.’”

But Dugan said it was important to get new and different thinking out there. The Air Force had released Global Reach, Global Power, a new vision for air power, in June 1990, just weeks before Dugan took office. That was more the approach the U.S. would need, Dugan reasoned, and Schwartzkopf seemed to agree.

The CENTCOM commander came under heavy criticism from retired Army officers, some of whom publicly questioned why he had given such an assignment to Air Force Headquarters, which would assuredly see things in air-centric terms, rather than a joint command that might be less parochial in its vision. But Schwartzkopf washed his hands of the matter, Dugan recalled. “He said, in effect, ‘I have written what I have written,’ just like Pontius Pilate. A CINC can give a problem to whoever the hell he wants. He could give it to RAND. He could find a consultant someplace. But he decided that somebody in the Air Force ought to be smart enough to help him with this.”

That someone, Dugan believed, would be Warden. “I thought he was a thinker, and I thought that we needed some fresh, fresh thinking.”

Ironically, Warden and Horner were not quite in tune with one another. “Chuck Horner was madder than hell,” Dugan recalled. Warden had a mixed reputation. He had written a treatise on air power called *The Air Campaign*, which asserted that air power could be either the primary or the supporting element of a strategy; Dugan was a fan, and as the deputy chief of staff for plans and operations a few years earlier, he had made sure that every member of the Air Staff got a copy.

But Warden had also managed to lose the confidence of his boss during a stint as a wing commander, and he’d needed to be reassigned and rehabilitated at Headquarters, where he was assigned to Checkmate. Dugan and Schwartzkopf told Warden to keep Tactical Air Command informed about his work, but not to cede approval authority to anyone.

What Warden delivered was not an implementable plan, Dugan said, but a concept that was “big enough that you could brief it to the President and the President could grasp it immediately and say, ‘This is big enough to solve my problem.’ And he did. And it did.”

Warden briefed his concept to Horner on Aug. 20 in the Desert. Horner sent Warden back to Washington, but kept other



Image from CSPAN video

Secretary of Defense Richard Cheney briefed reporters at the Pentagon on Sept. 17, 1990, on his decision to relieve to relieve Gen. Mike Dugan. Cheney said Dugan’s comments to reporters did not square with administration policy.

members of the Checkmate team—including then-Lt. Col. David Deptula, now Dean of AFA’s Mitchell Institute for Aerospace Studies—in Riyadh. Deptula had written “Global Reach, Global Power,” and contributed to Warden’s presentation.

Dugan was riding high. He had no way of knowing his days were numbered, or that his frank views would somehow lead to his ouster. That all came to pass in mid-September, after Dugan flew to the Middle East with three news reporters: John Broder of the Los Angeles Times, Rick Atkinson of the Washington Post, and John North of Aviation Week.

On Sunday, Sept. 16, 1990, the daily reporters’ stories led their papers. Atkinson’s story in the Washington Post declared: “U.S. TO RELY ON AIR STRIKES IF WAR ERUPTS.” Broder’s Los Angeles Times story was even more provocative: “U.S. War Plan in Iraq: ‘Decapitate’ Leadership.”

According to Broder, Dugan declared that “air power is the only answer available to our country in this circumstance.”

In the Post, Atkinson’s lead proved explosive:

DHAHRAN, SAUDI ARABIA—The Joint Chiefs of Staff have concluded that U.S. military air power—including a massive bombing campaign against Baghdad that specifically targets Iraqi President Saddam Hussein—is the only effective option to force Iraqi forces from Kuwait if war erupts, according to the Air Force Chief of Staff, Gen. Michael J. Dugan.

“The cutting edge would be in downtown Baghdad. This [bombing] would not be nibbling at the edges,” Dugan said in an interview. “If I want to hurt you, it would be at home, not out in the woods someplace.”

Although U.S. ground and naval forces would play a substantive role in any military campaign, Iraq’s huge army and tank force means “air power is the only answer that’s available to our country” to avoid a bloody land war that would probably destroy Kuwait, Dugan said. That view, he added, is shared by the other Chiefs and the Commander of U.S. forces in the Persian Gulf region, Gen. H. Norman Schwarzkopf.

“It was really pithy on the front page of the Washington Post,” Dugan said. And it instantly stirred the ire of senior officials.

The article also said Dugan floated the notion of targeting Saddam Hussein and his family and told Airmen in theater that American public support would hold only until "the body bags come home. The Joint Chiefs of Staff don't decide anything," he explains now. "The Chairman meets with them every day and he uses them as a sounding board and if there's a decision to be made, the Chairman makes it."

Gen. Colin Powell, the Chairman, was furious. Perhaps perceiving the lead as a challenge to his authority, "The Chairman took great umbrage."

Powell himself was just back from a Middle East trip, he wrote in his memoir, "An American Journey." He reached Dugan at 6 a.m. that Sunday, finding him at Eglin Air Force Base, Fla., where he was preparing to speak to a graduating class of new F-16 pilots. "He had read the Washington Post," Dugan said. "And he was not in a listening mode."

Powell was worried that air power was being oversold, he wrote, and he added that he had already "warned" Dugan about press comments twice before. Dugan, for his part, has no recollection of such warnings. In Powell's telling, "In a single interview, Dugan had made the Iraqis look pushover, suggested American commanders were taking their cue from Israel, suggested political assassination ... and said ... the American people would not support any other administration strategy." National Security Advisor Brent Scowcroft would go on TV that day to make clear Dugan didn't speak for the administration and wasn't in the chain of command.

Defense Secretary Dick Cheney's executive assistant called Dugan later that day. The Chief should be in Cheney's office at 8 a.m. the next morning. "I said, 'OK.' I knew what that was about."

When Dugan reported, Cheney was prepared; "he had been tuned by Colin Powell's response and reaction," Dugan said. "He went through a list of nine ... accusations of poor performance on my behalf, all related to the trip and the news articles," Dugan said.

He might have argued some of the points, but that wasn't going to get anywhere. "He came in with a with an agenda, he was going to achieve what he had chosen," Dugan said. "And the question was whether it was going to be graceful on both of our parts or not."

The face-off boiled down to this: Cheney "reckoned that I should resign."

Dugan had to think quickly. Refusing might be possible, but it would almost assuredly go badly. "I was a presidential appointee. The President is the only one who can fire you," he said. But fighting the request would make it all much bigger than Dugan as an individual, it would cost the service, though how was impossible to say. "I thought about the C-17, and what would become the F-22," he said. He imagined the service being punished for his comments.

Still, "I reckoned I wasn't going to resign," Dugan said. "But if it was going to make [Cheney's] life easier," he added, "I would ask for early retirement."

Dugan requested to retire effective Jan. 1, a move that the Baltimore Sun would report at the time that would be worth some \$17,650 annually because of a large pending pay raise.

Despite objections from some members of the Senate Armed Services Committee, President Bush approved the request.

At a news conference on Tuesday, Sept. 18, 1990, following a public announcement about Dugan's removal, Cheney visited the Pentagon briefing room to take questions from reporters. "The statements attributed to General Dugan in two newspapers this weekend, and as confirmed by him to me, did not in my mind, reveal an adequate understanding of the situation and what is expected of him as Chief of Staff of the Air Force and as a member of the Joint Chiefs," Cheney said. He said he discussed the matter with the President and others and that the decision was his.

Reporters questioned Cheney on what it was that Dugan had apparently done wrong. Had anything attributed to Dugan been untrue? Hadn't others made similar statements about potential strategies? The Secretary merely repeated that some topics are off-limits. "We never talk about future operations, such as the selection of specific targets for potential airstrikes. We never talk

about the targeting of specific individuals who are officials of other governments. Taking such action might be a violation of the standing presidential executive order. ... In a situation involving potential conflict, I think it's contrary to sound practice to reveal classified information about the size and disposition of U.S. forces. And as a general matter of policy, I don't think we want to be demeaning the contributions of other services. General Dugan's statements in my opinion were not consistent with this policy."

Dugan now learned what it was like to become an invisible man. In an instant, he had gone from being a superhero to a pariah, from someone people would rush to in the Pentagon hallways to persona non grata.

The real twist was that he didn't disappear; Dugan kept returning to work, day after day. When Army Gen. Douglas MacArthur was fired by President Harry S. Truman, the popular general packed his bags and went home. Dugan, however, remained, commuting to the Pentagon daily for the next three months. "I stayed on duty until January," he said. "I didn't do anything useful, but I stayed on duty."

Checking in at 0900 and remaining until 1700, Dugan took on an unwanted cast.

"I was a leper," Dugan said. "I was forgotten, but not gone."

For six weeks his former Vice Chief, Mike Loh, was Acting Chief and after that his one-time squadron mate, Gen. Merrill A. "Tony" McPeak arrived in Washington to be the 14th Chief of Staff, after closing out his work at Pacific Air Forces. Neither spent much, if any, time with Dugan.

Dugan did not let the humiliation ruin his life, however. He had other things to live for: Six children, four of whom went on to serve in the military, three in the Air Force and one in the Marine Corps. Eight grandchildren. And he had more to contribute in the workplace, as well. He joined the Board of Directors of the Air Force Association and later the Aerospace Education Foundation. In 1993, he became the president of the National Multiple Sclerosis Society, a large non-profit, and he remained in that role until 2005, and continues his involvement as its president emeritus to this day.

"There was more to my life," Dugan said, "than being Chief."✪

"Being an Airman has to do with God, country, and the Air Force. In this age nobody goes to war without Airmen. If you don't have Airmen plus air and space forces, you don't get to the fight, you don't control your destiny, you don't have a joint operation, you don't sustain the operation. ... On the other hand, Airmen and Guardians sometimes forget their contributions to the effort are frequently made in very brief moments in time. When the Army goes to war, the forces are stable, ponderous; they stay a long while, they are hard to disengage; for the Navy, part of their mission is presence, they mean to stay where they go. For Air and Space Forces, when they do something important, they may do it for just a few fleeting seconds—except for POWs and those in missile silos, and surveillance, intel and cyber roles, who remain "on station" 24 hours a day, seven days a week, all year long. Airmen's roles are different yet essential."

Acquisition Reform Takes On a Sense of Urgency

Advancing technology and the threat from China drive the Pentagon toward revolutionary change.



Northrop Grumman illustration

The Air Force's Sentinel ICBM program, which required digital modeling and engineering in its development, exemplifies the approach acquisition leaders want from industry in the future.



Image from AFA video

Gen. Duke Richardson, Commander of Air Force Materiel Command, says vendors must “get on the bus” with digital engineering “or you’re going to get run over by the bus.”

By John A. Tirpak

The Air Force's acquisition system is getting a significant overhaul. The growing military threat posed by China, an aging U.S. workforce, and the opportunities and necessity presented by new digital technology are converging to accelerate the way the defense department develops and acquires its weapons.

The use of digital engineering and modeling to design, develop, and sustain new systems is not a passing fad, but a change that is here to stay, said Gen. Duke Z. Richardson, head of Air Force Materiel Command. While most companies are immersing themselves in this new way of doing business, those that drag their feet will be left behind.

“Get on the bus, or you’re going to get run over by the bus,” he warned.

William A. LaPlante, Under Secretary of Defense for Acquisition and Sustainment, said a few weeks later at an industry gathering: “All of you ... should be moving—if you haven’t moved already—your engineering departments into the digital world.” LaPlante acknowledged that “digital engineering” has become a buzzword that doesn’t seem to mean the same thing to all audiences.

“You could say, it’s ‘automating the processes’” and about the “move to ‘paperless.’ But that’s not the magic of it,” LaPlante said. “What we’re talking about ... is the ability to crunch designs overnight; tens of thousands of designs ... digitally, so you can find design spaces you would never have found before.”

Digital engineering also accelerates the learning curve of new engineers, enabling newcomers “maybe one year out of school” to create “pretty sophisticated designs, whereas 20 years ago, it might have [required] someone with 10 years of experience,” to accomplish the same task.



Image from AFA video

Andrew Hunter, Assistant Secretary of the Air Force for Acquisition, Technology and Logistics, says programs that embrace digital design have “a much higher degree of maturity earlier in the design process.”

Boeing's T-7A Red Hawk was designed and developed digitally, with sections of the plane designed and built in different countries. When the two components were joined, they fit instantly, underscoring the advantage of digital design. Lt. Gen. Richard M. Clark, the Air Force Academy superintendent, spoke at a rollout ceremony in April.



Tech. Sgt. Matthew Fredericks

LaPlante wants companies to apply digital engineering to every part of the design and production life cycle. “Are you truly doing it completely in digital?” he asked. “Are you truly doing it in design with less physical prototyping, and are you keeping a living digital twin? If you’re not doing that, then you’re not doing digital engineering.”

True champions of the approach tie in digitally with their suppliers, so that all partners have access to the same digital models, and that the impact of proposed changes is understood.

“If you don’t have access to it, you’re not doing digital engineering,” LaPlante said. Likewise, if the design and models reside locally, rather than in a shared, secure cloud computing environment, vendors are not yet where they need to be. “Make sure you’re really doing it.”

It’s not that digital engineering is a panacea that will solve all problems, LaPlante said. “But it is a way to move faster. It is a way to come up with designs that might have been counter-intuitive, and it’s also a way to accelerate the learning for engineers.”

THE AIR FORCE TAKE

Andrew Hunter, assistant secretary of the Air Force for acquisition, technology and logistics, said the Operational Imperatives laid out by his boss, Air Force Secretary Frank Kendall, demand faster, more efficient, and more effective acquisition than what has been possible in the past two decades. Speaking at AFA’s Air, Space & Cyber Conference in September, he said new war-winning capabilities are required in the mid-to-late 2020s, to ensure the Air Force can be successful “in a high intensity, peer-to-peer competition.”

That demands a “sense of urgency” and focus, he said. “It’s a very daunting task, because we have a lot of capability we have to deliver in a fairly short amount of time,” Hunter told reporters. But “we have to deliver to get the job done.”

China, Hunter said, now has the economic power and technological know-how to make good on its overt ambitions of becoming the world’s top military superpower by mid-century. That demands “transforming the acquisition system for the 21st century,” he said.

The Air Force’s job jar is overfull: modernizing its entire nuclear deterrence enterprise and fielding all-new technologies in the conventional force within the next decade, all while sustaining everything else.

Like LaPlante, Hunter said the Air Force will insist that engineers, operators, and industry work more closely together to provide fighting capability that’s relevant and can be updated swiftly. He wants the Air Force to refresh technology more like the commercial world, which updates at a near-constant pace. Better synchronization with the commercial world benefits the Air Force two ways: It will help USAF systems stay ahead of the threat, and also make the service a more attractive customer to companies that are not traditional defense suppliers. He calls this “shaping the innovation base.”

The new systems being developed are “incredibly software intensive,” Hunter said, so they do not “lend themselves to the kind of industrial models of acquisition that were the foundation” of USAF’s past breakthroughs.

Capabilities visible in real time mean “faster, more iterative” development, enabling “increments of capability in weeks and months rather than years.” These are objectives of USAF’s Digital Transformation initiative, he explained.

This methodology puts all the information for a new capability into a single database, allowing everyone involved—developers, engineers, managers, acquirers, users—to see progress in real time. The ramifications of changes can be understood more quickly, allowing for the consideration of an enormous number of alternatives in a relatively short time. On the Sentinel ICBM (the weapon formerly dubbed the Ground-Based Strategic Deterrent), Air Force officials say they have been able to work through “millions” of trade-offs to achieve the optimum design.

“What I am seeing in our programs that have been implementing this is a much higher degree of maturity earlier in the design process,” Hunter said. Designers can make “informed choices” about trade-offs earlier.

Richardson sees the benefit not just in fielding weapons but sustaining them. If the digital foundations are built correctly, “it will actually allow us to accelerate all along the life

cycle,” he said.

Another change heralded by digital engineering, Richardson predicted in August, is the end of “big bang” program milestones, such as critical design reviews (CDRs). The process becomes more fluid, less about stages and more about progress.

“This is completely transforming how we’re doing systems engineering,” Richardson said. Maintaining an up-to-the-minute digital model and pushing decision-making to “the lowest level” means “cataclysmic, three-day” CDRs aren’t necessary. Richardson said such reviews make no sense, as he’s presented with a table full of drawings “like I’m supposed to notice if there’s [something] missing. C’mon. That’s no way to do business.”

He added that “we’ve got programs doing this now ... as a normal part of the workday.” Programs may still have “something like” a CDR “where people like me ... give it the stamp of approval,” the fact is the work has already happened. “Really, it’s been going on the entire time,” Richardson said.

Developers should have “traceability of test verification,” he said, meaning more testing will be virtual and less in the “real world,” saving time and cost.

But that doesn’t mean start-up costs will be less, Richardson said.

“It probably doesn’t require less people. In fact, it might even require more people at the beginning,” he said. Savings will come over time, not from the start.

Richardson said the Air Force will look for ways to get smarter about the entire sustainment enterprise.

“We’re going to dig in deep on this idea of digital materiel management,” he said. “We’re going to look at the digital tools to see if we can actually reinvent the processes.”

Richardson, whose job is to carry out Hunter’s policies, said he and Hunter agree that the users must be fundamentally involved in setting requirements and monitoring the products that the acquisition enterprise produces. Richardson said his job will be to make sure “the programs we deliver ... are integrated with each other,” to facilitate their employment and so that they can function interactively, within systems like the Advanced Battle Management System.

The acquisition system is now thinking about platforms as

part of “the entire fighting system, working together,” Richardson said at the spring conference.

“Closing kill chains” without the Space Force or even the other services will no longer work, he stated.

Program Executive Officers who “like to be left alone,” managing the risk in their program alone and “shielding themselves from connections to other things. ... That’s going to have to stop,” Richardson said. “We’re not going to be able to do that anymore, not if we’re going to keep up.”

Richardson said he uses the term “revolutionizing acquisition” intentionally, “to be provocative; to kind of challenge ourselves.”

Hunter agreed. “I think we can really amplify the effect of our efforts when we’re working closely together” with industry and operators, Hunter said. Sustainment has to go hand-in-hand with new development, because “we can’t meaningfully deliver operational capability if it’s not sustainable, ready, and able to go into the fight. ... There’s no capability if you can’t sustain it.”

The Air Force needs “resilient and secure supply chains” to accomplish its mission, he said.

THE WAY FORWARD

Richardson said programs should be constructed along lines suggested by former AFMC Commander retired Gen. Ellen M. Pawlikowski, whose prescription for success was threefold: Program managers God-like authorities, with limited oversight; sharp people; and money for risk.

That recipe has worked for the B-21 bomber, he said, and it’s why it’s one of the Air Force’s best-performing development programs.

Richardson said all this flows from what Kendall—a former Pentagon acquisition chief—wrote in his book, “Getting Defense Acquisition Right.”

Kendall outlines four objectives in the book, Richardson said: Setting reasonable requirements, putting professionals in charge; giving them the resources they need, and providing strong incentives for success.

With a large portion of the Air Force’s acquisition workforce nearing retirement, Richardson said the Air Force must offer the incentives necessary to “recruit, reward, and retain” skilled



The B-21 Raider program sets an example for modern acquisition and development programs. Shown here in an artist's rendering, the bomber will roll out in December.

USAF graphic



Airman 1st Class Josey Blades

A Royal Australian Air Force E-7A Wedgetail takes off during Black Flag 22-1 at Nellis Air Force Base, Nev., in May. The E-7A Wedgetail is equipped with a high-powered radar, used to monitor the battle space and provide friendly forces with an advantage over their opponents.

talent, just as much as it must “incentivize industry.”

A big part of the effort will be to rebuild the Air Force’s bench in systems engineering, which has atrophied, but which Kendall, Hunter, and Richardson all agree is critical to delivering the capabilities the Air Force needs.

Richardson also said AFMC will take a page from Air Force Chief of Staff Gen. Charles Q. Brown Jr.’s mandate to push decision-making down to the lowest-possible level.

“Not just empowering them, but equipping them so that they can be empowered,” Richardson said. That means providing the “tools and training” for the workforce to make the most out of digital methods. The workforce is “getting up to speed ... on some of the tools,” but he’d like to see more embrace them. However, industry uses “a lot of different tools” and standards, and it may be too soon to mandate specifics, he said.

While the youngest workers are “super excited” about the new methods, “we’ve got to get the middle managers super excited,” he said.

Along with that, Richardson said he plans to “amplify the warfighter culture” in AFMC, so that every person in the command’s workforce understands their role and “feels very connected to the tip of the spear.” He has also previously said that surveys of AFMC personnel show they want to do “meaningful work,” which makes the connection between their jobs and the results in the field that much more important.

Hunter said one of the thorniest problems facing acquisition will be ABMS. In the past, the Air Force would typically hold a competition and choose a single company to manage or integrate such a program.

“There’s power in that, right?” Hunter said. “There’s a reason why our system has operated that way. It’s been so successful in the past.”

But ABMS “cuts across so many stovepipes” that a different approach is needed, he said. “It touches every single system that we operate, in every domain in which we operate,” he said. ABMS will require coordination among numerous program executive officers and “hundreds of program managers to

be successful.”

Such complexity is not something the acquisition enterprise was built to handle, Hunter said, so “standards and interfaces” that are universally applicable are needed, as well as enforcement mechanisms. It will also be a challenge to budget for, because the requirements are under “no single entity below the level of the Secretary.”

Rather than a single contractor for ABMS, “you need a team approach,” Hunter said. All of the technical and organizational problems are so complex that they’re “bigger than one company can really address on its own ... so we’re taking the team approach.”

Asked if the U.S. can match the speed with which China has advanced its new weapons programs, Hunter acknowledged that “the pace is fast.” China doesn’t have to deal with a two-party systems and congressional oversight. But “their requirements are not our requirements,” Hunter countered. China has “fundamentally different problem sets ... to solve.”

The Air Force will focus on the problem sets it has before it, Hunter added, and Kendall’s Operational Imperatives “created the infrastructure to allow us to do that,” along with the urgency to do it quickly, and to accept risk “judiciously,” by “making good trade-offs.” Referencing the founder of Lockheed Martin’s Skunk Works organization, Kelly Johnson, Hunter said that programs may need to limit themselves to one “miracle” apiece, rather than three.

Hunter added that most of the Operational Imperatives grew out of science and research programs already well underway with the Air Force Research Laboratory. The Air Force is also going to be very open to adopting systems in use by allies and partners, such as the E-7 Wedgetail developed for Australia, that will succeed the E-3 AWACS. This, too, will speed acquisition along.

When there is a viable solution “we could quickly acquire,” it, he said, the Air Force need not reinvent the wheel. Wedgetail, he said, can be seen even now as “already a success story.”



B-21 Raider: The Indispensable Bomber

The Air Force's first new bomber in a generation is the key to ensuring an American advantage in range, payload, and survivability to fight.

By Col. Chris Brunner, USAF (Ret.)

In this new era of great power competition, fielding the stealthy B-21 Raider bomber on time and in volume is a national imperative. The B-21 is an indispensable capability for delivering responsive and lethal global power in the future. When fielded, it will be the only dual-capable, long-range, survivable capability that can penetrate advanced air defenses to hold peer adversaries' highest-valued targets at risk. Without the B-21 eliminating adversary Anti-Access / Area-Denial (A2/AD) capabilities which restrict the freedom of U.S. and Allied forces to maneuver, seizing and maintaining the initiative in a war primarily with capabilities such as standoff weapons, would be much more difficult, would take much longer, and would be much less cost-effective.

Today, the U.S. long-range bomber fleet is the oldest, smallest, and most fragile it has ever been. Except for the B-2, U.S. bombers cannot survive in highly contested air space. Fielding a robust force of B-21s is the only way the United States can maintain the range and payload advantage it enjoyed in past conflicts. Mass is still as important in future war as

Fielding a force of B-21s is the only way the U.S. can maintain the range and payload advantage it has had in past conflicts.

it was in past wars. The ability to inflict multiple, simultaneous dilemmas on an adversary is vital to creating compounding opportunities for Combatant Commanders to exploit. Long-range B-21 strikes in concert with other asymmetric capabilities, such as offensive cyber attacks and electromagnetic spectrum operations against sensors and command and control systems, degrade an adversary's ability to sense, decide, and act mirroring them in the proverbial fog of war. Once an adversary is denied the information it needs to defend itself, B-21s and other 5th and 6th generation platforms can then systematically degrade their ability to sustain offensive operations, leading to its defeat.

Among the long-standing principles of war, surprise is one of the most valuable: Surprise creates shock, confusion, and indecisiveness. It degrades an enemy's operations and produces opportunities for the attacker. Confronting adversaries in unexpected ways forces errors, exposes vulnerabilities, and ultimately slows their ability to react effectively in a timely manner.

U.S. bomber forces have long been used to achieve surprise; The raid on Tokyo led by then-Lt. Col. Jimmy

Illustration: Mike Tsukamoto/staff; USAF; Jonny Belvedere.

Doolittle may be the best-known example of this. The April 18, 1942, Doolittle Raid caught Japan's military by complete surprise and demonstrated that Japan's homeland was not an operational sanctuary. Doolittle's Raiders, flying 16 twin-engine B-25s off the deck of the U.S.S. Hornet, dealt a significant psychological blow to Japan and provided a much-needed morale boost for the American people. While the raid achieved little damage, it convinced the Japanese government to change its plans and direct valuable resources elsewhere to prevent another U.S. attack by air. Then, as now, air power can exacerbate a nation's sense of insecurity because the speed, range, and maneuverability of aircraft make them harder for an adversary to counter than slower moving ground or naval forces.

Today, 80 years later, the stealthy long-range B-21 promises to create even more challenging dilemmas for adversaries. The B-21 Raider will be the most survivable, most lethal, and most cost-effective combat aircraft ever built. The B-21 is an invaluable investment in the Nation's security, to be sure, providing U.S. commanders an incredible capability to deny adversaries operational sanctuaries. They create an imposing deterrent, as few adversaries would subject themselves to B-21 attacks against which they have no defense. When deterrence fails, B-21s can attack any target, anywhere on the globe within hours—and at much less risk than virtually any other instrument of U.S. power. Moreover, the larger the B-21 fleet, the greater its deterrence value.

The dual-capable B-21 is as much a key to the next offset strategy, and Integrated Deterrence, as are nuclear submarines; maybe even more so because of the inherent economic value in a capability that can create both conventional and nuclear effects. Instead of trying to respond to an opponent's strengths, the goal of an "offset" strategy is to impose burdens (financial and/or geopolitical "costs") to change strategic behavior by affecting their decision-making calculus. Simply stated, the goal is to force a competitor to invest resources in defense at the cost of offensive capabilities. The goal of such a cost-imposing strategy, then, is not just to ensure victory in war through technological overmatch and mass, but also to deter war in the first place by driving up the cost to defend against superior technology at the expense of the capability to wage war. The B-21 achieves this by growing a U.S. advantage—next-generation low observable technologies—faster than adversaries can react and adapt. During the Cold War, the U.S. planned to build 132 B-2s and 100 B-1s with the aim to bleed the Soviet military economy dry by forcing them to defend against these superior U.S. strategic capabilities. That same strategy applies today.

As with any deterrence strategy, the end goal is to make war

unattractive, unaffordable, and unwinnable in the adversary's eyes. Historically, bombers provided a flexible, visible tool for U.S. national security leadership to wield during a crisis. They can be "flexed"—flown next to a country's borders, for example—to signal U.S. resolve and deployed in a crisis far faster than ground or naval forces. And, unlike forward-based ground and naval forces, bombers can operate from distant bases, a disincentive to adversaries launching a preemptive strike.

Complicating the adversary's dilemma even more is the B-21's ability to deliver either conventional or nuclear weapons. The cost to counter a robust force of penetrating B-21s far exceeds the cost to develop, build, and sustain this revolutionary weapon system. The return on investment is invaluable.

CHALLENGES TO EXISTING METHODS OF POWER PROJECTION

The world has changed since Secretary of Defense Bob Gates approved the requirements for the then named "LRS-Bomber" (B-21) program in 2011, but the need for the Raider has only grown greater. China is aggressively attempting to assert itself as the Indo-Pacific region's economic and military leader and is backing up its ambitions by rapidly expanding the capacity and capability of its armed forces. To this end, it is fielding three aircraft carriers, low-observable aircraft, long-range air-to-air missiles, and hypersonic missiles such as the DF-21 and Fractional Orbital Bombardment System.

Like the United States, China enjoys a geographic "moat"—the Pacific Ocean. On top of this inherent advantage, it has mounted an aggressive campaign to deny any potential adversary the freedom to operate and sustain military forces inside the Western Pacific's Second Island Chain. As Dave Ochmanek points out in his RAND paper *Determining the Military Capabilities Most Needed to Counter China and Russia*, both "China's and Russia's anti-access and area-denial capabilities are expressly designed to keep U.S. and allied forces at arm's length and to suppress U.S. and allied operations for a period of time that is sufficient to allow the imposition of a *fait accompli*." An increasingly contested environment poses significant challenges to U.S. power-projection in the Indo-Pacific.

To prevail in conflict, U.S. Combatant Commanders require the capability and capacity to create large-scale effects in the battlespace in the shortest time possible. China's A2/AD strategy blunts U.S. efforts by reducing the efficacy of its land- and carrier-based strike systems. Threats to forward bases along the Western Pacific's First Island Chain, combined with an ever-increasing mobile ballistic missile threat to Navy carriers, means U.S. forces must overcome enormous distances to attack



Tech. Sgt. Hailey Haux

The B-2 Spirit brought stealth, range, and strike capacity to new levels, but only 21 were produced, and each aircraft is essentially unique, driving up the cost of operations and maintenance. The Air Force anticipates building at least 100 B-21s.



Master Sgt. Edward Snyder

Stealthy F-117s dropping guided bombs proved game changers during Operation Desert Storm, allowing bombers to hit multiple targets per sortie instead of only one.

Chinese targets.

A war against China in the Indo-Pacific would not be like the permissive contests seen in Iraq and Afghanistan, but instead would be characterized by:

- Intense ballistic and cruise missile attacks, as well as on airbases and ports
- Enemy bomber attacks, on U.S. and allied airbases and ports
- Anti-ship ballistic and cruise missile attacks on Navy surface ships and carriers by an increasingly powerful PLAN surface fleet, submarine fleet, and naval aviation
- Advanced enemy fighters with long-range air-to-air missiles (e.g., J-20 with PL-15) capable of threatening U.S. AWACS, tankers, and less survivable non-stealthy missile launching aircraft at range
- Advanced, long-range, enemy air defense systems designed to deny access to non-stealthy aircraft
- Adversary targets that are hardened, underground, mobile, or are beyond the reach of standoff weapons
- U.S. and Allied forces would be subject to relentless cyberattacks and information warfare measures throughout all stages of the conflict.

It is easy to see why the B-21 is a central requirement for any future conflict in the Indo-Pacific—there are no other U.S. capabilities that can reach, penetrate, and persist throughout the theater within hours, not days, weeks, or months. No other U.S. capability can operate from more bases located in northern Australia or other distant areas where the density of Chinese missile attacks would be spread thin. No other U.S. or allied capability can more effectively overcome the “tyranny of distance” of the Indo-Pacific and the great geographic depth of China to deny the People’s Liberation Army operational sanctuaries.

Numbers are important: creating and exploiting the element of surprise requires operations at scale. U.S. forces must have the capacity to create dilemmas, exploit an enemy’s indecision, and rapidly destroy its highest value, most critical targets from day one of a conflict. Germany’s Luftwaffe learned this the hard way during World War II, when it attempted to gain a qualitative edge over Allied air forces by deploying jet fighter technologies. The Luftwaffe’s Me-262 was over 100 mph faster than Allied fighters, but the Germans produced only 1,430 Me-262s compared to 30,000 American P-51s and P-47s. Even a 4-to-1 kill ratio in favor of the Me-262 was insufficient for Germany to regain air

superiority over its homeland. Vastly superior numbers helped the allies overcome a technologically superior, but much smaller German force. The takeaway: Quantity is just as important as quality. Mass remains an important element in dominating and dictating the tempo of a war.

A minimum of 100 B-21s is the current capacity requirement. Air Force officials have acknowledged that the number needed may be upwards of 145. Given the National Defense Strategy’s focus on China as the pacing threat, it is important for the U.S. to make decisions now to procure the B-21 force it needs for the 2030’s and beyond.

ATTRIBUTES THAT COUNT

Stealthy bombers are defined by three key attributes—range, payload, and survivability. These attributes underwrite their ability to perform multiple missions and strike multiple targets in a single sortie. The combination of long-range, endurance, and large payloads combined with survivability make modern penetrating bombers ideal platforms for multiple missions in A2/AD environments such as maritime strikes, suppression/destruction of enemy air defenses (SEAD/DEAD), strategic attacks, and close air support (CAS). This is a radical shift from roles bombers performed during the Vietnam War, when B-52s conducted carpet bombing operations over the jungles of Vietnam. B-1s and B-52s continued to use this tactic of employing large payloads of unguided munitions to ensure targets were destroyed in Operation Desert Storm in 1991 as well as in Operation Allied Force against Serbia in 1999. Mass, then, was required to overcome inaccuracy, but the introduction of the GBU-31 Joint Direct Attack Munition (JDAM), first employed by B-2s during Allied Force, revolutionized bomber efficiency forever.

Just as stealthy F-117 fighters and their laser-guided bombs were a game-changer in Operation Desert Storm, B-2s dropping up to 16 JDAMs per sortie revolutionized air warfare in 1999. GPS-aided munitions were accurate to less than 10 feet versus thousands of feet in World War II. Bomber strikes shifted from “one bomber, one target” to “one bomber, many targets.” Today’s B-2 can strike 80 targets on a single sortie. After Allied Force, B-1s, B-2s, and B-52s using GPS-aided munitions proved central to the post-9/11 campaigns in Afghanistan and Iraq. There, employing JDAM enabled bombers to conduct close air support, which was once considered only a fighter mission. Lt. Gen. Bob Elder, former 8th Air Force Commander, describes

the metamorphosis of the strategic bomber succinctly: “Their enduring success is the result of their inherent flexibility and adaptability.”

Today, U.S. bombers outfitted with beyond-line-of-sight datalinks and carrying a large variety of different and in-flight reprogrammable weapons have literally become flying vending machines in the sky. They can satisfy most everyone’s needs on a single sortie. Today, a bomber can take off from the U.S. mainland with zero targeting data, receive updates enroute, fly for tens of hours, and strike from inside or outside of an adversary’s air defense system. B-1s with intercontinental ranges and aerial refueling can employ 24 2,000-lb JDAMs per sortie, weapons that are reprogrammable in-flight. Fighters are capable of long-range missions, but it would take multiple fighters to achieve the same massed effects as a single bomber—and many more aerial refuelings to achieve comparable effects.

B-21s will provide a whole new meaning to “affordable mass” because they will be able to get close enough to targets to employ lower-cost munitions. Maj. Gen. Jason Armagost, Director of Air Force Global Strike Command Plans, Programs, and Requirements, emphasized the importance of affordable mass when he stated that future munitions “need to be relevant—and part of that relevance is cost—and we need a sufficient volume of fire.”

THE VALUE OF RANGE

Despite their large sizes, bombers are extremely agile and can deploy over intercontinental ranges more quickly, easily, and with less complexity than shorter-range aircraft. To cite just one example, a bomber launching directly from its airbase in North Dakota could reach a target area in the Indo-Pacific with just a single aerial refueling.

Distance is the greatest impediment to U.S. and Allied forces operating in the Indo-Pacific theater. Very few military assets can create a wide span of effects over long ranges. Aircraft carriers may need to standoff 1,000 to 1,500 nm from China’s coastline to reduce the threat of anti-ship missile attacks. This greatly reduces the potential for carrier-based fighters, whose combat radius to launch strikes or accomplish other missions is too short to bridge that distance. Furthermore, they can’t achieve the speeds quickly penetrate the battlespace, then retreat. Many long-range stand-off weapons still lack the range to hit deep targets; they are also expensive and less effective against mobile, hardened, or deeply buried targets. Sea-launched and ground-launched long-range hypersonic weapons are even more expensive and require target intelligence updates in-flight to be effective against mobile and relocatable targets that can quickly change their positions. The B-21 not only solves these range problems but expands options for U.S. commanders to penetrate and persist in contested areas to find and attack time sensitive mobile targets.

THE VALUE OF A LARGE, FLEXIBLE PAYLOAD

Bombers are very cost-effective platforms to deliver precise and decisive effects. B-21s with the ability to penetrate and persist in an adversary’s airspace, combined with a deep magazine, can not only attack and destroy multiple targets per sortie, but it can also launch large salvos of weapons or decoys to overwhelm and destroy adversary air defense systems, creating access for other assets to contribute to the fight.

A bomber’s cavernous internal weapons bays are a dream for weapons innovators. Additionally, it is far easier to develop long-range weapons for a bomber than a fighter, as the size of the weapons bay limits the size of the munitions they carry and the target effects they can create. Small weapons bays also limit

the effects fighters can achieve in a contested environment, since carrying additional weapons externally reduces their survivability. The less survivable a platform is, the more dependent it is on standoff weapons to counter enemy air defenses. This means they must use larger, longer-range weapons to reach their targets, raising the cost per strike. The ability to defeat critical hardened and deeply buried targets, such as command and control bunkers or Iranian nuclear facilities, is possible only with specialized munitions delivered by a penetrating stealthy bomber.

A modern product of digital knowhow, the B-21 will have the ability to rapidly integrate new software and even hardware, ensuring its lethality and survivability not only in the short term, but over its entire service life. The B-21 will be able to rapidly evolve and grow to meet new requirements.

THE VALUE OF SURVIVABILITY

Denying sanctuaries to an adversary is a strategic imperative in warfare; no adversary should be afforded the luxury of employing its most damaging capabilities with impunity.

The proliferation of very capable modern air defense systems means that future combat aircraft must be extremely survivable to accomplish its mission. Many high-value targets are now protected by advanced air defense systems and by locating them deep inland rather than on an accessible coastline. Countries like China and Russia are taking advantage of their strategic depth to create geographic sanctuaries for such targets, placing them increasingly out of range of short-range strike aircraft and even stand-off weapons launched from outside an integrated air defense system’s reach.

This is why low observability is now and will remain the price of admission for air warfare. Stealth is a requirement for any combat aircraft that must attack targets in A2/AD environments including inside and adversary’s national borders. In the 1970s, advances in materials and computing technology made stealth a reality. Some 40 some years later, advances in stealth technology continue to provide U.S. warfighters with a significant advantage. Stealth does not make an aircraft completely invisible to sensors. Stealth makes an aircraft invisible enough to make detection infrequent, and the data adversary sensors receives is ambiguous enough that an adversary cannot definitively connect the dots fast enough successfully engage. The effectiveness of stealth is further enhanced when coupled with other capabilities such as electronic warfare and cyberattacks that deceive, degrade, or even destroy an adversary’s air defenses. Stealth can reduce the number of supporting aircraft and other capabilities required to attack a target while reducing attrition.

STANDOFF WEAPONS VERSUS B-21 PENETRATING STRIKES

Standoff weapons are vital to defeating an adversary such as China, but they are less effective against mobile targets. Realistically, without a datalink or autonomous capability, the time-of-flight of current stand-off weapons is too long to strike mobile or relocatable targets over long ranges. Furthermore, standoff weapons cannot carry the very large warheads, such as the GBU-57 Massive Ordnance Penetrator or GBU-72 Advanced 5K Penetrator, needed to attack hardened and deeply buried targets. They also lack the range to strike targets deep in China’s interior when launched by non-survivable legacy aircraft beyond Chinese airspace.

Only a penetrating bomber can effectively persist in contested areas to find, identify, and attack highly mobile missiles that keep U.S. aircraft carriers and other forces out of the fight, or anti-satellite weapons located deep in China’s interior that

threaten U.S. space assets.

Precision is a significant differentiator between penetrating aircraft such as the B-21 and other long-range weapons that rely on other sources to provide targeting data and target updates. Penetrating bombers such as the B-21 can close kill chains organically—that is, with little to no off-board help—in contested and highly contested environments. Off-board data from other aircraft or space-based sensors can be used to cue a target search, but because the B-21 can penetrate, it can self-target with on-board sensors and eliminate target location errors created by a target's movement. This is an essential discriminator. Being able to verify offboard intelligence and positively identifying targets using real-time data is another penetrating aircraft differentiator.

Finally, penetrating bombers are a very cost-effective means of delivering large payloads of weapons, either direct attack or standoff or a combination of both, on targets in contested areas over a protracted campaign. Eliminating high-value targets as quickly as possible increases the resiliency and survivability of all joint force operations. For example, bomber strikes against DF-21 and DF-26 anti-ship ballistic missiles will reduce threats to Navy assets and enable them to operate inside the Second Island Chain.

FOUNDATION OF NUCLEAR DETERRENCE

Today's nuclear deterrence environment is more uncertain than ever. Russia's aggression against Ukraine has been marked by threats to use nuclear weapons. Iran seems more determined than ever to develop and deploy a nuclear weapon, and it was recently discovered that China is building multiple ICBM silo fields as it deploys its own nuclear triad. Most worrisome, though, is that the United States only has a nuclear treaty in place with Russia, and it doesn't even apply to Russia's large inventory of theater nuclear weapons. In the absence of treaties, Iran and China's nuclear growth goes uncontained. With these facts in mind, it is no surprise that DOD's most recent Nuclear Posture Review determined its nuclear triad—composed of nuclear-capable bombers, ICBMs, and SLBM submarines—is still necessary and will remain a vital instrument of U.S. soft and hard power for the unforeseeable future. As former Chief of Staff of the Air Force General Mark Welsh, once said, "Nuclear deterrence is the wallpaper that everything else hangs on."

Due to their inherent responsiveness, agility/flexibility, and visibility, bombers are a cornerstone of U.S. nuclear deterrence. The ICBM is a static weapon system residing underground that has two modes of operation: standby or launch; there is no in-between. SSBNs are never meant to be seen until they are required to launch nuclear weapons. ICBMs and SSBNs are not as visible and have a very limited ability to dynamically deter or demonstrate escalation. Their deterrence value lies in their ability to maintain a constant alert status with weapons ready to launch at a moment's notice. Bombers, on the other hand, can be used dynamically and visibly in an escalating crisis because they can be used interchangeably for conventional and nuclear deterrence missions.

Dual-capable bombers are inherently more cost-effective than the other two legs of the triad. Bomber aircrew and maintenance personnel are highly trained and proficient in both conventional and nuclear mission requirements. Upon Presidential direction, a bomber wing can rapidly transform into a nuclear force that is loaded with nuclear software and weapons and placed on nuclear alert in a matter of hours. By direction of National Command Authority, a full bomber wing can be on alert in a few days for the whole world to see.

Bombers visibly signal U.S. resolve unlike submarines and

ICBMs—and they can be invisible when you don't want them to be. Moreover, bombers are the best nuclear instrument to provide extended deterrence to U.S. allies and partners, which helps reduce the proliferation of nuclear weapons. Bombers are also more stabilizing in crises compared to SLBM-carrying submarines and ICBMs. Unlike ballistic missiles, they can be recalled after launch, and the hours it requires them to get to their launch points provides time and leverage for decision-makers to de-escalate a situation with less risk of catastrophic errors that have horrific consequences.

CONCLUSION

Operation Desert Storm in 1991 put the stealth revolution on full display for the world to see. The perceived sanctuary in and around Baghdad disappeared instantly as the first-ever stealth attack aircraft, the F-117, penetrated one of the most concentrated air defenses in the world, laying waste to much of what Saddam Hussein and his cronies held dear. Flying only 2 percent of the strike missions, F-117s eliminated 40 percent of all strategic targets—with no losses. From that moment on, stealth became the dominant asymmetric advantage of the United States.

Only nine years later, conflict in the Balkans during Operation Allied Force showcased yet another U.S. stealth marvel, the B-2. The B-2 engaged targets with GPS-aided JDAMs. Flying less than 1 percent of the sorties, B-2s dropped 11 percent of the munitions, and it did so while originating all its sorties from Whiteman Air Force Base in Missouri. These 30-plus hour flights highlighted the value of stealth, range, and precision.

China, Russia, and others took notice. Endless videos of F-117 and B-2 precision attacks led both to seek ways to take these advantages away from the United States, spawning their A2/AD complexes.

Fortunately for the United States, the Air Force and its defense industry partners continued to make advances in stealth materials, coatings, and sustainment. They also developed more advanced computing power and precision weapons, which all contributed to maintaining the Air Force's position as the undeniable world leader in stealth capabilities.

The F-22 and F-35 are prime examples of the continuing technological revolution that has produced dominant warfighting capabilities for U.S. warfighters. The B-21 is the next step in this evolution, and it is even better than its predecessors. With adversary A2/AD capabilities growing by the day, the need for the B-21 has never been greater, especially in the Indo-Pacific, where penetrating long-range strike systems are the best means America has to deter or defeat Chinese aggression as required by the 2022 National Defense Strategy.

Fielding the B-21 on time and at scale is a national imperative. The Air Force's long-range bombers exist to provide weapons and sensor density at range that enable commanders to achieve a broad array of effects against the most difficult target sets. These effects are critical to the success of all joint force operations, not just the Air Force. At a global level, the United States is the only nation on the planet now capable of achieving war-winning effects over great distances in a matter of hours. The B-21 is the capability that can provide our Nation's leaders with a flexible, cost-effective, dual-capable instrument to deter war and—should deterrence fail—to prevail against America's enemies. ✪

Col. Chris Brunner, USAF (Ret.), is a Senior Resident Fellow for Air Power at AFA's Mitchell Institute for Aerospace Studies.



Joint Task Force Civil Support at Joint Base Langley-Eustis, Va., share information during a Joint All-Domain Command and Control demonstration.

Refining the JADC2 Concept

Agreeing to share data is easy. Actually doing it is hard.

By Amanda Miller

When Air Force Secretary Frank Kendall came to office, he was plain in his assessment of the Air Force’s Advanced Battle Management System and its work on joint all-domain command and control (JADC2). Though he thought the concepts had merit, he wasn’t convinced the Air Force was moving in the right direction to achieve operational effectiveness.

The question wasn’t whether improving the ability to move targeting data across platforms and domains was a worthy goal, but rather whether the Air Force was following a sufficiently systematic approach to making that happen.

The problem itself was not new. Retired Air Force Col. Robert H. Epstein said almost every operation he took part in over the course of his career was a joint, international affair. “We were never the only service

“No one knows what JADC2 is. It’s just completely confusing!”

—Derek Tourneer, head of the Space Development Agency

that was there,” Epstein said. “Matter of fact, we were never the only flag that was actually represented on the org chart of how we shared information.”

Now the senior solution architect for Leidos’ C4ISR Solutions Operation, Epstein wants to solve problems he experienced in combat. “For Libya operations, I saw pilots actually coming back and having to sit there and, on a whiteboard, tell us what they saw,” Epstein recalled. “Because we couldn’t share information with one another [technologically], and we had to do it on the fly.”

That kind of manual process might work in “a pick-up war, or what we did in Afghanistan,” he said, but in a peer fight where the gaps and delays would be magnified and exploited by a highly capable enemy, they could become insurmountable weaknesses. The risk is this simple: “We’re going to lose because this gets into an OODA loop [observe, orient, decide, act] and a turning battle. [To win], we need to outturn our



Staff Sgt. Brandon Cribelar

adversaries, so the way we make decisions is forcing them to react to us and not the other way around.”

At AFA’s Air, Space & Cyber Conference in September, JADC2 was high on everyone’s agenda, as it remains one of Kendall’s seven “Operational Imperatives”—his top priorities for the department. Kendall used some of his stage time at the AFA conference to announce Brig. Gen. Luke C.G. Cropsey had been named to coordinate the ongoing development of the Advanced Battle Management System, or ABMS. Cropsey is the integrating program executive officer for command, control, communications, and battle management.

ABMS and a new space-based “backbone” now being developed by the Space Force’s Space Development Agency are the department’s key contributions to operationalizing JADC2, which is a DOD-wide objective.

The Air Force is shifting its approach from one focused on proofs of concepts and experiments to one based on developing an operational architecture and model. Brig. Gen. Jeffery D. Valenzia, the Department of the Air Force’s cross-functional team lead for ABMS, said that rather than “imagining the solution ahead of time and establishing the key performance parameters that we want,” the department intends to offer a digital model “and we can allow you to demonstrate the proof of your solution within the model.”

Epstein applauded the progress, praising the department for “getting after the real problem, which is to create the architecture and standards that allow industry to help you solve your problems.”

This involves engineering the backward-compatibility

necessary to link existing communication systems with SDA’s planned data-transport satellite constellation, which could be fielded as soon as 2024, using model-based systems engineering to develop a multi-level mesh network for battle management C2.

DEFINING JADC2

Devising a single universal, well-understood, and fully accepted definition of JADC2 has been elusive.

Gen. Jacqueline D. Van Ovost, head of U.S. Transportation Command, describes it this way: “It’s an ability to be connected, to understand the environment through a battlespace awareness, having secure crypto so that we can communicate and ... ensure that we can get decision advantage at all echelons so that we can execute command intent at all echelons.”

Maj. Gen. John M. Olson, mobilization assistant to the Chief of Space Operations, who is also overseeing data and AI for the Space Force, defines JADC2 this way: “It’s really the ability to sense, make sense, and act across all domains, across the joint services, in a contested environment, at the speed of relevance.”

Leidos’ Epstein says JADC2 is “creating the pipes so that we can push data around, because data is everything—that’s how we make decisions.”

Or as Olson says: “It’s operationalization of data.”

So it’s not surprising that Derek Tournear, head of the Space Development Agency, says “No one knows what JADC2 is. It’s just completely confusing.”

Tournear continues: “It really is a simple concept: ... How do we get any and all sensor data to any and all shooters at the

Joint All-Domain Command and Control has been a focus for U.S. Transportation Command boss Gen. Jacqueline Van Ovost, center, since her time leading Air Mobility Command. Here she discusses the issue with Lt. Col. David Schur, then-commander of the 43rd Operations Support Squadron, and AMC's then-Command Chief, Chief Master Sgt. Brian Kruzelnick.



Staff Sgt. Christian Sharpe

right time?"

The difficult part is not the concept, but the execution, he said. "In order to do that across the 'J' in JADC2—across all the services—is extraordinarily difficult. Everybody uses different comm systems, and they use different networks, and it's just very difficult to cross all of those lines."

To simplify the problem, Tournear boils the challenge down to "two main capabilities." The first is beyond-line-of-sight targeting. "Think mobile missile launchers—think ships. Detect them. Track them. Calculate a fire control solution and send it down directly to the war fighter so they can use that in their solution." The second capability is to enable that same thing "for advanced missiles in flight." That is, to detect and track a hypersonic glide vehicle in flight, then "calculate a fire control solution [and] send it down to an interceptor to take out that threat immediately."

COMMERCIAL HELP

To achieve that vision, the U.S. must leverage its advantages in the commercial sector. "It's the richness and the intellectual curiosity and capacity—the entrepreneurial capability and the industrial base strength of our United States as well as of our partners and allies" that must be harnessed to achieve success, Olson said.

That's why the department is rallying around a model-based systems engineering approach for JADC2.

Lanny Merkel, director of JADC2 capabilities and proprietary programs for Collins Aerospace, said the nature of conventional military acquisition and the requirements process is that it's often hard to read between the lines, to understand the vision and sentiment behind the requirements.

"We've all experienced reading requirements documents, and ... you don't really get the context," Merkel said. "You don't get the precision. You don't understand the intricacies and how the activities are really related like you do when you have

a model-based systems engineering model of what's trying to be achieved."

Engineering fellow Teri Williams of Raytheon Intelligence & Space said based on experience from the Valiant Shield exercise that the aim is not to solve the whole problem at once, but to learn as you go. "You're going to have an initial 60 percent, 70 percent solution, that you're going to try your best to model," Williams said. "You're going to take what technologies you have, and you're going to refine those concepts."

That's step one. "But then you go out and you exercise that. So instead of the old antiquated tabletop exercises ... we're using real software, real hardware out in the field. So we take that and we test it. And then we refine our algorithms and then go back and test it again."

Even with all the iterations, "we're able to reduce the risk to the combatant commanders," Williams said. "We're able to reduce that cost and bring in operational capability faster."

Ron Fehlen, vice president and general manager of USAF programs, broadband communication systems, for L3 Harris Technologies, cited the benefits of clarity and focus. Instead of "blank sheets of paper," he said, the development process becomes a "very disciplined conversation" in which participants define the ground rules and assumptions used inside the model. That brings everyone together.

Valenzia said this transparency extends beyond industry partners to include allies.

DATA PATCHWORK

Merkel said JADC2's initial solutions will not be a "seamless integration of data between domains and enclaves," but rather the patching together of "many existing systems ... stove-piped in at different security levels."

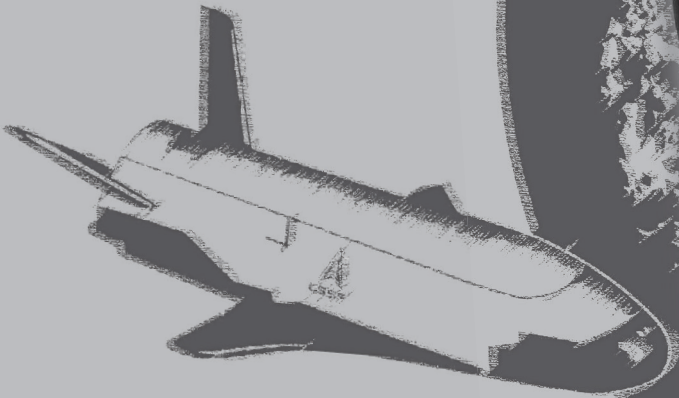
To do that, he said, "we really need to work through the access to the data through cross-domain solutions or secure processing activities that can, in the near term, Band-Aid ...

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SDA illustration

The Space Development Agency announced two contract awards for the first generation of the Transport Layer. These satellites will be able to communicate with Link 16 communications systems, directly connecting them to the internet. Making it the first step toward developing the National Defense Space Architecture's inaugural tranche (called Tranche 0).

that information together.”

SDA's planned space architecture includes a data-transport “layer” of satellites in low Earth orbit that will communicate directly with existing Link 16 communication systems, extending Link 16's 200-nautical mile effective range with persistent space connectivity.

SDA Director Tournear said existing technology limits the number of moving targets the U.S. can engage to perhaps “a dozen or so targets a week, maybe a half dozen or so a day.”

That's too small a threshold, he said. “If we get into a conflict where we need to prosecute hundreds a day, how are we going to do that? I can only have this communication within 200 nautical miles. How am I going to actually sense, calculate a fire control solution, and send it to a weapon all with only sensors and radios available within that? Well, that's not going to happen.”

By enabling Link 16 “radios to tie into our Transport Layer system of hundreds of satellites in low Earth orbit,” Tournear said, “that's essentially like plugging into the internet.”

In other words, combat jets can connect to targeting cells “that are located anywhere on the globe, and they can talk to any of these other Link 16 networks that are located anywhere on the globe. You can tie in all that processing and targeting capability and get that to pair with your weapon systems immediately.”

The payoff: “Now if I have an F-35 coming in, receiving the Link 16 signal with targets, those targets could be coming from sensors that are either within my 200 nautical mile AOR, area of operations, or a fire control cell that's located back in the continental U.S. crunching all this data, calculating it, and sending it over my existing radio.”

SDA also intends to connect with other Army and Navy systems, “going down to existing tactical data links, so the services don't have to worry about fielding new equipment: They can

just tie into us,” Tournear said.

SDA expects demonstrations to begin in 2023 and to be able “to affect the fight starting in '24.”

MULTI-LEVEL MESH NETWORK

SDA's Transport Layer of hundreds of optically linked satellites is envisioned as part of a multi-level, secure mesh network that will also include “translator” payloads to safely connect to other systems, including commercial satellite networks. SDA also plans for this National Defense Space Architecture to include a DOD-owned Tracking Layer of infrared missile-warning satellites, for which it has started awarding contracts. The concept features further layers including a “custody layer” for intelligence, surveillance, and reconnaissance and a “navigation layer” for position, navigation, and timing that doesn't rely on GPS.

“And the reason that the multi-level, secure mesh network is important is because the network will be under attack from the threat,” said Brad Tousley, vice president of strategy and technology for Raytheon Intelligence & Space. “So the network is going to come up, and it's going to go down in different periodic locations” for security purposes.

Tournear said the mesh network, with its different layers and functions, is both resilient and powerful, its satellites equipped with onboard processing power to crunch data and the ability to pass data from one satellite network to another, including commercial constellations.

“Commercial industry is fielding a bunch of sensors and a bunch of different comm networks up there,” Tournear said. DOD's “multi-level mesh network is how you pull data on and off to make sure you can get data from whatever source to whatever shooter at the right classification level.

This, he said, is how DOD will connect all the sensors and shooters and make it all “readily available for our war fighters.”

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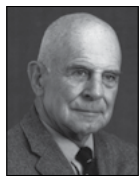
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C. R. Smith
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Carl A. Spaatz
Chairman, 1950-51

Harold C. Stuart
President, 1951-52
Chairman, 1952-53

Arthur F. Kelly
President, 1952-53
Chairman, 1953-54

George C. Kenney
President, 1953-54
Chairman, 1954-55

John R. Alison
President, 1954-55
Chairman, 1955-56

Gill Robb Wilson
President, 1955-56
Chairman, 1956-57

John P. Henebry
President, 1956-57
Chairman, 1957-58

Peter J. Schenk
President, 1957-59

James M. Trail
Chairman, 1958-59

Howard T. Markey
President, 1959-60
Chairman, 1960-61

Julian B. Rosenthal
Chairman, 1959-60

Thos. F. Stack
President, 1960-61
Chairman, 1961-62

Joe Foss
President, 1961-62
Chairman, 1962-63

John B. Montgomery
President, 1962-63

W. Randolph Lovelace II

President, 1963-64
Chairman, 1964-65

Jack B. Gross
Chairman, 1963-64

Jess Larson
President, 1964-67
Chairman, 1967-71

Robert W. Smart
President, 1967-69

George D. Hardy
President, 1969-71
Chairman, 1966-67
Chairman, 1971-72

Martin M. Ostrow
President, 1971-73
Chairman, 1973-75

Joe L. Shosid
President, 1973-75
Chairman, 1972-73
Chairman, 1975-76

George M. Douglas
President, 1975-77
Chairman, 1977-79

Gerald V. Hasler
President, 1977-79
Chairman, 1976-77

Victor R. Kregel
President, 1979-81
Chairman, 1981-82

Daniel F. Callahan
Chairman, 1979-81

John G. Brosky
President, 1981-82
Chairman, 1982-84

David L. Blankenship
President, 1982-84
Chairman, 1984-85

Edward A. Stearn
Chairman, 1985-86

Martin H. Harris
President, 1984-86
Chairman, 1986-88

Sam E. Keith Jr.
President, 1986-88
Chairman, 1988-90

Jack C. Price
President, 1988-90
Chairman, 1990-92

Oliver R. Crawford
President, 1990-92
Chairman, 1992-94

James M. McCoy
President, 1992-94
Chairman, 1994-96

Gene Smith
President, 1994-96
Chairman, 1996-98

Doyle E. Larson
President, 1996-98
Chairman, 1998-2000

Thomas J. McKee
President, 1998-2000
Chairman, 2000-02

John J. Politi
President, 2000-02
Chairman, 2002-04

Stephen P. Condon
President, 2002-04
Chairman, 2004-06

Robert E. Largent
President, 2004-06*
Chairman, 2006-08

Joseph E. Sutter
Chairman, 2008-10



Bernie Skoch
Chairman, 2022-

S. Sanford Schlitt
Chairman, 2010-12

George K. Muellner
Chairman, 2012-14

Scott P. Van Cleef
Chairman, 2014-16

F. Whitten Peters
Chairman, 2016-19

Gerald R. Murray
Chairman, 2019-22

* The office of National President, an elected position, was disestablished in 2006.

AFA Executive Directors/Presidents



Willis S. Fitch
Executive Director
1946-47

*—President/CEO 2006-07

James H. Straubel
Executive Director
1948-80

Russell E. Dougherty
Executive Director
1980-86

David L. Gray
Executive Director
1986-87

John O. Gray
Acting Executive Director
1987-88, 1989-90

Charles L. Donnelly Jr.
Executive Director
1988-89

Monroe W. Hatch Jr.
Executive Director
1990-95

John A. Shaud
Executive Director
1995-2002

Donald L. Peterson
Executive Director
2002-06*/07*

Michael M. Dunn
President-CEO
2007-12

Craig R. McKinley
President
2012-15

Larry O. Spencer
President
2015-19



Bruce A. Wright
President-CEO
2019-

VICE CHAIRMEN FOR FIELD OPERATIONS



Jim Simons
Vice Chairman
for Field Operations
2020-

Joseph E. Sutter
2006-08

James R. Lauducci
2008-10

Justin M. Faiferlick
2010-12

Scott P. Van Cleef
2012-14

David A. Dietsch
2014-16

F. Gavin MacAloon
2016-20

VICE CHAIRMEN FOR AEROSPACE EDUCATION



Stephen K. Gourley
Vice Chairman for
Aerospace Education
2021-

L. Boyd Anderson
2006-07

S. Sanford Schlitt
2007-10

George K. Muellner
2010-12

Jerry E. White
2012-15

Richard B. Bundy
2015-18

James T. Hannam
2018-2021

NATIONAL SECRETARIES



Michael J. Liquori
National Secretary
2021-

Sol A. Rosenblatt
1946-47

Julian B. Rosenthal
1947-59

George D. Hardy
1959-66

Joseph L. Hodges
1966-68

Glenn D. Mishler
1968-70

Nathan H. Mazer
1970-72

Martin H. Harris
1972-76

Jack C. Price
1976-79

Earl D. Clark Jr.
1979-82

Sherman W. Wilkins
1982-85

A. A. "Bud" West
1985-87

Thomas J. McKee
1987-90

Thomas W. Henderson
1990-91

Mary Ann Seibel
1991-94

Mary Anne Thompson
1994-97

William D. Croom Jr.
1997-2000

Daniel C. Hendrickson
2000-03

Thomas J. Kemp
2003-06

Judy K. Church
2006-09

Joan Sell
2009-11

Edward W. Garland
2011-14

Marvin L. Tooman
2014-15

John T. Brock
2015-17

Ross Lampert
2017-2018

Richard W. Hartle
2018-2021

NATIONAL TREASURERS



Charles L. Martin Jr.
National Treasurer
2020-

W. Deering Howe
1946-47

G. Warfield Hobbs
1947-49

Benjamin Brinton
1949-52

George H. Haddock
1952-53

Samuel M. Hecht
1953-57

Jack B. Gross
1957-62

Paul S. Zuckerman
1962-66

Jack B. Gross
1966-81

George H. Chabbott
1981-87

William N. Webb
1987-95

Charles H. Church Jr.
1995-2000

Charles A. Nelson
2000-05

Steven R. Lundgren
2005-10

Leonard R. Vernamonti
2010-14

Nora Ruebrook
2014-16

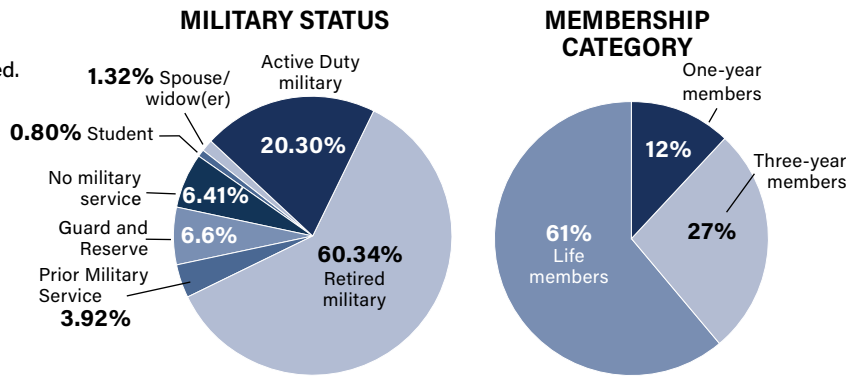
Charles L. Martin Jr.
2016

Steven R. Lundgren
2016-2020

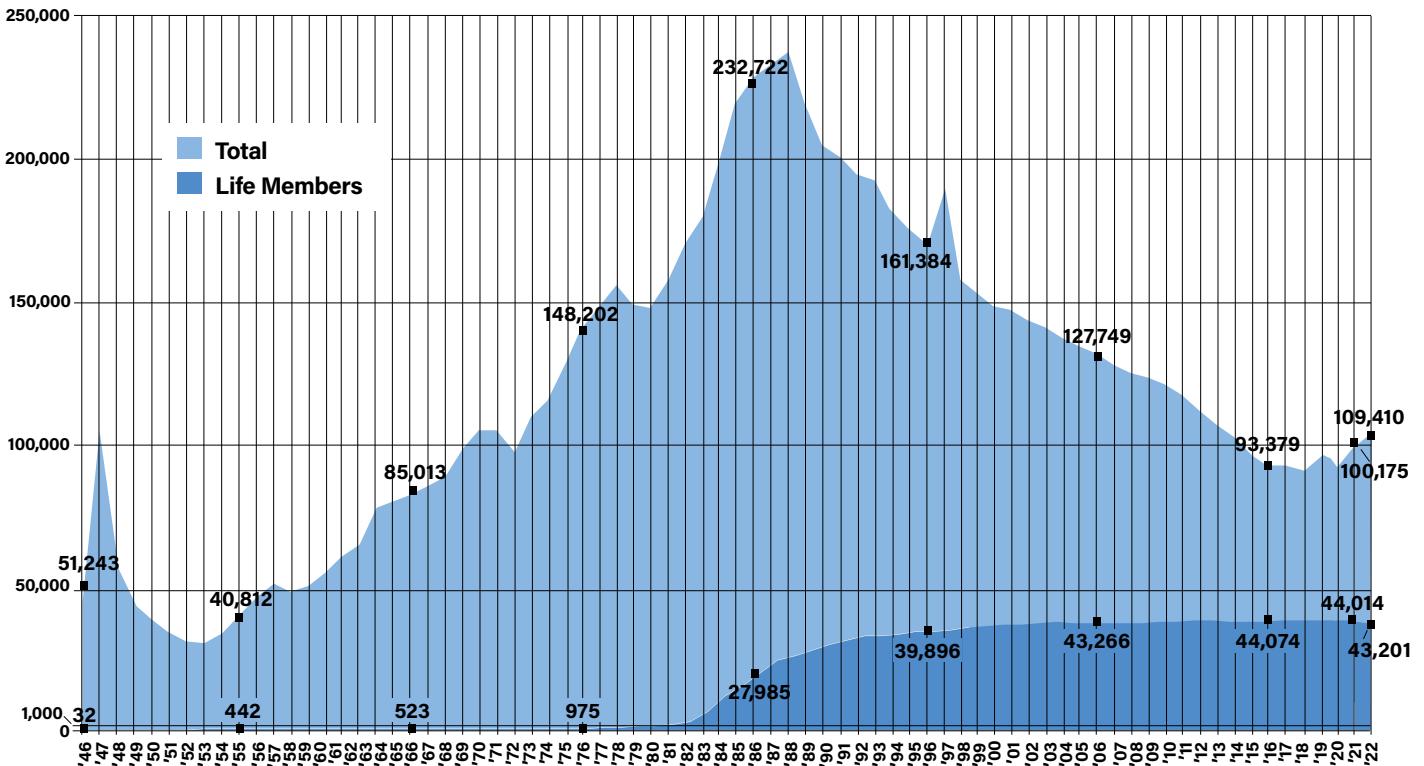
AFA Membership

As of September 2022. Total **109,410**. Numbers are rounded.

AFA Membership statistics peaked in the 1980s when health insurance was a member benefit provided by the association. After TRICARE for Life was established by Congress, membership trended downward. Over the past five years, membership totals have bounced back and are steadily regaining momentum.



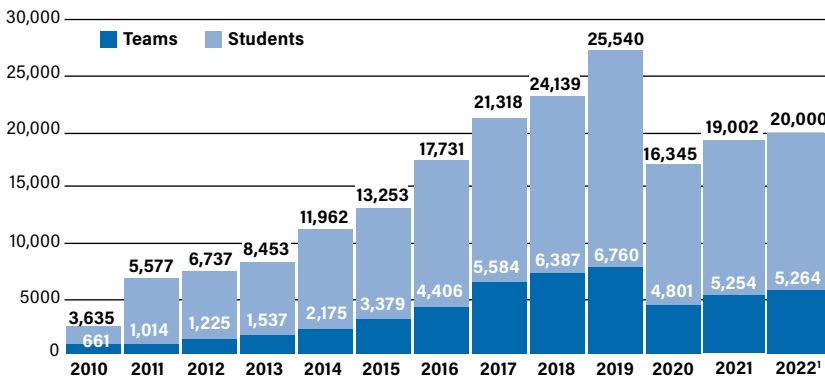
AFA Membership Over The Years



STEM Programs

AFA'S CYBERPATRIOT PROGRAM

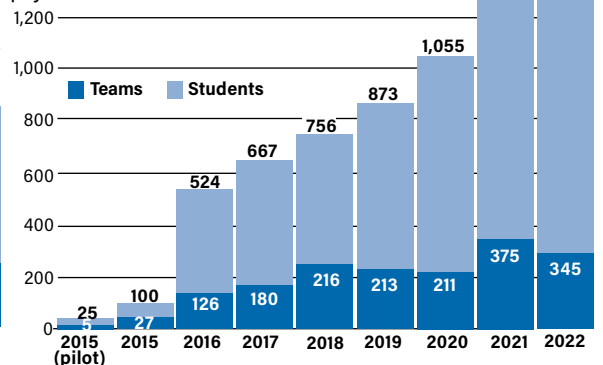
CyberPatriot is the National Youth Cyber Education Program created by AFA to inspire K-12 students toward careers in cybersecurity or other science, technology, engineering, and mathematics (STEM) disciplines.



¹Estimated—our competitor registration deadline is early November.

AFA'S STELLARXPLORERS PROGRAM

StellarXplorers is a challenging, space system design competition involving all aspects of system development and operation with a spacecraft and payload focus.



National Aerospace Awards

H.H. ARNOLD AWARD

Named for the World War II leader of the Army Air Forces, the H.H. Arnold Award has been presented annually in recognition of the most outstanding contributions in the field of aerospace activity. Since 1986, it has been AFA's highest honor to a member of the armed forces in the field of national defense.

Year	Award Recipient(s)	Year	Award Recipient(s)
1948	W. Stuart Symington, Secretary of the Air Force	1985	Gen. Bernard W. Rogers, USA, SACEUR
1949	Maj. Gen. William H. Tunner and the men of the Berlin Airlift	1986	Gen. Charles A. Gabriel, USAF (Ret.), former Air Force Chief of Staff
1950	Airmen of the United Nations in the Far East	1987	Adm. William J. Crowe Jr., USN, Chm., Joint Chiefs of Staff
1951	Gen. Curtis E. LeMay and the personnel of Strategic Air Command	1988	Men and women of the Ground-Launched Cruise Missile team
1952	Sen. Lyndon B. Johnson and Sen. Joseph C. O'Mahoney	1989	Gen. Larry D. Welch, Chief of Staff, USAF
1953	Gen. Hoyt S. Vandenberg, USAF (Ret.), former Air Force Chief of Staff	1990	Gen. John T. Chain, CINC, SAC
1954	John Foster Dulles, Secretary of State	1991	Gen. Charles A. Horner, Cmdr., CENTCOM Air Forces and 9th Air Force
1955	Gen. Nathan F. Twining, Chief of Staff, USAF	1992	Gen. Colin L. Powell, USA, Chm., Joint Chiefs of Staff
1956	Sen. W. Stuart Symington	1993	Gen. Merrill A. McPeak, Chief of Staff, USAF
1957	Edward P. Curtis, special assistant to the President	1994	Gen. John Michael Loh, Cmdr., Air Combat Command
1958	Maj. Gen. Bernard A. Schriever, Cmdr., Ballistic Missile Div., ARDC	1995	World War II Army Air Forces veterans
1959	Gen. Thomas S. Power, CINC, SAC	1996	Gen. Ronald R. Fogleman, Chief of Staff, USAF
1960	Gen. Thomas D. White, Chief of Staff, USAF	1997	Men and women of the United States Air Force
1961	Lyle S. Garlock, Assistant SECAF	1998	Gen. Richard E. Hawley, Cmdr., ACC
1962	A. C. Dickieson and John R. Pierce, Bell Telephone Laboratories	1999	Lt. Gen. Michael C. Short, Cmdr., Allied Air Forces Southern Europe
1963	The 363rd Tactical Recon. Wing and the 4080th Strategic Wing	2000	Gen. Michael E. Ryan, Chief of Staff, USAF
1964	Gen. Curtis E. LeMay, Chief of Staff, USAF	2001	Gen. Joseph W. Ralston, CINC, EUCOM
1965	The 2nd Air Division, PACAF	2002	Gen. Richard B. Myers, USAF, Chm., Joint Chiefs of Staff
1966	The 8th, 12th, 355th, 366th, and 388th Tactical Fighter Wings and the 432nd and 460th TRWs	2003	Lt. Gen. T. Michael Moseley, Cmdr., air component, CENTCOM, and 9th Air Force
1967	Gen. William W. Momyer, Cmdr., 7th Air Force, PACAF	2004	Gen. John P. Jumper, Chief of Staff, USAF
1968	Col. Frank Borman, USAF; Capt. James Lovell, USN; and Lt. Col. William Anders, USAF, Apollo 8 crew	2005	Gen. Gregory S. Martin, USAF (Ret.), former Cmdr., AFMC
1969	(No presentation)	2006	Gen. Lance W. Lord, USAF (Ret.), former Cmdr., AFSPC
1970	Apollo 11 team (J. L. Atwood; Lt. Gen. S. C. Phillips, USAF; and astronauts Neil Armstrong and USAF Cols. Buzz Aldrin and Michael Collins)	2007	Gen. Ronald E. Keys, Cmdr., ACC
1971	John S. Foster Jr., Dir. of Defense Research and Engineering	2008	Gen. Bruce Carlson, Cmdr., AFMC
1972	Air units of the allied forces in Southeast Asia (Air Force, Navy, Army, Marine Corps, and the Vietnamese Air Force)	2009	Gen. John D. W. Corley, Cmdr., ACC
1973	Gen. John D. Ryan, USAF (Ret.), former Chief of Staff	2010	Lt. Gen. David A. Deptula, USAF Deputy Chief of Staff, ISR
1974	Gen. George S. Brown, USAF, Chm., Joint Chiefs of Staff	2011	Gen. Duncan J. McNabb, Cmdr., TRANSCOM
1975	James R. Schlesinger, Secretary of Defense	2012	Gen. Norton A. Schwartz, USAF (Ret.), former Chief of Staff
1976	Sen. Barry M. Goldwater	2013	Gen. Douglas M. Fraser, USAF (Ret.), former Cmdr., SOUTHCOM
1977	Sen. Howard W. Cannon	2014	Gen. C. Robert Kehler, USAF (Ret.), former Cmdr., STRATCOM
1978	Gen. Alexander M. Haig Jr., USA, Supreme Allied Commander, Europe	2015	Gen. Janet C. Wolfenbarger, USAF (Ret.), former Cmdr., AFMC
1979	Sen. John C. Stennis	2016	Gen. Mark A. Welsh III, USAF (Ret.), former Chief of Staff
1980	Gen. Richard H. Ellis, USAF, CINC, SAC	2017	Lt. Gen. Christopher C. Bogdan, USAF (Ret.), former PEO, F-35 Prgm
1981	Gen. David C. Jones, USAF, Chm., Joint Chiefs of Staff	2018	Gen. Herbert J. Carlisle, USAF (Ret.), former Cmdr., AFMC
1982	Gen. Lew Allen Jr., USAF (Ret.), former Chief of Staff	2019	Gen. Ellen M. Pawlikowski, USAF (Ret.), former Cmdr., AFMC
1983	Ronald W. Reagan, President of the United States	2020	Gen. David L. Goldfein, USAF (Ret.), former Chief of Staff, USAF
1984	The President's Commission on Strategic Forces (Scowcroft Commission)	2021	Gen. John W. "Jay," Raymond, USSF, Chief of Space Operations
		2022	Gen. Tod D. Wolters, USAF (Ret.), former Cmdr., USEUCOM and NATO SACEUR



Gen. Tod D. Wolters accepts the H.H. Arnold Award from CSAF Gen. Charles Brown at the Air, Space & Cyber Conference Sept. 19, 2022. AFA President Bruce Wright (I) and Board Chairman Gerald Murray were also present.

W. STUART SYMINGTON AWARD

AFA's highest honor to a civilian in the field of national security, the award is named for the first Secretary of the Air Force.

Year	Award Recipient(s)	Year	Award Recipient(s)
1986	Caspar W. Weinberger, Secretary of Defense	2004	Peter B. Teets, Undersecretary of the Air Force
1987	Edward C. Aldridge Jr., Secretary of the Air Force	2005	Rep. Duncan Hunter (R-Calif.)
1988	George P. Schultz, Secretary of State	2007	Michael W. Wynne, SECAF
1989	Ronald W. Reagan, former President of the United States	2008	Gen. Barry R. McCaffrey, USA (Ret.)
1990	John J. Welch, Asst. SECAF (Acquisition)	2009	Sen. Orrin G. Hatch (R-Utah)
1991	George Bush, President of the United States	2010	John J. Hamre, Center for Strategic & International Studies
1992	Donald B. Rice, SECAF	2011	Rep. C. W. "Bill" Young (R-Fla.)
1993	Sen. John McCain (R-Ariz.)	2012	Gen. James L. Jones, USMC (Ret.)
1994	Rep. Ike Skelton (D-Mo.)	2013	Michael B. Donley, SECAF
1995	Sheila E. Widnall, SECAF	2014	Ashton B. Carter, former Deputy SECDEF
1996	Sen. Ted Stevens (R-Alaska)	2015	William A. LaPlante, Asst. SECAF (Acquisition)
1997	William Perry, former SECDEF	2016	Jamie M. Morin, Director, Cost Assessment & Prgm Evaluation
1998	Rep. Saxby Chambliss (R-Ga.) and Rep. Norman D. Dicks (D-Wash.)	2017	Lisa S. Disbrow, Undersecretary of the Air Force
1999	F. Whitten Peters, SECAF		
2000	Rep. Floyd Spence (R-S.C.)	2019	Heather Wilson, former SECAF
2001	Sen. Michael Enzi (R-Wyo.) and Rep. Cliff Stearns (R-Fla.)	2020	Will Roper, Asst. SECAF (AT&L)
2002	Rep. James V. Hansen (R-Utah)	2021	Barbara Barrett, former SECAF
2003	James G. Roche, SECAF	2022	Sen. Jim Inhofe, Ranking Member, SASC

JOHN R. ALISON AWARD

AFA's highest honor for industrial leadership.

Year	Award Recipient(s)	Year	Award Recipient(s)
1992	Norman R. Augustine, Chairman, Martin Marietta	2005	Richard Branson, Chm., Virgin Atlantic Airways and Virgin Galactic
1993	Daniel M. Tellep, Chm. and CEO, Lockheed	2006	Ronald D. Sugar, Chm. and CEO, Northrop Grumman
1994	Kent Kresa, CEO, Northrop Grumman	2007	Boeing and Lockheed Martin
1995	C. Michael Armstrong, Chm. and CEO, Hughes Aircraft	2008	Bell Boeing CV-22 Team, Bell Helicopter Textron, and Boeing
1996	Harry Stonecipher, Pres. and CEO, McDonnell Douglas	2009	General Atomics Aeronautical Systems Inc.
1997	Dennis J. Picard, Chm. and CEO, Raytheon	2010	Raytheon
1998	Philip M. Condit, Chm. and CEO, Boeing	2011	United Launch Alliance
1999	Sam B. Williams, Chm. and CEO, Williams International	2012	Boeing
2000	Simon Ramo and Dean E. Wooldridge, missile pioneers	2013	X-51A WaveRider Program, Boeing, Aerojet Rocketdyne, and Air Force Research Laboratory
2001	George David, Chm. and CEO, United Technologies	2014	C-17 Globemaster III, Boeing
2002	Sydney Gillibrand, Chm., AMEC; and Jerry Morgensen, Pres. and CEO, Hensel Phelps Construction	2015	F-22 Raptor, Lockheed Martin
2003	Joint Direct Attack Munition Industry Team, Boeing	2016	SpaceX
2004	Thomas J. Cassidy Jr., Pres. and CEO, General Atomics Aeronautical Systems	2017	Northrop Grumman
		2018	Skunk Works, Lockheed Martin
		2019	Draken International
		2020	Marilyn Hewson
		2021	Tory Bruno, CEO, United Launch Alliance
		2022	Jeff Babione, COO, Sierra Space

AFA LIFETIME ACHIEVEMENT AWARD

The award recognizes a lifetime of work in the advancement of aerospace.

Year	Award Recipient(s)
2003	Maj. Gen. John R. Alison, USAF (Ret.); Sen. John H. Glenn Jr.; Maj. Gen. Jeanne M. Holm, USAF (Ret.); Col. Charles E. McGee, USAF (Ret.); Gen. Bernard A. Schriever, USAF (Ret.)
2004	Gen. Russell E. Dougherty, USAF (Ret.); Florene Miller Watson
2005	Sen. Daniel K. Inouye; William J. Perry; Patty Wagstaff
2007	CMSAF Paul W. Airey, USAF (Ret.)
2008	Col. George E. Day, USAF (Ret.); Gen. David C. Jones, USAF (Ret.); Harold Brown
2009	Doolittle Raiders; Tuskegee Airmen; James R. Schlesinger
2010	Col. Walter J. Boyne, USAF (Ret.); Andrew W. Marshall; Gen. Lawrence A. Skantze, USAF (Ret.); Women Airforce Service Pilots
2011	Natalie W. Crawford; Lt. Gen. Thomas P. Stafford, USAF (Ret.); Gen. Larry D. Welch, USAF (Ret.); Heavy Bombardment Crews of WWII; Commando Sabre Operation-Call Sign Misty
2012	Gen. James P. McCarthy, USAF (Ret.); Vietnam War POWs; Berlin Airlift Aircrews; Korean War Airmen; Fighter Pilots of World War II
2013	Maj. Gen. Joe H. Engle, USAF (Ret.); US Rep. Sam Johnson; The Arlington Committee of the Air Force Officers' Wives' Club—"The Arlington Ladies"
2014	Brig. Gen. James A. McDivitt, USAF (Ret.); Civil Air Patrol—World War II veterans; American Fighter Aces
2015	R. A. "Bob" Hoover; Eugene F. "Gene" Kranz; Gen. Michael V. Hayden, USAF (Ret.)
2016	Maj. Gen. Claude M. Bolton Jr., USAF (Ret.); Lt. Col. John T. Correll, USAF (Ret.); Gen. Charles A. Horner, USAF (Ret.); Lt. Gen. James M. Keck, USAF (Ret.); Gen. Richard B. Myers, USAF (Ret.)
2017	Gen. Ronald R. Fogleman, USAF (Ret.); Col. Clarence E. "Bud" Anderson, USAF (Ret.); Elinor Otto; Lafayette Escadrille Memorial Foundation
2018	Maj. Gen. Alfred K. Flowers, USAF (Ret.); Dan Friedkin; Air Force Scientific Advisory Board; Air Force Enlisted Village; Air Force Aid Society
2019	Gen. John A. Shaud, USAF (Ret.); Gen. T. Michael Moseley, USAF (Ret.); Dr. Benjamin Lambeth
2020	Gen. Lloyd "Fig" Newton, USAF (Ret.); Gen. John M. Loh, USAF (Ret.); Maj. Gen. Michael Collins, USAF (Ret.)
2021	CMSAF James M. McCoy, USAF (Ret.)
2022	Gen. Lance W. Lord, USAF (Ret.); Brig. Gen. Wilma Vaught, USAF (Ret.)

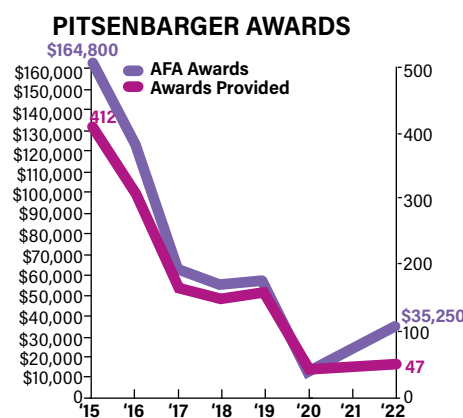
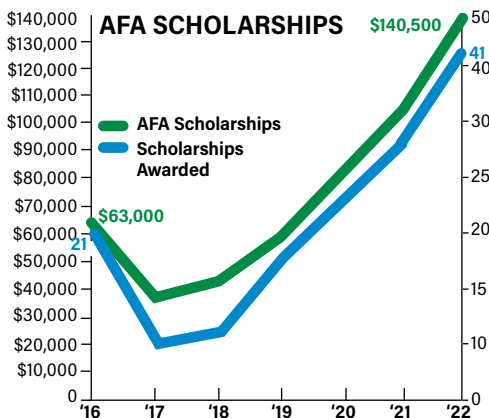
AFA CHAIRMAN'S AEROSPACE EDUCATION ACHIEVEMENT AWARD

For long-term commitment to aerospace education, making a significant impact nationwide.

Year	Award Recipient(s)	Year	Award Recipient(s)
2009	ExxonMobil Foundation	2015	Northrop Grumman Foundation
2010	USA Today	2016	Harry Talbot
2011	The National Science Foundation	2017	Analytical Graphics, Inc.
2012	The Military Channel	2018	Project Lead the Way
2013	The Civil Air Patrol Aerospace Education Program	2019	Air Force Junior Reserve Officer Training Corps.
2014	Department of Defense STARBASE Program	2020	Bernard K. "Bernie" Skoch
		2021	The Mitchell Institute for
		2022	Arnold Air Society and Silver Wings

Scholarships

AFA awards **scholarships**, to aspiring college students backed by funds from generous organizations and individuals. AFA also funds **Pitsenbarger** awards for Airmen who complete their associate degree through the Community College of the Air Force and intend to pursue a bachelor's degree.



Mike Tsukamoto/Air & Space Forces Magazine staff

Linda McMahon accepts the 2022 AFA Member of the Year Award from Jim Simons, Vice Chairman of the Board, Field Operations, and Gerald Murray, Board Chairman, Sept. 17, 2022.

AFA Field Awards

AFA MEMBER OF THE YEAR AWARD

State names refer to recipient's home state at the time of the award.

Year	Award Recipient(s)	Year	Award Recipient(s)
1953	Julian B. Rosenthal (N.Y.)	1986	John P. E. Kruse (N.J.)
1954	George A. Anderl (Ill.)	1987	Jack K. Westbrook (Tenn.)
1955	Arthur C. Storz (Neb.)	1988	Charles G. Durazo (Va.)
1956	Thos. F. Stack (Calif.)	1989	Oliver R. Crawford (Texas)
1957	George D. Hardy (Md.)	1990	Cecil H. Hopper (Ohio)
1958	Jack B. Gross (Pa.)	1991	George M. Douglas (Colo.)
1959	Carl J. Long (Pa.)	1992	Jack C. Price (Utah)
1960	O. Donald Olson (Colo.)	1993	Lt. Col. James G. Clark (D.C.)
1961	Robert P. Stewart (Utah)	1994	William A. Lafferty (Ariz.)
1962	(No presentation)	1995	William N. Webb (Okla.)
1963	N. W. DeBerardinis (La.) and Joe L. Shosid (Texas)	1996	Tommy G. Harrison (Fla.)
1964	Maxwell A. Kriendler (N.Y.)	1997	James M. McCoy (Neb.)
1965	Milton Caniff (N.Y.)	1998	Ivan L. McKinney (La.)
1966	William W. Spruance (Del.)	1999	Jack H. Steed (Ga.)
1967	Sam E. Keith Jr. (Texas)	2000	Mary Anne Thompson (Va.)
1968	Marjorie O. Hunt (Mich.)	2001	Charles H. Church Jr. (Kan.)
1969	(No presentation)	2002	Thomas J. Kemp (Texas)
1970	Lester C. Curl (Fla.)	2003	W. Ron Goerges (Ohio)
1971	Paul W. Gaillard (Neb.)	2004	Doyle E. Larson (Minn.)
1972	J. Raymond Bell (N.Y.) and Martin H. Harris (Fla.)	2005	Charles A. Nelson (S.D.)
1973	Joe Higgins (Calif.)	2006	Craig E. Allen (Utah)
1974	Howard T. Markey (D.C.)	2007	William D. Croom Jr. (Texas)
1975	Martin M. Ostrow (Calif.)	2008	John J. Politi (Texas)
1976	Victor R. Kregel (Texas)	2009	David R. Cummock (Fla.)
1977	Edward A. Stearn (Calif.)	2010	L. Boyd Anderson (Utah)
1978	William J. Demas (N.J.)	2011	Steven R. Lundgren (Alaska)
1979	Alexander C. Field Jr. (Ill.)	2012	S. Sanford Schlitt (Fla.)
1980	David C. Noerr (Calif.)	2013	Tim Brock (Fla.)
1981	Daniel F. Callahan (Fla.)	2014	James W. Simons (N.D.)
1982	Thomas W. Anthony (Md.)	2015	James R. Lauducci (Va.)
1983	Richard H. Becker (Ill.)	2016	David T. Buckwalter (Texas)
1984	Earl D. Clark Jr. (Kan.)	2017	James T. Hannam (Va.)
1985	George H. Chabbott (Del.) and Hugh L. Enyart (Ill.)	2018	Russell V. Lewey (Ala.)
		2019	Susan Broderick Mallett (Ala.)
		2020	Mark Tarpley (Okla.)
		2021	Gabrielle "Gabbie" Kearney (Alaska)
		2022	Linda McMahon (Va.)

CyberPatriot Awards

CyberPatriot Mentor of the Year

Karen Morikawa
Cybersecurity Program Manager, U.S. Navy (Hawaii)

CyberPatriot Coach of the Year

Jeremiah Milonas
Red Bank Regional High School (Little Silver, N.J.)

GOLD LIFE MEMBER CARD

Awarded to members whose AFA record, production, and accomplishments on a national level have been outstanding over a period of years.

Name	Year	Card No.	Name	Year	Card No.
Gill Robb Wilson	1957	1	Sam E. Keith Jr.	1990	12
Jimmy Doolittle	1959	2	Edward A. Stearn	1992	13
Arthur C. Storz Sr.	1961	3	Dorothy L. Flanagan	1994	14
Julian B. Rosenthal	1962	4	John O. Gray	1996	15
Jack B. Gross	1964	5	Jack C. Price	1997	16
George D. Hardy	1965	6	Nathan H. Mazer	2002	17
Jess Larson	1967	7	John R. Alison	2004	18
Robert W. Smart	1968	8	Donald J. Harlin	2009	19
Martin M. Ostrow	1973	9	James M. McCoy	2013	20
James H. Straubel	1980	10	George M. Douglas	2014	21
Martin H. Harris	1988	11	John A. Shaud	2016	22
			Mary Anne Thompson	2018	23

DONALD W. STEELE SR. MEMORIAL AWARD

Air Force Association Unit of the year.

Year	Award Recipient(s)	Year	Award Recipient(s)
1953	San Francisco Chapter	1985	Cape Canaveral Chapter (Fla.)
1954	Santa Monica Area Chapter (Calif.)	1986	Charles A. Lindbergh Chapter (Conn.)
1955	San Fernando Valley Chapter (Calif.)	1987	Carl Vinson Memorial Chapter (Ga.)
1956	Utah State AFA	1988	Gen. David C. Jones Chapter (N.D.)
1957	H. H. Arnold Chapter (N.Y.)	1989	Thomas B. McGuire Jr. Chapter (N.J.)
1958	San Diego Chapter	1990	Gen. E. W. Rawlings Chapter (Minn.)
1959	Cleveland Chapter	1991	Paul Revere Chapter (Mass.)
1960	San Diego Chapter	1992	Central Florida Chapter and Langley Chapter (Va.)
1961	Chico Chapter (Calif.)	1993	Green Valley Chapter (Ariz.)
1962	Fort Worth Chapter (Texas)	1994	Langley Chapter (Va.)
1963	Colin P. Kelly Chapter (N.Y.)	1995	Baton Rouge Chapter (La.)
1964	Utah State AFA	1996	Montgomery Chapter (Ala.)
1965	Idaho State AFA	1997	Central Florida Chapter
1966	New York State AFA	1998	Ark-La-Tex Chapter (La.)
1967	Utah State AFA	1999	Hurlburt Chapter (Fla.)
1968	Utah State AFA	2000	Wright Memorial Chapter (Ohio)
1969	(No presentation)	2001	Lance P. Sijan Chapter (Colo.)
1970	Georgia State AFA	2002	Eglin Chapter (Fla.)
1971	Middle Georgia Chapter	2003	Hurlburt Chapter (Fla.)
1972	Utah State AFA	2004	Carl Vinson Memorial Chapter (Ga.)
1973	Langley Chapter (Va.)	2005	Central Florida Chapter
1974	Texas State AFA	2006	Enid Chapter (Okla.)
1975	Alamo Chapter (Texas) and San Bernardino Area Chapter (Calif.)	2007	Central Oklahoma (Gerrity) Chapter
1976	Scott Memorial Chapter (Ill.)	2008	Lance P. Sijan Chapter (Colo.)
1977	Thomas B. McGuire Jr. Chapter (N.J.)	2009	Paul Revere Chapter (Mass.)
1978	Thomas B. McGuire Jr. Chapter (N.J.)	2010	C. Farinha Gold Rush Chapter (Calif.)
1979	Brig. Gen. Robert F. Travis Chapter (Calif.)	2011	Lance P. Sijan Chapter (Colo.)
1980	Central Oklahoma (Gerrity) Chapter	2012	Hurlburt Chapter (Fla.)
1981	Alamo Chapter (Texas)	2013	Paul Revere Chapter (Mass.)
1982	Chicagoland-O'Hare Chapter (Ill.)	2014	D. W. Steele Sr. Memorial Chapter (Va.)
1983	Charles A. Lindbergh Chapter (Conn.)	2015	Lance P. Sijan Chapter (Colo.)
1984	Scott Memorial Chapter (Ill.) and Colorado Springs/Lance Sijan P. Chapter (Colo.)	2016	Paul Revere Chapter (Mass.)
		2017	Enid Chapter (Okla.)
		2018	Langley Chapter (Va.)
		2019	Wright Memorial Chapter (Ohio)
		2020	Mile High Chapter (Colo.)
		2021	Paul Revere Chapter (Mass.)
		2022	Mel Harmon Chapter (Colo.)

Aerospace Education Excellence Award

Presented for excellence in aerospace education programming. To qualify, a chapter must have received the Aerospace Education Achievement Award this year.

Small Chapter

Mel Harmon Chapter, Colo.
President Michael Sumida

Medium Chapter

Northeast Texas Chapter, Texas
President Bruce Goren

Large Chapter

Paul Revere Chapter Mass.
President David DeNofrio

Extra Large Chapter

Ak-Sar-Ben Chapter, Neb.
President William Mavity

Aerospace Education Achievement Award

Presented to chapters for outstanding achievement in aerospace education programming.

Ak-Sar-Ben Chapter, Neb.
President William Mavity

Cheyenne Cowboy Chapter, Wyo.
President Scott Fox

Chicagoland-O'Hare Chapter, Ill.
President Gerald Ashley

Chuck Yeager Chapter, W. Va.
President Peter Jones

Gen. David C. Jones Chapter, N.D.
President John Conner

Dobbins Chapter, Ga.
President Mike Wilkins

Donald W. Steele, Sr. Memorial Chapter, Va.
President Linda McMahon

Gen. E.W. Rawlings Chapter, Minn.
President Roman Hund

Lincoln Chapter, Neb.
President Kenneth Brownell

Martin H. Harris Chapter, Fla.
President Sharon Branch

Mel Harmon Chapter, Colo.
President Michael Sumida

Mile High Chapter, Colo.
President Cliff Klein

Northeast Texas Chapter, Texas
President Bruce Goren

Northern Utah Chapter, Utah
President Scott Warren

Paul Revere Chapter, Mass.
President David DeNofrio

Gen. Robert E. Huyser Chapter, Colo.
President Michael Peterson

Salt Lake City Chapter, Utah
President David Been

Scott Memorial Chapter, Ill.
President Rickey Oeth

Seidel Chapter, Texas
President John Campbell

Space Coast Chapter, Fla.
President Dwyer Dennis

Swamp Fox Chapter, S.C.
President David Hanson

Tucson Chapter, Ariz.
President Walter Saeger

AFA's 2022 Teacher of the Year Award

The Air & Space Forces Association named Nancy Parra-Quinlan the 2022 Teacher of the Year. The annual award recognizes exceptional teachers who inspire their students through innovative approaches to science, technology, engineering, and math (STEM) education. The award is sponsored by Rolls-Royce North America Defense.



Nancy Parra-Quinlan, (right) 2022 Teacher of the Year, prepares a rocket launch experiment with her students from Kino Junior High School in Mesa, Ariz., where she teaches STEM, 7th and 8th grade science, and Career and Technical Education courses.

Outstanding State Organization

OKLAHOMA

President Dan Ohnesorge

Outstanding Chapters by Size

Small Chapter

Mel Harmon Chapter, Colo.
President Michael Sumida

Medium Chapter

Chuck Yeager, W.Va.
President Peter Jones

Large Chapter

Paul Revere Chapter, Mass.
President David DeNofrio

Extra Large Chapter

Siedel Chapter, Texas
President John Campbell

Chairman's Citation

Awarded to those individual AFA members whose distinguished contribution to AFA in a specific field has improved and elevated the effectiveness of the Association in a national sense.

Todd Freece, Florida
Molly Mae Potter, Texas

Arthur C. Storz Sr. Membership Award

Presented to that AFA chapter which produces the highest number of new members during the 12-month period ending June 20, 2022, as a percentage of total chapter membership as of June 30, 2021.

Langley Chapter, Va.

President Michael Thompson

Unit Exceptional Service Awards

Airmen and Family Programs

Mile High Chapter, Colo.
President Cliff Klein

Best Single Program

Richmond Chapter, Va.
President Harper Alford

Communications

Seidel Chapter, Texas
President John Campbell

Community Partners

Northeast Texas Chapter, Texas
President Bruce Goren

Community Relations

Mel Harmon Chapter, Colo.
President Michael Sumida

Overall Programming

Siedel Chapter, Texas
President John Campbell

Veterans Affairs

Ak-Sar-Ben Chapter, Neb.
President William Mavity

AAS/SW Integration

Paul Revere Chapter, Mass.
President David DeNofrio

Jack Gross Award

Presented to the chapter in each size category with the highest number of new members as a percentage of chapter size at the beginning of the membership year. A minimum of 10 is required.

Small Chapter

MiG Alley Chapter, South Korea
President Trenton Schreyer

Large Chapter

Ramstein Chapter, Germany
President Brett Sydnor

Extra Large Chapter

Mount Clemens Chapter, Mich.
President Doug Slocum

Chapter Size Larger Than 1,100

Langley Chapter, Va.
President Michael Thompson

Community Partner Awards

GOLD AWARD

Presented to chapters whose Community Partners represent at least six percent of overall chapter membership, with a minimum number of Community Partners. The minimum number is determined by chapter size.

Cheyenne Cowboy Chapter, Wyo.

Fairbanks Midnight Sun Chapter, Alaska
Lincoln Chapter, Neb.

Mel Harmon Chapter, Colo.
Meridian Chapter, Miss.

Northeast Texas Chapter, Texas
Ute-Rocky Mountain Chapter, Utah

ACHIEVEMENT AWARD

Presented in the field to chapters whose Community Partners represent at least 3 percent of overall chapter membership, with a minimum number of Community Partners. The minimum number is determined by chapter size.

David D. Terry Chapter, Ariz.
Gen. David C. Jones Chapter, N.D.
Golden Triangle Chapter, Miss.
Green Mountain Chapter, Vt.

Hurlburt Chapter, Fla.
Swamp Fox Chapter, S.C.
Tennessee Valley Chapter, Ala.



Mike TSukamoto/Air & Space Forces Magazine staff

Jake Loud, Fairbanks Midnight Sun Chapter President (center) accepts the Community Partner Gold Award on behalf of the chapter, at ASC22. Left is Jim Simons, Vice Chairman of the Board, Field Operations and Chairman of the Board Gerald Murray.

AFA Lifetime Achievement of the Year Award Winner



Mike TSukamoto/Air & Space Forces Magazine staff

(L-r): Air & Space Forces President Bruce Wright, Brig. Gen. Wilma Vaught, (Ret.), AFA Chairman of the Board Gerald Murray, and Gen. Jacqueline Van Ovost, commander, U.S. Transportation Command, during a ceremony honoring Vaught and her achievements Sept. 20, 2022.

(See AFA Lifetime Achievement Award on p. 57)

Special Recognition Awards

STATE GROWTH

This state has realized a growth in total membership from June 2021 to June 2022:

Alaska	Georgia	Montana	Pennsylvania
Alabama	Hawaii	Nevada	South Carolina
Arizona	Iowa	New Jersey	Tennessee
Arkansas	Idaho	New Mexico	Texas
Colorado	Louisiana	New York	Utah
Delaware	Maryland	North Carolina	Virginia
District of Columbia	Michigan	North Dakota	Washington
Florida	Mississippi	Oklahoma	Wyoming
	Missouri	Oregon	

CHAPTER GROWTH

These chapters have realized a growth in total membership from June 2021 to June 2022:

Abilene Chapter, Texas	Eglin Chapter, Fla.	Inland Empire Chapter, Wash.	Richard I. Bong Chapter, Minn.
Alamo Chapter, Texas	Enid Chapter, Okla.	Iron Gate Chapter, N.Y.	Richmond Chapter, Va.
Albany-Hudson Valley Chapter, N.Y.	Everett R. Cook, Tenn.	Joe-Walker-Mon Valley Chapter, Pa.	Roanoke Chapter, Va.
Albuquerque Chapter, N.M.	Fairbanks Midnight Sun Chapter, Alaska	Keystone Chapter, Japan	Robert H. Goddard Chapter, Calif.
Altus Chapter, Okla.	Falcon Chapter, Fla.	Lake Superior Northland Chapter, Mich.	Rushmore Chapter, S.D.
Ark-La-Tex Chapter, La.	Finger Lakes Chapter, N.Y.	Lance P Sijan Chapter, Colo.	Salt Lake City Chapter, Utah
Austin Chapter, Texas	Florida Highlands Chapter, Fla.	Langley Chapter, Va.	San Jacinto Chapter, Texas
BG Bill Spruance Chapter, Del.	Florida West Coast Chapter, Fla.	L.D. Bell Niagara Frontier Chapter, N.Y.	Savannah Chapter, Ga.
BG Frederick W. Castle Chapter, N.J.	Fort Dodge Chapter, Iowa	Lewis E. Lyle Chapter, Ariz.	Scott Berkeley Chapter, N.C.
BG Harrison R. Thyng Chapter, N.H.	Fort Meade Chapter, Md.	Liberty Bell Chapter, Pa.	Scott Memorial Chapter, Ill.
BG Robert Cardenas San Diego Chapter, Calif.	Frank Luke Chapter, Ariz.	Llano Estacado Chapter, N.M.	Snake River Valley Chapter, Idaho
Big Sky Chapter, Mont.	Frank P. Lahm Chapter, Ohio	Lloyd R. Leavitt Jr. Chapter, Mich.	South Alabama Chapter, Ala.
Birmingham Chapter, Ala.	Fresno Chapter, Calif.	Long Island Chapter, N.Y.	South Georgia Chapter, Ga.
Blue Ridge Chapter, N.C.	Gen. Dan F. Callahan Chapter, Tenn.	Lt. Col. B.D. Buzz Wagner Chapter, Pa.	Space Coast Chapter, Fla.
Bob Newman Cape Fear Chapter, N.C.	Gen. Charles A. Horner Chapter, Iowa	Lt. Erwin R. Bleckley Chapter, Kan.	Spangdahlem Chapter, Germany
Bozeman Chapter, Mont.	Gen. James R. McCarthy Chapter, Fla.	Maj. Gen. Oris B. Johnson Chapter, La.	Stan Hryn Monterey Bay Chapter, Calif.
Capt. Eddie Rickenbacker Memorial Chapter, Ohio	Gen. Bernard A. Schriever LA Chapter, Calif.	Martin H. Harris Chapter, Fla.	Steel Valley Chapter, Ohio
Carl Vinson Memorial Chapter, Ga.	Gen. Bruce K. Holloway Chapter, Tenn.	McChord Field Chapter, Wash.	Swamp Fox Chapter, S.C.
Central Maryland Chapter, Md.	Gen. Carl A. Spaatz Chapter, N.Y.	Mel Harmon Chapter, Colo.	Tarheel Chapter, N.C.
Central Oklahoma Gerrity Chapter, Okla.	Gen. Charles L. Donnelly Jr. Chapter, Texas	Meridian Chapter, Miss.	Tennessee Ernie Ford Chapter, Calif.
Charlemagne Chapter, Germany	Gen. David C. Jones Chapter, N.D.	Miami-Homestead Chapter, Fla.	Tennessee Valley Chapter, Ala.
Charleston Chapter, S.C.	Gen. Doolittle LA Area Chapter, Calif.	Mifflin County Chapter, Pa.	The Red Tail Memorial Chapter, Fla.
Cheyenne Cowboy Chapter, W.Y.	Gen. H. H. Arnold Memorial Chapter, Tenn.	MiG Alley Chapter, Korea	Thomas B. McGuire Jr. Chapter, N.J.
Col. Bud West Chapter, Fla.	Gen. Robert F. Travis Chapter, Calif.	Mile High Chapter, Colo.	Thomas W. Anthony Chapter, Md.
Columbia Gorge Chapter, Ore.	Gen. Russell E. Dougherty, Ky.	Montgomery Chapter, Ala.	Thunderbird Chapter, Nev.
Columbia Palmetto Chapter, S.C.	Gold Coast Chapter, Fla.	Mount Clemens Chapter, Mich.	Tokyo Chapter, Japan
Cochise Chapter, Ariz.	Golden Gate Chapter, Calif.	Nations Capital Chapter, D.C.	Total Force Chapter, Pa.
Concho Chapter, Texas	Golden Triangle Chapter, Miss.	North Coast Chapter, Ohio	Tucson Chapter, Ariz.
David D. Terry Jr. Chapter, Ariz.	Greater Seattle Chapter, Wash.	Northeast Iowa Chapter, Iowa	Tulsa Chapter, Okla.
David J. Price/Beale Chapter, Calif.	Grissom Memorial Chapter, Ind.	Northern Utah Chapter, Utah	Tyndall Chapter, Fla.
Del Rio Chapter, Texas	Happy Hooligan Chapter, N.D.	Olmstead Chapter, Pa.	United Kingdom Chapter, Europe
Delaware Galaxy Chapter, Del.	Harry S. Truman Chapter, Mo.	Orange Co./Gen. C.E. LeMay Chapter, Calif.	Ute-Rocky Mountain Chapter, Utah
Denton Chapter, Texas	Hawaii Chapter, Hawaii	Otis Chapter, Mass.	Waterman-Twining Chapter, Fla.
Dobbins Chapter, Ga.	Hurlburt Chapter, Fla.	Palm Springs Chapter, Calif.	White Sands Chapter, N.M.
Dolomiti Chapter, Italy		Pocono Northeast Chapter, Pa.	Whiteman Chapter, Mo.
Donald W. Steele Sr. Memorial Chapter, Va.		Pope Chapter, N.C.	William J. 'Pete' Knight Chapter, Calif.
Edward J. Monaghan Chapter, Alaska		Pride of the Adirondacks Chapter, N.Y.	Wright Memorial Chapter, Ohio
		Ramstein Chapter, Germany	York-Lancaster Chapter, Pa.
		Red River Valley Chapter, N.D.	

REGION GROWTH

This region has realized a growth in total membership from June 2021 to June 2022:

European Region	New England Region	Rocky Mount Region
Central Region	North Central Region	South Central Region
Far West Region	Northeast Region	Southeast Region
Florida Region	Northwest Region	Southwest Region
Midwest Region	Pacific Region	Texoma Region

Individual Awards by Region

Presented for outstanding service.

Medal of Merit

Awarded for exceptional services in local, regional, or national fields and shall denote great initiative on the part of the recipient for specific achievements.

Exceptional Service Award

Presented to those individual AFA members who have performed exceptional services for AFA in local, regional, or national fields.

Central East
Medal of Merit
 Brian McMahan

Exceptional Service Award
 Peter Jones
 Mike Winters

Far West
Medal of Merit
 Chris Kavilas
 Brenda Pluntze

Exceptional Service Award
 Allison Dahlgren
 Tav Taverney

Florida
Medal of Merit
 Michael Bohn
 Barbara Phillips

Exceptional Service Award
 Shirley Pigott
 Michael Richardson

Midwest
Medal of Merit
 Jim Brownell

Exceptional Service Award
 Fred Niblock
 Tom O'Shea

New England
Medal of Merit
 Wade Fox
 Audra Racine

Exceptional Service Award
 Nick Cloe

North Central
Medal of Merit
 John Conner
 Janelle Gates
 Roman Hurd
 William Lewis
 Megan Wallin
 Victor Johnson

Exceptional Service Award
 David Pohlen

Northeast
Medal of Merit
 Joe Abegg
 Maurice Connor
 George Filer
 Alfred Smith
 William Stratemeier
 Jeff Allender
 Shirley Shallenberger

Exceptional Service Award
 Howard Leach

Rocky Mountain
Medal of Merit
 Terry Hensley
 Chris Klein
 Lisa Maney
 Mike Sumida
 Scott Warren

Exceptional Service Award
 Henry Eichman

South Central
Medal of Merit
 Jeffrey Coggin
 Timothy Davis
 Megan Deheck
 Kathleen Mason
 Paula Penson

Exceptional Service Award
 Dale Barton
 James Harris
 Troy Eastman

Southeast
Exceptional Service Award
 Mike Wilkins

Southwest
Medal of Merit
 David Carrell
 Paul Dolce
 Angie Moore
 William Polakowski

Texoma
Medal of Merit
 Joe Cordina
 Bruce Goren
 Bill Harding
 Holly Olsen
 Tony Weedn
 Mike Opatowsky

Exceptional Service Award
 Frank Eldridge
 Scott Northcutt

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Monthly Journal of the Air & Space Forces Association		
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b. Paid Circulation (by mail and outside the mail)		
(1) Mailed outside-county paid subscriptions stated on PS Form 3541 (include paid distribution above nominal rate, advertiser's proof copies, and exchange copies)	56,187	55,844
(2) Mailed in-county paid subscriptions stated on PS Form 3541 (include paid distribution above nominal rate, advertiser's proof copies, and exchange copies)	0	0
(3) Paid distribution outside the mails including sales through dealers and carriers, street vendors, counter sales, and other paid distribution outside USPS	475	465
(4) Paid distribution by other classes of mail through the USPS (e.g., first-class mail)	0	0
c. Total Paid Distribution [sum of 15b (1), (2), (3), (4)]	56,662	56,309
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(1) Free or nominal rate outside-county copies included on PS Form 3541	0	0
(2) Free or nominal rate in-county copies included on PS Form 3541	0	0
(3) Free or nominal rate copies mailed at other classes through the USPS (e.g., first-class mail)	0	0
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f. Total Distribution [sum of 15c and 15e]	57,268	56,915
g. Copies Not Distributed	4,517	5,670
h. Total [sum of 15f and g]	61,785	62,585
i. Percent Paid [15c / 15f x 100]	99.94%	98.94%
16. Electronic Copy Circulation		
a. Paid electronic copies	13,750	38,787
b. Total paid print copies (15c) + paid electronic copies (16a)	70,412	95,096
c. Total print distribution (15f) + paid electronic copies (16a)	71,018	95,702
d. Percent paid (both print & electronic copies) (16b / 16c x 100)	99.15%	99.37%

17. Publication of Statement of Ownership

If the publication is a general publication, publication of this statement is required. Will be printed in the November 2022 issue of this publication.

18. Signature and Title of Editor, Publisher, Business Manager, or Owner: Eric Chang Lee (signed), Production Manager. Date: Oct. 3, 2022

I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).

AFA Chapter Members by Region, State, and Chapter

These figures indicate the number of affiliated members as of September 2022. Listed below the name of each region is the Region President.

CENTRAL EAST REGION	14,665	Michigan	1,343	Highpoint . . . . .	.47	Gen. H. H. Arnold Memorial	122
Kenneth Spencer		Battle Creek	4	Mercer County . . . . .	.75	Maj. Gen. Dan F. Callahan	376
Delaware	416	Lake Superior Northland	112	Sal Capriglione	192		
Brig. Gen. Bill Spruance	108	Lloyd R. Leavitt Jr.	266	Shooting Star	134	SOUTHEAST REGION	6,644
Delaware Galaxy	308	Mount Clemens	961	Thomas B. McGuire Jr.	311	Mike Trotter	
District of Columbia	1,655	Ohio	3,222	New York	1,818	Georgia	2,855
Nation's Capital	1,655	Capt. Eddie Rickenbacker Memorial*	426	Albany-Hudson Valley*	285	Carl Vinson Memorial	951
Maryland	2,873	Frank P. Lahm	322	Finger Lakes	301	Dobbins	1,329
Baltimore*	12	Gen. Joseph W. Ralston	308	Gen. Carl A. Spaatz	113	Savannah	365
Central Maryland	491	North Coast*	156	Genesee Valley	149	South Georgia	210
Fort Meade	1,082	Steel Valley	115	Iron Gate	209	North Carolina	2,127
Thomas W. Anthony	1,288	Wright Memorial*	1,895	L. D. Bell-Niagara Frontier	216	Blue Ridge	367
Virginia	9,520	MIDWEST REGION	5,225	Long Island	451	Bob Newman Cape Fear	216
Donald W. Steele Sr. Memorial	4,929	Chris Canada		Pride of the Adirondacks . . . . .	.94	Kitty Hawk	49
Gen. Charles A. Gabriel	2,071	Illinois	1,883	Pennsylvania	1,911	Pope	568
Langley	1,630	Chicagoland-O'Hare	778	Altoona	119	Scott Berkeley	303
Richmond	604	Scott Memorial	1,105	Joe Walker-Mon Valley	174	Tarheel	624
Roanoke	286	Iowa	431	Lehigh Valley	135	South Carolina	1,662
West Virginia	201	Fort Dodge	26	Liberty Bell	468	Charleston	532
Chuck Yeager	201	Gen. Charles A. Horner	154	Lt. Col. B. D. "Buzz" Wagner . . . . .	.95	Columbia Palmetto	364
FAR WEST REGION	7,434	Northeast Iowa	216	Mifflin County* . . . . .	.78	Strom Thurmond	344
Wayne Kauffman		Richard D. Kisling	35	Olmsted	221	Swamp Fox	422
California	6,692	Kansas	496	Pocono Northeast	158	SOUTHWEST REGION	6,062
Bob Hope	405	Lt. Erwin R. Bleckley	345	Total Force	256	Alan Berg	
Brig. Gen. Robert Cardenas San Diego	730	Maj. Gen. Edward R. Fry	151	York-Lancaster	207	Arizona	3,112
Brig. Gen. Robert F. Travis	446	Missouri	1,340	NORTHWEST REGION	3,870	Cochise	106
C. Farinha Gold Rush	735	Harry S. Truman	451	Jeff Putnam		Frank Luke	1,655
David J. Price/Beale	227	Spirit of St. Louis	506	Alaska	523	Prescott/Goldwater	296
Fresno*	360	Whiteman	383	Edward J. Monaghan	391	Tucson	1,055
Gen. B. A. Schriever Los Angeles	703	Nebraska	1,075	Fairbanks Midnight Sun	132	Nevada	1,615
General Doolittle Los Angeles Area*	685	Ak-Sar-Ben	870	Idaho	439	Thunderbird	1,615
Golden Gate*	434	Lincoln	205	Snake River Valley	439	New Mexico	1,335
High Desert	100	NEW ENGLAND REGION	2,711	Oregon	679	Albuquerque	891
Orange County/Gen. Curtis E. LeMay	441	David DeNofrio		Bill Harris	179	Llano Estacado	164
Palm Springs	276	Connecticut	512	Columbia Gorge*	500	White Sands	280
Robert H. Goddard	350	Flying Yankees/Gen. George C. Kenney	296	Washington	2,229	TEXOMA REGION	10,925
Stan Hryn Monterey Bay	134	Lindbergh/Sikorsky	216	Greater Seattle	670	Paul Weseloh	
Tennessee Ernie Ford	353	Massachusetts	1,361	Inland Empire	602	Oklahoma	1,714
William J. "Pete" Knight	313	Minuteman	226	McChord Field	957	Altus	172
Hawaii	742	Otis	223	ROCKY MOUNTAIN REGION	5,110	Central Oklahoma (Gerrity)	1,135
Hawaii*	742	Paul Revere	699	Linda Aldrich		Enid	110
FLORIDA REGION	7,974	Pioneer Valley	213	Colorado	3,663	Tulsa	297
Todd Freece		New Hampshire	515	Gen. Robert E. Huyser	108	Texas	9,211
Florida	7,974	Brig. Gen. Harrison R. Thyng	515	Lance P. Sijan	1,978	Abilene	327
Gen. James R. McCarthy	275	Rhode Island	164	Mel Harmon	121	Aggieland	166
Col. H. M. "Bud" West	157	Metro Rhode Island	132	Mile High	1,456	Alamo	3,564
Eglin	1,197	Newport Blue & Gold	32	Utah	1,055	Austin	914
Falcon	468	Vermont	159	Northern Utah	371	Concho	237
Florida Highlands	248	Green Mountain	159	Salt Lake City	385	Del Rio	124
Florida West Coast	280	NORTH CENTRAL REGION	2,477	Ute-Rocky Mountain	299	Denton	427
Gold Coast	514	Dan Murphy		Wyoming	392	Fort Worth	1,242
Hurlburt	841	Minnesota	755	Cheyenne Cowboy	392	Gen. Charles L. Donnelly Jr.	260
Martin H. Harris	920	Gen. E. W. Rawlings	620	SOUTH CENTRAL REGION	6,040	Northeast Texas	387
Miami-Homestead	313	Richard I. Bong	135	Bernie Skoch		San Jacinto	790
Red Tail Memorial	415	Montana	323	Alabama	2,106	Seidel	773
Space Coast	910	Big Sky	253	Birmingham	272	OVERSEAS CHAPTERS	1,150
Tyndall	325	Bozeman	70	Montgomery	1,087	US Air Forces in Europe	787
Waterman-Twining	1,111	North Dakota	385	South Alabama	168	Charlemagne: Geilenkirchen, Germany	19
GREAT LAKES REGION	6,138	Gen. David C. Jones	205	Tennessee Valley	579	Dolomiti: Aviano AB, Italy	196
Craig Spanberg		Happy Hooligan	69	Arkansas	792	Ramstein: Ramstein AB, Germany	366
Indiana	985	Red River Valley	111	David D. Terry Jr.	479	Spangdahlem: Spangdahlem AB, Germany	83
Central Indiana	303	South Dakota	354	Lewis E. Lyle	313	United Kingdom: RAF Lakenheath, U.K.	123
Fort Wayne	114	Dacotah	156	Louisiana	889	Pacific Air Forces	363
Grissom Memorial	173	Rushmore	198	Ark-La-Tex	519	Keystone: Kadena AB, Japan	120
Lawrence D. Bell Museum	173	Wisconsin	660	Maj. Gen. Oris B. Johnson	370	MIg Alley: Osan AB, South Korea	172
P-47 Memorial Chapter	102	Billy Mitchell	660	Mississippi	855	Tokyo: Tokyo	71
Southern Indiana	120	NORTHEAST REGION	4,787	Golden Triangle	298		
Kentucky	588	Patrick Kon		John C. Stennis	387		
Gen. Russell E. Dougherty	373	New Jersey	1,058	Meridian	170		
Lexington	215	Brig. Gen. Frederick W. Castle	184	Tennessee	1,398		
		Hangar One	115	Everett R. Cook	286		
				Gen. Bruce K. Holloway	614		

*These chapters were chartered before Dec. 31, 1948, and are considered original charter chapters. Ohio's North Coast Chapter was formerly the Cleveland Chapter; Oregon's Columbia Gorge Chapter was formerly the Portland Chapter.



Airman 1st Class Christian Soto/71st FTW

Spouse Space is a new community-based alliance created at Vance Air Force Base, Okla., to empower military spouses and provide co-working office space, partnerships, connections, personal development opportunities, and support for each other.

Vance Spouses Address Quality-of-Life Challenges

The Air Force’s first “Spouse Space” officially opened at Vance Air Force Base, Okla., on Oct. 12 thanks to a group of inspirational spouses, supportive leadership, and strong community support from the Air & Space Forces Association’s Enid Chapter. This project builds a local solution to the quality-of-life issues receiving national attention through [spouse of the 22nd Chief of Staff of the Air Force Gen. Charles Q. Brown Jr.] Sharene Brown’s Five & Thrive initiative.

In a little over a month, Vance spouses mobilized to create the Vance Spouse Space which has a “WeWork”-inspired theme and allows for military spouses to directly connect on base. The initiative will allow spouses to work, study, and connect while increasing spouse resilience and family retention.

“Vance [Air Force Base] is a birthplace of Air

“By providing a space for our spouses to work, study and connect, we hope to show [them] that their goals and careers are valued!”

—Meg Hewes, Spouse Space co-founder

Force aviators. As such, we have the opportunity to make a positive first impression on hundreds of Air Force families every year. These first impressions are crucial to resiliency and ultimately retention,” organizer and co-founder of the initiative, Meg Hewes told AFA. “By providing a space for our spouses to work, study, and connect, we hope to show our Air Force spouses that their goals and careers are valued. Moreover, since we know spouse employment is a significant factor in both retention and overall happiness, we hope this space positively impacts Air Force families for years to come.”

A SPOUSE-CREATED SPACE

As you walk into the Vance Spouse Space within the Community Chapel Activities Center, you can’t help but smile. The two rooms are beautiful. Larger furnishings like tables and couches were thrifted and

refurbished. Smaller items such as decorations and coffee cups were handmade by local spouse entrepreneurs. Items ranging from coffee machines to snacks to white boards were purchased by community supporters through an Amazon Wish List.

The team behind the Vance Spouse Space is composed of 15 spouses from diverse backgrounds including spouses of officers and enlisted members as well as seasoned and brand-new military spouses. “We believe that spouses hold the answer to many quality-of-life issues. Whether it is spouses starting an initiative like the Spouse Space, raising their hand to support their communities as key spouses, command spouses, or volunteer spouses, so often the solution is a grassroots effort for spouses, by spouses,” co-founder Anne Parker said.

The Vance Spouse Space does more than provide a space to work, study, and connect. It addresses the isolation and potential mental health issues that could result from remote work without connection. In a survey Hewes conducted among pilot training spouses at Vance, two-thirds of the spouses worked or studied from home part-time.

“Although the continuity of employment and less under-employment is a significant step forward, ... the isolation and loneliness that comes from working alone at home is a common drawback,” Hewes said.

This initiative will not only provide a physical space, it will also enforce the good mental health habits of socialization and community-building. Professional and personal development events are currently planned ranging from book clubs to VA loan seminars. Just as the physical space was created by spouses, the educational content will come primarily from military spouses. Parker summarized, “Our goal with this space is to highlight our military spouses and give them a place to support and help each other. There are so many talents in this community.”

THE MAGIC TRIAD

Although Team Vance made this herculean effort seem easy, a great deal of sweat, heart, and stars aligning helped make this a success. “Community doesn’t just happen. Community is deliberately built,” Parker said at the grand opening. “An initiative like this takes a magic triad. It takes the passion, innovation, and the drive of spouses. It takes the support and connections

of our community partners. And finally, the third part of that triad is our leadership.”

The passion Parker speaks of lit up the Enid community. AFA’s Enid Chapter (Okla.) led by Chapter President Geoff Clark jumped right in to support the Vance Spouse Space. The chapter attended planning meetings, solicited donations from local businesses, and is currently working to provide a large-screen TV for videoconferencing. They set a goal of \$2,500 for this effort.

Janelle Stafford, AFA National Director for the Central Area, was one of the many AFA leaders who attended the event. “The Enid Chapter has set a high bar for the rest of us to follow and has provided a great template of what can be. A perfect example of community partnerships and how AFA can help meet specific community needs to advance our mission,” Stafford said. “It was such a heartwarming experience.”

Col. Jay Johnson, commander of the 71st Flying Training Wing, noted the community’s support saying, “All the time, this community comes to us and goes, ‘How can we help?’ So, we went out to the community and said, ‘Here’s how you can help.’ This community through the AFA chapter and many others said, ‘What do you need?’ and stepped up to do this. If we had a space that was 10 times bigger, they would have filled it.”

The support of Vance leadership was apparent to every attendee at the Spouse Space launch. Team Vance spouses credit the leadership leg of the magic triad as a critical component of their success. Vance leaders showed up for this initiative every step of the way.

“Capitalizing on the many strengths, talents, and diversity of our spouse force will only strengthen the success of our mission,” said Colonel Johnson in a Vance Air Force Base news release. “Supporting spouses and quality of life for our military families improves the force’s readiness and retention and strengthens the resilience of our families and our communities as a whole.”

“These opportunities empower our spouses to shift their perspective from a feeling of being underutilized and lacking control, to becoming confident as the flexible, resilient powerhouses that we know military spouses to be,” stated Chief Master Sgt. Brandon Smith, Vance’s command chief, in the release.



The Spouse Space is located inside the Community Chapel Activities Center and provides Air Force spouses more than a place to work and study, it may also address isolation and health issues that result from remote work or separation.

Kari Volliva/AFA, VP, Member/Field Relations



Janelle Stafford/AFA National Director (Central Area)

71st Flying Training Wing Commander, Col. Jay Johnson, at the Spouse Space grand opening noted that quality of life for military families only strengthens force readiness.

STRONG FAMILIES, STRONG FORCES

In late 2021, Sharene Brown, launched the Five & Thrive initiative to highlight Quality-of-Life (QoL) issues directly tied to military family readiness, resilience, and retention of the force, which in turn impacts mission execution. Five & Thrive aims to improve the QoL challenges in five focus areas (Child Care, Education, Health Care, Housing, and Spouse Employment) by highlighting preventative measures, promoting best practices, fostering community partnerships, and encouraging Department of the Air Force (DAF) families to thrive.

The Five & Thrive initiative is shaping the conversations of Air Force and Space Force families worldwide. The issues are not new, but the discussions and brainstorming sessions are reinvented. Military spouses are coming to the table to be part of the solution. Great people working together on the hard issues will make all the difference.

Committed to supporting the efforts of Sharene Brown and Mollie Raymond, spouse of the first Chief of Space Operations Gen. John "Jay" Raymond, AFA took intentional steps to ensure spouses were part of the Air, Space & Cyber Conference discussions in September. For the first time ever, AFA offered free registration and free memberships to military spouses. Four sessions were dedicated to quality-of-life topics with questions from spouse attendees shaping the discussion. The rooms were packed with spouses, Airmen, and Guardians who all wanted to be part of the solution.

"There is no doubt our spouses make a difference, serving alongside their Airmen and Guardians every day," said Sharene Brown. "You—our spouses—are often the agents of change," she said while moderating the "Spouses in the Fight!" panel Sept. 19 at the conference.

The inclusion of spouses at the conference marked a cultural shift. As Air Force spouse Adam Evans summarized, "It previously felt like AFA was a club we didn't belong to. AFA looked different this year because of the spouses."

Themes of inclusion and community rang true in countless quality-of-life discussions during the conference. The hard issues cannot be tackled in silos or by individuals. The entire Air Force and Space Force family must come together.

As Mollie Raymond reflected on during the "Families in the Fight!" panel, "It's one thing to just say these programs are out there, the resources out are out there. But when you say and invite spouses to join you, it just brings it to a different level and it says that hey, we can do this together. We can support one another and inspire one another."

The quality-of-life issues facing the Department of the Air Force are not isolated to spouses. These issues affect our families, resiliency, and retention. An investment in strong families is an investment in stronger Forces.

AMPLIFY THE GOOD

Supporting Department of the Air Force families has been a mission focus for AFA since its inception. The recent efforts by Sharene Brown and Mrs. Mollie Raymond have motivated the organization to persistently provide AFA mission-focused thought leadership and expand and strengthen support for Airmen, Guardians and their families. With a keen desire to avoid reinventing the wheel, AFA is taking a "Listen—Amplify—Connect—Build" approach.

To **listen**, AFA formed the F2 Task Force promoting Strong Families and Strong Forces earlier this year. This diverse group of 16 spouses provides direct inputs into AFA to include programmatic recommendations and needs-gap analysis.

The largest **amplification** to date has been the spouse integration during the 2022 Air, Space & Cyber Conference. AFA welcomed 1,000 military spouse registrants to the event. The F2 Task Force is currently exploring other options for virtual events and increased promotion.

With its commitment to DAF families, AFA will **build** new programming on an as-needed basis where identified. A key focus will be increased support at the local level through community partnerships and AFA chapters. Efforts like the Vance Spouse Space are currently being documented for franchising opportunities at installations around the world.

Just like with the Vance Spouse Space, **connection** will continue to be a key focus of AFA's support to military spouses. This has already shown up in the form of spouse networking events and engagements. However, the real magic will happen through AFA's chapters at the local level. Chapters are led by mission-driven volunteers who believe in our Air Force and Space Force family.

The passion of AFA leaders can be characterized by the quote often attributed to AFA's founder Gen. James H. Doolittle, "There is nothing stronger than the heart of a volunteer." When heart and community combine, we will find the right solutions. As Colonel Johnson said with regards to the importance of the Vance community, "You can't teach [community]. You can't pay for that. That comes from inside [the heart]. That's what this space is all about. It's from the heart and it's incredible."

The momentum from the Air, Space & Cyber Conference and the Five & Thrive initiative was cited as a key motivator in the actualization of the Vance Spouse Space. Anne Parker and Meg Hewes took these national efforts and turned them into local action. During the Vance Spouse Space grand opening, Parker ended her remarks with a compelling plea to Vance leadership, "You all believe that our families matter and their quality-of-life is important. You all buy into these efforts and put your backing and credibility behind them. We will build you something that will not just support your families but your mission too." 🌟

For more information on the Thrive & Five initiative, please visit <https://www.fiveandthrive.org/home>.

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IS FOR VETERAN

When we're thanked for our service
we reflect on how we served.

The way we had to break in boots.
The times we gathered up our nerve.

The nicknames that made us laugh.
The smell of chili mac MREs.

The pride we felt with that first oath.
The friendships that came to be.

So, at the game, when we're asked to stand,
it's not applause that's in my sight.

I'm looking around for you, my friend,
to see who's on my left and right.



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