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AIR FORCE

MAGAZINE

BLACK AND AIR FORCE BLUE

For Black Airmen, disparities persist
In USAF life, culture, and promotions | **28**



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July/August 2020. Vol. 103, No. 7 & 8

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Photo: Sgt. Jake Burreiro

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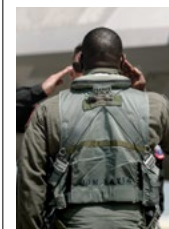


Photo: Staff Sgt. Ryan Campbell/NVANG

Lt. Col. Paul Lopez, then-commander of USAF's F-22 Demonstration Team, salutes a crew member. See "Black Airmen Speak Out," p. 33.

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Power Plays and Competition

Russia and the United States are flying missions on the edges of each other's territory at the fastest pace in a generation. Russian Tu-95 Bear bombers have repeatedly approached U.S. airspace near Alaska, causing F-22s to scramble, and U.S. bombers and intelligence aircraft have similarly shown their prowess over northern Europe and the Pacific. Russian instigation also rattles its neighbors.

On the other side of the planet, China continues to press territorial claims in skirmishes and standoffs all along its southern flank. China faced off with India and Bhutan, on land, over border claims in June, and in the South China Sea, continues to build up man-made islands in a bid to extend its perimeter beyond international norms. To China, the entire sea is sovereign territory.

China's increasingly brutal treatment of ethnic Uyghurs, including forced sterilization and imprisonment in concentration camps, was classified as genocide in a recent report from the Jamestown Foundation. Its tightening stranglehold on Hong Kong, meanwhile, demonstrates the "One Country, Two Systems" policy—in place since 1997—is shrinking away.

In Taiwan, they can only be wondering: Can the U.S. be relied on in the face of Chinese expansion and aggression? Likewise, a free and unfettered Europe depends largely on America's commitment to its NATO allies in the face of Russian instigation.

Regardless of your domestic politics, protecting our allies and deterring our rivals remains central to American interests both at home and abroad. U.S. strategy depends on the ability to deter competitors, with credible force, from trying to have their way with neighbors. China may not fear Taiwan, but it does fear a conflict with the United States—at least for now.

Republicans and Democrats agree on funding defense—at least the experts do. The House Armed Services Committee approved its version of the 2021 defense policy bill by a 56-0 vote, and the Senate Armed Services Committee approved its version also by a very a wide margin. But it is among the non-experts that cracks appear in this apparent unity of vision.

The trillions of dollars invested to cushion the blows of COVID-19 have ballooned the budget deficit this year to more than \$2 trillion and our overall national debt to more than \$20 trillion. Near-zero interest rates today make that debt burden relatively manageable, but our deflated economy will produce less tax revenue to pay those bills. Interest rates, and inflation won't remain at historic lows forever.

Hence, the knives are out and those who'd carve up and redirect the defense budget for other purposes are honing the blades. Rep. Barbara Lee (D-Calif.) offered a resolution in June to cut \$350 billion from defense spending "to reduce the priority given to war in our foreign policy ... while using the funds to increase our diplomatic capacity and for domestic programs."

Even think tanks and advocacy groups lined up to laud the proposal, among them Public Citizen, the Center for International Policy, and Veterans for Peace. Yes, these are the usual suspects demanding the usual cuts, but make no mistake: At a time in our nation's history when calls to "defund the police" are netting real results—the New York City Council agreed to a \$1 billion cut to its police force—it's not

ludicrous to think that serious people would do serious damage to our national defense.

With only a couple of exceptions, defense spending has risen annually for roughly two decades. Expensive ground-centric wars in Afghanistan, Iraq, and Syria have taken their toll. It is natural for taxpayers and legislators to want to ratchet down that spending now to fund other priorities; it is beyond their intuition to understand that our military is now depleted and ill-suited to take on peer competitors in potential future conflicts.


The fact that our Air Force is now the smallest and oldest it has ever been is common knowledge only to those in the know. Joe Public is oblivious, and even less aware of what the U.S. will face should it ever need to engage in combat with the People's Republic of China.

Taking on China will require superior air, space, and cyber forces. Conventional land and naval forces need not apply. While the cry "where are the carriers" might have defined potential combat with China a generation ago, that is no longer the case. Aircraft carriers, the pride of the Navy fleet, remain among the most visible symbols of American military power. But in combat with China they will instead be our most visible targets—and greatest symbols of U.S. vulnerability. Too big to hide and too slow to escape, they will be held at bay—or sunk at will—by hypersonic guided missiles, destroyed before they get close enough to become effective.

Instead, it will be the United States' low observable assets that reign supreme in conflicts with other great powers. Stealth fighters and bombers that can strike deep in enemy territory without being detected; spacecraft that can track and queue potential targets and threats from the vantage of the gods; and cyber operators that can paralyze adversaries' intelligence and communications networks with strategic effect are all critical to deter future wars—and to win them should it come to that.

No wonder, then, that the Navy and Army are trying to develop long-range strike weapons to seek relevancy in such a fight. Unable to get within 1,000 miles of their targets, they want new capabilities to enable them to engage. They forget why we have a joint force: It's not to divvy up missions to ensure that everyone gets a piece of the action, but rather to match the right solution to the problem. No one would call on a B-2 bomber to eliminate a terrorist streaking across the desert in a pickup truck, because an MQ-9 Reaper will do the job well for a fraction of the cost. Likewise, it makes little sense for the Army to acquire a capability for which the Air Force is inherently better suited.

The national security budget is ultimately an insurance policy. We buy down risks in some areas and accept it in others. Were budgets infinite, we would afford duplicative capabilities. Since they are not, logic must prevail.

To deter and, when necessary, fight and win peer conflicts, America must invest in those capabilities that deliver the greatest effect for the lowest cost. Against China and Russia, that means investing in our Air and Space Forces. 

Taking on China will require superior air, space, and cyber forces. Conventional land and naval forces need not apply.

Russia, Russia, Russia!

With regard to ["Strategy & Policy: Putin's Five New Nukes," April, p. 16], a few points: First, the RS-28 Sarmat is not really a new weapon, it is just the follow-on development of Russian liquid-fueled ICBMs after the SS-18. A 200-ton, 100-foot, 10-foot-diameter storable liquid-propellant ICBM.

Second, the nuclear-powered cruise missile sounds like a real disaster waiting to happen, a flying Chernobyl. I think the world community should consider additional sanctions on Russia simply for flight-testing such a weapon, let alone deploying numbers of them. It is a real environmental threat to the globe. Our nation discovered in the '50s with the NB-36H that airborne nuclear power is impossible to shield and safeguard properly. It is just a stupid idea.

Third, I believe the announcement of these five systems is solely to create fear in the West and for Putin to look "tough" to his population. It is "Crazy Ivan" all over again, to make Russia seem dangerous.

Fourth, I have seen no mention of it in the current rush to hypersonics, but we *had* an operational hypersonic boost-glide type of weapon in the late 1970s, the Pershing II, which had a maneuverable Mach 8 warhead—in those days, called a MARV. Wikipedia has an excellent description of this missile. And remember, this was tested and fully operational 30 years ago! It was equipped with a nuclear warhead, but easily could have a conventional one. In particular, it had radar guidance which could be translated to an anti-ship function. We should probably

restart this program to counter the Chinese anti-ship ballistic missile system. It could be carried by a modified Oshkosh 10x10 PLS (palletized load system) truck chassis, obviating the need for a trailer/launcher. If we really wanted to, we could probably have some in service within 24 months. All development was completed 30-plus years ago. And new types of hypersonic glide vehicles could easily replace the current MARV.

MSgt. Chris Dierkes,
 NYANG
 Westhampton Beach, N.Y.

I was curious to note that your article, "Putin Nuclear Retaliation Statement Seen As Nothing New by Pentagon," by John A. Tirpak failed to mention that U.S. nuclear first-strike policy is, and always has been, that we reserve the right to strike first (unlike our policy on first use of chemical and biological weapons). The article makes the Rus-

sian policy seem new and hostile rather than reconfirmation of our and their existing long-standing policies. I know that a large part of AFA's purpose is to publicize reasons we need a strong and effective Air Force, but exaggeration of enemy hostility does not enhance the world's safety from nuclear weapon use. Russia's demonstrated hostility since its documented (by all of our intelligence agencies) interference in the previous presidential election makes the need to further embellish it unnecessary.

Steven E. Zalesch
 New Haven, Conn.

On Unrest, Race, and USAF

[Regarding "World: Wright, Race, and USAF's Demons," June, p. 31]: [I was] on Active duty in the '60s/'70s and retired in the '90s. All of the military went through class after class of military training concerning race relations. What we are going through now

WRITE TO US

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is what we went through a generation ago. There is no difference. This generation hasn't been taught the lessons of yesterday, and we (the older) have to take the blame for not teaching our children the fundamentals of love and respect for everyone.

CMSgt. Dwight L. Graupman,
USAF (Ret.)
Spotsylvania, Va.

The tragedy of George Floyd should never have happened. An arrest should not have resulted in a death.

What concerns me is that the Air Force seems to feel a responsibility for this. I was in the military for 24 years and learned to work with people of various backgrounds and races and to look after each other, regardless. It is for that reason, as well as others, that I do encourage people to join the military.

I have studied military aviation history for many years, and, if anything, the Air Force has led the nation in providing opportunities for African Americans. An excellent example are the Tuskegee Airmen. Thanks to the Army Air Force, these men were given an opportunity to prove themselves and made an invaluable contribution to our victory in World War II. The Air Force was a leading institution in combating racism. It should be viewed as such, not a racist organization.

TSgt. Joe Domhan,
NYANG (Ret.)
West Babylon, N.Y.

COVID and the Chief

The article ["World: COVID-19 and the U.S. Air Force; Q&A With CSAF Gen. David L. Goldfein," May, p. 20] certainly shows that General Goldfein has taken energetic, decisive action. However, the article also indicates to me that the Air Force does not appear to have any COVID testing capability or, at least, it doesn't have much. COVID testing was not mentioned once.

If I look at the military in general, it doesn't seem to have much COVID testing capability. The aircraft carrier USS Roosevelt pulled into Guam on March 27, 2020, with 20 percent of its crew infected with COVID. It's just now pulling out to sea after being disabled for 55 days. It is pretty clear that the Navy did not have anywhere near the sufficient COVID testing capability on

the USS Roosevelt, otherwise it would have been able to identify the asymptomatic COVID sailors and isolate them before 20 percent of the crew became sick. What's worse is that the USS Kidd had a very similar disaster one month later, on April 28, with 20 percent of its crew sick with COVID. The Navy's problems with social distancing are clearly more severe than those faced by the Air Force, but it would be a mistake not to learn from their painful experience. What if the crews that we depend upon to execute our nuclear deterrent became sick? What if the pilots that fly our F-22s and F-35s got sick?

What would it cost to test all 320,000 in the Air Force in a day? The Abbott ID Now can test 100 people in a day. Therefore $320,000 / 100 = 3,200$ Abbotts. These units cost \$4,500 each for a total cost of $3,200 \times \$4,500 = \14.4 million. This is hardly a showstopper. Each test requires reagents costing \$40. This cost is $\$40 \times 320,000 = \13 million [approximately.]

The problem is not cost. In the case of the USS Roosevelt, it would have cost less than \$500,000 to test the entire crew in a day in order to save a \$10 billion aircraft carrier. The problem is test machine/reagent availability. There aren't enough. The Air Force/military can solve this problem by utilizing their defense suppliers just as Ford, GM, and GE were utilized to make ventilators.

The CDC/US public health service test philosophy is to "test a few and lock down everyone". The military can't afford to do this. The military must test everyone and lock down the few—the sick. The military can't "shelter in place." The military has to be ready to do its mission. To preserve its "readiness", it must use separation, quarantines, and COVID testing until a vaccine is ready. Spend the appropriate amount to defeat the COVID virus.

William Thayer
San Diego

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China and COVID 19

I read with great interest the April editorial "Competition and COVID-19 [p. 2]. I agree that China has, during the last 10 or more years, tried to replace the United States as the world leader. It is my view that the United States made many miscalculations in our national economic policy during the last 30 years.

Mistake 1: U.S. companies began the transfer of manufacturing goods into China in the early 1980s. This transfer became serious in the early 1990s as the U.S. Congress passed significant restrictive and costly manufacturing laws in the U.S. The Chinese government gladly wooed and welcomed U.S. manufacturing.

Mistake 2: As a result of this transfer of manufacturing of U.S. goods in China, U.S. consumers got much lower prices for those products. However, the quality of Chinese-manufactured products reflected the lower prices in very expected ways—significantly reduced quality, highly dangerous products, and a significant reduction in U.S. high-paying, blue-collar jobs.

Mistake 3: The U.S. led the world in making China a member of the World Trade Organization in December 2001.

The result was that the U.S. lost 8 million manufacturing jobs (a reduction of just over 30 percent) during the first decade of the 21st century (2001-2010). The vast majority of those jobs went to China.

Mistake 4: During the last three decades, U.S. companies and industries gave away critical manufacturing to China, all of which have come to light in the last three to six months. China makes critical defense components and sub-assemblies, has essentially developed and installed the technology in our communications products to know every bit of personal and national data on every person in the U.S., and has used stolen technology and intellectual property on much of the national and defense equipment they now use against us.

Mistake 5: In the last 30 years our national policymakers have ignored the most insidious facet of the U.S. intellectual, technology, and manufacturing move to China—the serious promotion of outright disloyalty to the United States by major corporations and citizen groups. In the last six months, NBA players chose China over the U.S. in our President's economic policy because their endorsements by

China were more important to them than the economic and political safety of the U.S. Corporations such as Mattel, Apple, Nike, and Adidas, and much of U.S. drug companies' products, are made in whole or in part in China. Yet these companies exercise little control of production processes and labor quality to produce these significant products and have run into serious quality and safety issues, as well as shortages. The American public and the military and our manufacturing base have received a serious wake-up call. We need to press our members of Congress and corporate leaders to treat China as a major threat to our security, national world presence, and economic and political systems. I thank Air Force Magazine for being among the first major military "house organs" to sound the alarm. I hope many read and heed.

Lt. Col. John Bredfeldt,
USAF (Ret.)
Dawsonville, Ga.

Subordinate Support

Gen. David L. Goldfein, USAF Chief of Staff, noted that, "You make your money as a commander," and "If you are the adult in the room that provides



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direction but empowers your subordinate leaders to take action, you win" ["Verbatim: Calm in the Storm," May, 7].

Unlike the commander of the USS Theodore Roosevelt, I was fortunate the Air Force had a culture of providing outstanding support to deployed units. As I moved up the ranks, I never forgot how important that culture was to support the Air Force mission regardless of who or where the people were.

As a junior officer, I was a commander of a geographically separated Air Force unit for two years, and a joint Defense detachment for another two years. I really found myself extremely fortunate to have superiors and staff in my parent unit 2,000 miles away and my headquarters another 4,000 miles away extremely supportive and helpful. In addition to support of routine tasks, they were always quick to provide guidance in crises and extremely critical situations. I was even provided personnel on TDY to help my unit relocate from a foreign base to a USAF base under critical conditions.

I was also fortunate that the people and the bases on which I was assigned lived up to every obligation in a tenant support relationship. My NCOIC was the adult in that relationship, where we got outstanding routine base support from all of the functional units, like supply, engineering, transportation, security, etc. Their support was extremely important in my unit's relocation that included over a million classified documents and over two million unclassified documents.

Finally, having established a "two-hat" function with the theater USAF headquarters, in which I served on its staff, we got timely support to perform our mission by flying on organizational aircraft to all of the air bases in the theater to provide them with materials for peacetime operations and wartime planning. We also got theater headquarters support in obtaining the highest priority for a secure facility on the base where many other organizations of all services were also relocating.

Having said that, I must submit that it takes more than a commander to provide calm to lead through a storm. If it were not for many people who voluntarily stepped up to provide advice, guidance, and support when I was a commander, I might have been like the commander of the USS Roosevelt.

I served in the Air Force many years

ago, but I truly hope the Air Force emphasizes the need for everyone to maintain a positive culture of helping units whenever and wherever they have a need. In my mid and later years of Active service and later as an Air Force civilian, I was a firm believer and proponent of the importance of providing exceptional and totally unselfish unit support.

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

What's in a Name?

Regarding ["Editorial: Launching the Space Force," January/February, p. 2]: After the United States entered World War I in April 1917, plans were made to construct numerous air bases throughout France. One of these bases was located at Issoudun, about 100 miles southeast of Paris. Issoudun was home to the 3rd Air Instructional Center (3rd AIC) and, at the time, was the largest air base in the world. The base boasted 13 airfields used to train American pilots in the art and science of aerial warfare.

As part of military life, the 3rd AIC began publishing a newspaper entitled "The Plane News." The Plane News captured life at Issoudun. Thumbing through the newspaper you'll find articles about events associated with the war (especially the air war), military topics such as customs and courtesies, poems, jokes, cartoons, scores from athletic events, social gatherings such as dances at the YMCA, songs, and letters. The Plane News is an excellent resource to gain real-time insight into daily life in the Air Service.

One of the articles that caught my eye was written on July 6, 1918. The article was titled "Name Wanted for Men of Air Service." Unlike the infantry, who were known as "Doughboys," and the Artillery, named "Rednecks," the article noted there was no nickname for U.S. Airmen. As a result, The Plane News sponsored a contest, open to all ranks, in search of an appropriate nickname. The winning entry would receive 100 French Francs (about \$20). Originally, the contest was scheduled to end on Aug. 4, 1918. However, there was so much interest the contest was extended to Aug. 10, then to Aug. 17.

Ultimately, about 300 names were proposed by readers from which a committee selected 25. Entries includ-

ed names such as "Sky Larks," "Joy Boys," "Eagles," "Starshooters," "Skyscrapers," "Larks," "War Eagles," "Sky Bo," "Sky Jackies," and "Joy Stickers." Subsequently, a vote was taken by the aviators at Issoudun, where the name "Airnats" was chosen. It was suggested by Sergeant C. B. Swafford, of the 655th Aero Squadron. The name had no particular significance, being an abbreviation of "aeronauts."

As the war continued, "Airnats" became more and more popular. In fact, in October 1918, Captain Jay W. Fay, director of the First Air Service Band, composed what he called the "Airnats' March," which was a big hit wherever it was played. Another tune, "When We Whirl In to Berlin thru the Air," composed by Nat Vincent, James Brockman, and James Kendis, was a hit song "Dedicated to the A.E.F. Airnats" as well. (A.E.F. meaning American Expeditionary Force)

When World War I ended, the "Airnats" nickname also passed into history. It was obvious the name did not match the mission of the Air Service, but the term used today and for the last 100 years certainly does. For the men and women of the Army Air Service, Army Air Corps, Army Air Force, and the United States Air Force, we are simply known as "Airmen!"

Maj. Robert A. Kasprzak,
USAF (Ret.)
Dayton, Ohio

What's in a Uniform?

When Gen. [Merrill] McPeak came out with the new Class A uniform many years ago it was immediately dubbed the "Delta Pilot" uniform because that is what it looked like.

The rank on the sleeve (like the Navy uses and like Delta pilots use) did not last long, and neither did the lack of insignia on the shoulder. But the lack of a pocket on the right side remained—and the worst feature of all, the three-button coat, remained. It may be comfortable (allegedly designed for general officers in the Pentagon) but it does not look "military" and should be scrapped. It's OK to keep the polyester (but not great) for easy maintenance, but the Air Force should definitely go back to the four-button coat and right side pocket.

Col. Roy Miller,
USAF (Ret.)
Phoenix

Carrier Quandry

"The carrier is not a threat to China because China has developed missiles specifically to kill carriers at great range and to shoot down joint strike fighters."

Retired British **Gen. Sir Richard Barrons**, former head of the U.K.'s Joint Forces Command, Financial Times [July 3].

Mercenary Mourning



Mike Tsukamoto/
staff

"You don't see yellow ribbons around trees for contractors. All these touching scenes of the military service member coming home and scooping his kids up at the airport, you never see that for contractors."

Mark Cancian, defense budget expert, Center for Strategic and International Studies, on how using private military contractors blunts perceptions of the human cost of long-term deployments. Washington Post [June 30].



Master Sgt. Matthew Plew

Lethal Weapon

"Since the inaugural test flight 31 years ago next month, the formidable B-2 Spirit has been the world's most technologically advanced bomber. The B-2 Spirit's stealth technology, long-range capability, and precision-strike payload produce a powerful conventional and nuclear statement: 'We are here. We are ready to respond. Anytime. Anywhere.' ... Maintaining a convincing nuclear deterrent is the National Defense Strategy's highest modernization priority."

Secretary of the Air Force Barbara Barrett on a visit to Whiteman Air Force Base, Mo., home of the B-2 Spirit [June 16].

Mea Culpa

"Always maintain a keen sense of situational awareness. As senior leaders, everything you do will be closely watched. And I am not immune, as many of you saw [as a] result of the photograph of me at Lafayette Square last week that sparked a national debate about the role of the military in civil society. I should not have been there. My presence in that moment and in that environment created a perception of the military involved in domestic politics. As a commissioned, uniformed officer, it was a mistake that I've learned from. ... We who wear the cloth of our nation come from the people of our nation, and we must hold dear the principle of an apolitical military that is so deeply rooted in the very essence of our Republic. Embrace the Constitution. Keep it close to your heart. It is our North Star. It's our map to a better future. Though we are not a perfect union, believe in the United States. Believe in our country. Believe in our troops and believe in our purpose."

Gen. Mark A. Milley, Chairman of the Joint Chiefs of Staff, in a video address to the graduating class at National Defense University [June 11].



Li Wei/China Ministry of Defense

Accidents Might Happen

"I think the possibility of an accidental shot being fired is rising."

Wu Shicun, president, National Institute for South China Sea Studies, in a report on American military activity in the region [June 26].

Day of Reckoning

"COVID ... and the downward pressure on the budget ... is going to accelerate the day of reckoning that was always facing us. ... We can no longer modernize and maintain what we have. ... You're going to either keep your force structure whole and ready, or you're going to modernize."

Brig. Gen. S. Clinton Hinote, Deputy Director, Air Force Warfighting Integration Capability, on the Air Force's strategy to retire current capability to pay for modernization, at a Mitchell Institute Aerospace Nation livestreaming event [May 27].

Ally Envy

"One of [President] Trump's favorite comparisons was to point to the tip of one of his Sharpies and say, 'This is Taiwan,' then point to the Resolute desk and say, 'This is China.' So much for American commitments and obligations to another democratic ally."

—**John R. Bolton**, former National Security Adviser, in "The Room Where it Happened," his memoir of his time in the White House.

The Future of the Expeditionary Force

Lt. Gen. Mark D. Kelly is the Air Force Deputy Chief of Staff for Operations. In the post since August 2018, he was nominated in June 2020 to gain a fourth star and take over Air Combat Command. He previously commanded at the squadron, wing, expeditionary wing, and numbered Air Force levels. He recently spoke with Air Force Magazine Editorial Director John A. Tirpak about the requirements process, changing the Air and Space Expeditionary Force model, joint all-domain command and control (JADC2), and operating tempo. This interview has been edited for space and clarity.

Q. Technology is moving faster all the time. The old requirements process needs to change in order to keep up. What are you doing to accelerate it?

A. Part of the requirement driver is ... adversary technology leaps that we have to patch and reprogram against, and do so at the speed of relevance. We can't build a software patch on an annual, or even six-month cycle. So we need resilience and secure, rapidly opening architecture. Another requirements driver will be the ability to plug into JADC2 and be a contributor to end-game decisions and superiority of the Blue network.

Q. Do you see requirements driven more top-down or bottom-up?

A. It will be a natural evolution. For instance, six months ago, we all started teleworking. I don't know if that was top-down or bottom-up, it just became a natural course we followed. So that's a small indication of the bigger path we're on: people are going to have to be able to plug-in and contribute from anywhere around the globe at different security levels. So, I think it's probably going to be a blinding flash of the obvious.

Q. You made a presentation at Corona in June about changing the Air and Space Expeditionary Force (AEF) model. What's going to change, and why?

A. Over the last 18 years, we presented forces to combat violent extremists in the Middle East, crowd-sourcing from a pool of Airmen. They've been so capable, flexible, and adaptable. They arrive at a forward base, they meet their new boss, acclimate to their surroundings, meet their deployed teammates, and execute the most intense team application on the planet—which is combat. And that's a great testament to our Airmen.

The adversary in that fight allowed the acclimation of Airmen to the situation, but a peer adversary will not. Airmen have to arrive and execute as a cohesive, high-performing team, from Minute one. We have to present forces that are combat-credible upon arrival, and that means training together as a team and integrating with other combat teams. And do that together in a high-end exercise like Red Flag before they're required to actually fight in a high-end conflict. We owe them that.

But the force presentation can't be divorced from what I would call the force generation. The 2018 National Defense Strategy recognized the need to have high readiness to counter

Lt. Gen. Mark Kelly was nominated to receive a fourth star and lead Air Combat Command after nearly two years as deputy chief of staff for operations at Headquarters USAF.



Airman 1st Class Kindra Stewart

peer adversaries, and every one of the services has a readiness recovery challenge.

So, force generation is key to our force presentation.

The generation model we're working through now adheres to the directed-readiness rates of our force elements. We've got well-codified requirements about what we have to have to respond to a crisis. And, we have a well-defined force structure in our Air Force. So, given these known parameters and a requirement to not outstrip our force-generation capability, we have to provide a force that gives Airmen more predictability in their lives. We also owe the Joint Staff, Secretary of Defense, combatant commanders, and allies relevant forces that can only come from the Air Force. We owe our adversaries an overwhelming deterrent.

It's a work in progress. But some of the Majcoms are already working incrementally toward force-generation and force-presentation models.

Q. Will you have a new system this year, or will it need more input from the new Chief of Staff, Gen. Charles Q. Brown Jr.?

A. We'll definitely give General Brown an opportunity to put eyes on it, and we look forward to his guidance to shape it. But he was at the Corona, and he's been supportive of our plan of action. We're looking to get some time with him in mid-August to go over some of the final details, and then we expect to have an IOC [initial operational capability] Air Expeditionary Force construct by Oct. 1.

But ... we already have obligations to the Joint Staff for Global Force Management; things we have to deploy as the immediate-response force that will be going in October. So, our new AEF has to converge with some decisions already made, and it won't be the final product.

I would expect full operational capability by October 2021. And then you'll have combat-credible teams and squadrons train together, or train separately at their own bases and come together in a high-end combat-certification exercise,

something akin to a Red Flag. ... And we'll aggregate these capabilities together, and they'll be offered to the Joint Staff and Secretary of Defense, either as one big AEF or we'll disaggregate them for Global Force Management.

But—a key point here—is if the Secretary of Defense had a need for a big AEF to be aggregated on short notice now ... we would be hard-pressed, based on the speed and relevance of modern combat, to pull that together. It would be very, very hard, if not impossible. We can't build the way we have and then all of a sudden have a requirement to aggregate in a combat zone ... and have a cohesive fighting team.

So, that's some of the calculus of why we have to build and train to a cohesive fighting AEF.

Q. We're hearing a lot about logistics under fire and rapidly moving from one austere base to another in wartime. How is this going to be exercised in the next few years?

A. The preponderance of our logistics infrastructure rides on our unclassified network, and so you could think of it, first and foremost, as networks under cyberattack. Every day is game day; our cyber ninjas are having to operate in the most contested and congested arena. If our guard is down, those important supplies are either at risk of being late to need or never showing up at a forward location.

So that gets a bit at the question of what you have to preposition, what organic supplies you take, and your distribution capabilities, hubs and spokes, and ability to distribute in foreign locations. ... I don't think we'll see a faster pace of these exercises, but see them incorporated more into the existing exercises.

Q. How is the Air Force's operating tempo today different than at the height of Operations Inherent Resolve and Enduring Freedom? Is the Air Force in a reset or rebuilding period now? Or is there just no time for that?

A. We're somewhere in between. Our pace around the globe hasn't really slowed down, but the dynamics have changed. Take our Air National Guardsmen, for example. We tend to think of Air Force operations as big movements of B-1 bombers and tankers and fighters—big operations like we've been doing in the Middle East for 18 years.

Now, think about what our Air Guardsmen are doing today. We had to surge them—many of them civilian medical experts—in such a way that we didn't do damage to their homefront. We surged them to different places all over the U.S. to deal with coronavirus. That was a huge surge, and they're still doing that. And then in the civilian unrest, our Guardsmen had to step forward and provide additional security in and around installations, and sometimes in the cities. So, all of that is above and beyond the Guard flying missions everyday in the Middle East and anywhere else around the world. We ask a lot of them, and in their eyes, it hasn't slowed down. And we're about to get into wildfire season and hurricane season where we'll have to rely on our Title 32 Guard members to lead the task forces that respond to crises.

On the Active-duty side, it hasn't changed much at all. The global laydown ebbs and flows a little bit. Coronavirus has added challenges to moving cargo, moving people, and we had a restriction of movement due to quarantine and host nation requirements for health and wellness because it has added processes. Stopping more frequently to wash your hands, being aware of what you touch, wearing a mask, and generally communicating is more difficult. So I would say our optempo hasn't really gone down much these last weeks and months.

Q. Joint all-domain command and control implies a top-down approach to directing forces rapidly to where they're needed, but the Air Force has been trying to drive decision-making to the lowest levels possible. How do you do both at the same time?

A. I actually see those two things converging. JADC2, at its core, is about decision superiority; it doesn't really get into decision authority. Decisions now have to be made in seconds that used to be made in days. So I think JADC2 will facilitate decisions to a lower level, because they'll now have real-time feedback. As an analogy, I think we're going to transition from football coaches—who call each play—to hockey coaches, who provide the operational strategy and trust the team to execute. They monitor the execution and make real-time adjustments to facilitate success based on the speed of what's going on in front of them. They're both coaches, they're both in charge, it's just a different dynamic they have to manage.

Q. Everyone seems to agree there are flat budgets ahead. Does that mean work on "The Air Force We Need" goes on the back burner? Or, if some growth is still coming, where?

A. If budgets double or get cut in half, 386 combat squadrons is still the requirement to execute that's been given to us by the National Defense Strategy. And we are growing: the F-35s at Eielson [Air Force Base, Alaska,] and [in] Vermont, for example. And yes, our ability to grow or not grow is driven by budget. JADC2 will keep growing. It's necessary to decision superiority.

Q. Is intelligence, surveillance, and reconnaissance (ISR) the main growth area?

A. Not necessarily. Think back to 2002. Our ISR wasn't an MQ-9, or even an MQ-1; it was an RQ-1. It did tactical ISR but was not a shooter. It evolved into a shooter, the MQ-9, and with Gorgon Stare, became a much more capable ISR asset.


The point is, I don't necessarily see growth in any one area, but as platforms become more capable, they grow beyond a niche capability, adding more utility. That builds decision superiority and more rapid execution of whatever decision is made.

Q. How is the Air Force going to look different in 2030?

A. To look forward, look back. Imagine a decade before the internet: daily life without real-time information. Driving, for example: How did we navigate with paper maps before driving apps that give us a GPS position? Or, how did we fix our cars, paging through a shop manual the size of an encyclopedia because we didn't have YouTube?

Ten years from now, JADC2 will simply be how we do things, day to day, and we'll wonder, how did we operate without being so connected? How did those old guys make decisions that were not machine-enabled, by an all-domain, common operating picture fed by a cloud of authoritative real-time data? And the answer will be, we did the best we could with the information we had. That gives you an idea of how things will be different.

Q. There are a lot of people who can't function without GPS and wouldn't know what to do with a paper map. Are Airmen then going to be able to function if they lose connectivity in a fight?

A. The short answer is, yes, because we're going to have to. We can't have any single point of failure. That's part of JADC2: it has to be self-healing. If we lose bits and pieces of it, it has to be able to reroute. 

By John A. Tirpak

The Big Fighter Gamble



Mike Tsukamoto /staff; landscape and F-35/USAF

The XQ-58A Valkyrie, shown in this illustration with an F-35A, is a joint venture between the Air Force Research Laboratory and Kratos Defense to develop semi-autonomous drones that can work in concert with unmanned fighters.

The Air Force bet big on the Next-Generation Air Dominance (NGAD) program—and it should soon get the first indications of how those bets could pay off.

"I hope to have the acquisition plan [for] NGAD rolling into the Digital Century Series this summer," said Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics Will Roper in June. The plan depends on a business-case analysis for the new airplane and on whether his digital approach to developing, building, fielding, and operating new aircraft will be more efficient than the traditional model. Secretive and already costing \$1 billion per year, NGAD is intended to ensure U.S. air superiority in future conflicts. Senior Air Force leaders over the past 18 months had coyly avoided describing NGAD as a plane, indulging speculation that it could be a new kind of sensor network, an arsenal plane, attritable aircraft, or something else. Roper allowed that it is, in fact, an airplane, and that he's waiting on an analysis to show that it can work as intended.

The Digital Century Series idea is to design and develop new aircraft on computers, while simultaneously designing the factories that will build them. Computer-aided design is hardly new, but the Century Series concept goes further, creating virtual models that are, in effect, "digital twins" of the future machine. That eliminates physical models and prototypes and enables builders to produce production-relevant aircraft sooner.

The ultimate goal: Build and field 50 to 100 aircraft that are technologically superior to competitors, will be operated for a comparatively few years, and then replaced by a refined

design or by entirely new aircraft. This, Roper said, is the only way to stay ahead of China and Russia, who don't have to wait through multiple budget debates to launch and build new aircraft projects.

The business-case analysis will determine whether Roper's preferred method will actually cost less than the conventional process, which took 20 years each to develop and deliver the F-22 and F-35. There's general agreement the Air Force can't wait that long again, but Roper acknowledged skepticism over throwing out industry's slow but proven methodology.

To "rewrite the book" on aircraft acquisition, he said, the NGAD team must compare the cost of the Century Series approach in terms of "effects per year," rather than metrics such as cost per flying hour, which don't necessarily translate to combat effectiveness.

He expects these new aircraft will be less costly to build because they will be intended to last just 10, rather than 30, years. That, in turn, should reduce sustainment costs, because USAF won't have to invest in such a robust supply and maintenance train. This approach would eliminate "vanishing vendor" syndrome for parts and force a new, faster aircraft design-and-construction rhythm. At the same time, radical changes in cockpit design and aircraft operations would be constrained in order to reduce the need to tinker with the pilot training enterprise.

CHANGING THE CALCULUS

Roper wants to demonstrate that the conventional process creates a unit cost tracked "year-by-year, via economies of scale,"

while the new approach will deliver “greater return on investment for price-per-lethality, per year.” With the exception of the F-35 program, the full cost of sustainment has not typically been counted in the cost of a new system, and Roper expects that including that comparison will reveal that sustaining obsolescing systems is a very high and tradeable cost.

This work is “very close” to being finished, Roper said.

If the analysis is favorable, it is “really going to help us” compete with China, Roper said. But even if the cost differential is close to break-even, the idea will pay off because the Air Force can field new aircraft more quickly for the same cost.

If, however, it turns out to be much more expensive, “then we’re going to have to argue that it’s a better return on investment, year by year.” But “my money’s on: It’s going to be cheaper,” he said.

Time is also a factor. Service leaders have consistently said they’ll need something new to deal with Russian and Chinese fifth-generation jets circa 2030. If NGAD craps out, conventional development will be too slow to make a difference. Based on recent history, new designs couldn’t be fielded until 2040, 10 years too late.

The head of Air Combat Command, Gen. James M. Holmes, said earlier this year that ACC is working on a “fighter-like” capabilities roadmap, and that NGAD is central to it. He emphasized, though, that what constitutes a “fighter” is very much an open question now, and requirements vary from Europe—where Russia is only a short distance away—to the Pacific where an aircraft’s range is a premium consideration.

Fighters in the Pacific theater will probably look different than traditional fighters, he told Air Force Magazine in a recent interview. He said ACC is defining the “range and payload with avionics fusion and connectivity” that will be needed in combat in 2030.

Roper recently realigned the program executive officers managing advanced aircraft, putting Brig. Gen. (sel.) Dale White in charge of NGAD, the “Low-Cost Attributable Aircraft Systems” project, and “Skyborg,” an effort to use artificial intelligence to make unmanned aircraft more autonomous. White will also oversee legacy aircraft such as the F-15, the new F-15EX, F-16, and A-10—but not the Air Force’s F-35A.

REVEAL AND CONCEAL

Future investment will be watched closely. The House Armed Services Committee’s version of the 2021 defense bill policy fenced 15 percent of the Air Force and Navy’s NGAD accounts until the Pentagon’s Cost Assessment and Program Evaluation (CAPE) office completes an independent, “non-advocate” review. The committee wants CAPE to assess the risks to “cost, schedule, development, integration, production, fielding, and sustainment,” and to verify that NGAD will meet affordability goals and won’t “jeopardize or otherwise be detrimental to other high-priority future capabilities being developed and procured



Staff Sgt. Chad Trujillo

With NGAD, Air Force Acquisition chief Will Roper aims to “rewrite the book” on aircraft acquisition.



Tech. Sgt. R.J. Biermann

ACC commander Gen. James Holmes says the future definition of “fighter” is an open question.

to support and execute other primary core competencies and missions.”

In June, the Air Force released requests for information to industry for both a potential successor to the MQ-9 and an “arsenal plane,” although the latter seemed to be oriented toward systems for dropping advanced munitions out the back end of cargo aircraft, rather than a new, stealthy penetrating system. It is unclear whether the Low-Cost Attributable Aircraft, the “arsenal plane,” or a stealthy replacement for the MQ-9 Reaper hunter-killer drone will be part of the NGAD “family;” they could be, but neither Roper, nor others, have said so.

Gen. Timothy M. Ray, head of Global Strike Command, said in the spring that he is eyeing a “clean-sheet” design for an arsenal plane. That aircraft would also follow the rapid digital development model.

In March testimony prepared for the Senate Armed Services Committee, Holmes and Lt. Gen. David S. Nahom, Air Force deputy chief of staff for plans and programs, said NGAD is very much part of a “family of capabilities enabling air dominance in the most challenging operational environments.” The fiscal 2021 budget request included \$1 billion for NGAD and “\$6.6 billion across” the Future Years Defense Program to replace “once-in-a-generation, mass-produced fighters with smaller batches of iteratively upgraded platforms of multiple types.”

Using the Digital Century Series technique will permit the Air Force to troubleshoot “design, assembly, maintenance, and cost” before airplanes are ever built, eliminating the learning curve in both production and operation. The concept will be applied to non-fighter aircraft, munitions, and satellites, they said. To say more requires “a classified setting.”

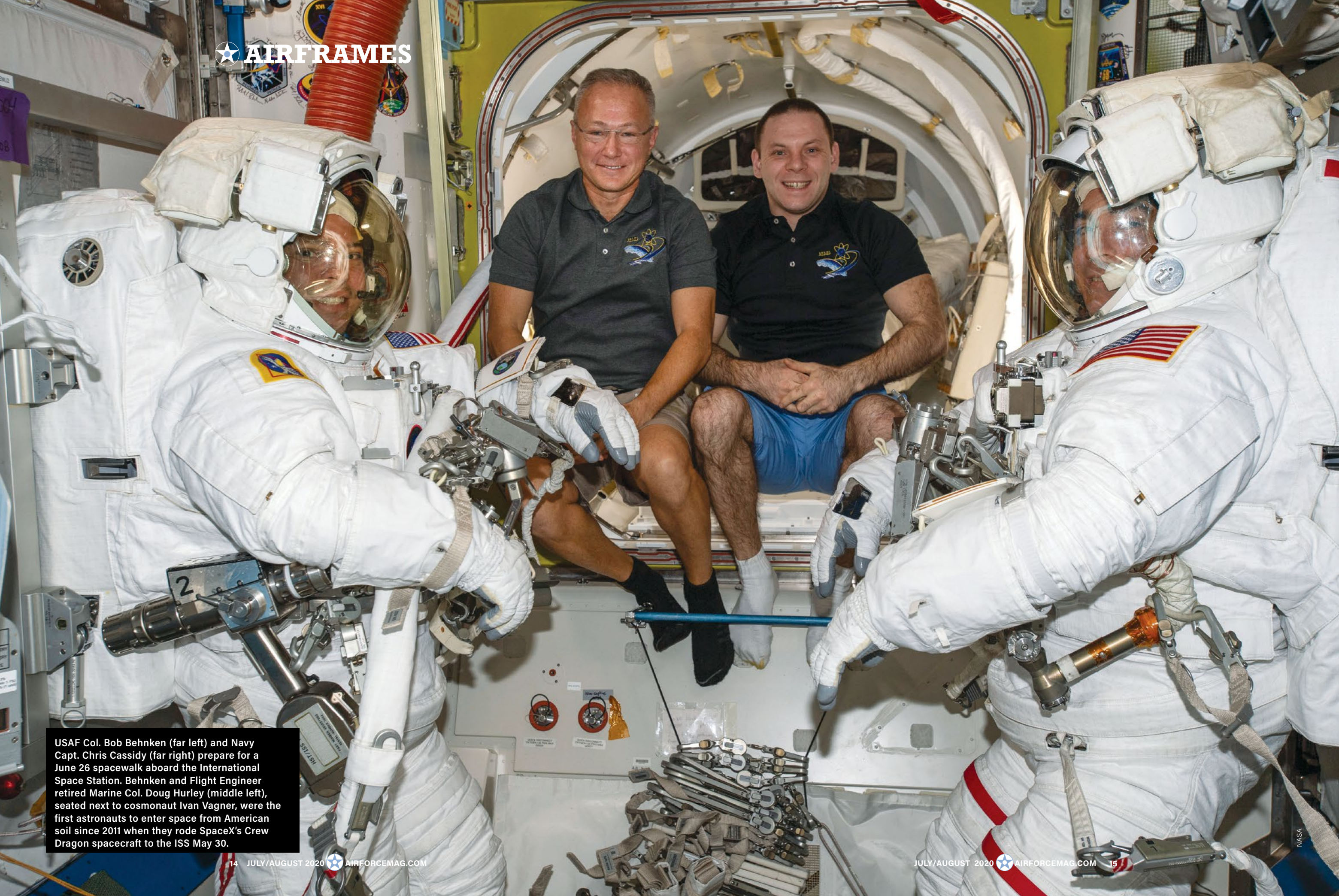
Chief of Staff Gen. David L. Goldfein, in a May interview with Air Force Magazine, said the secrecy surrounding NGAD and other top new programs is regrettable, but necessary, to avoid tipping the Air Force’s hand too early. He predicted that USAF’s overall scheme for air dominance will become clearer in about two years, as programs mature.

The technologies in NGAD will “not only outfit a next generation of capability, but also, I believe, be retrofitted into some of our current platforms and weapon systems,” Goldfein said. This includes technologies to enable joint all-domain command and control, which will connect all the sensors, shooters, and command nodes among the services.

“There are certain things that you connect to that are in the white, and there’s a growing number of things we will connect to in the black, and that’s probably as far as I can go,” he said. “What you are seeing from us is a ‘reveal and conceal’ strategy. We reveal at a time of our choosing, based on our deterrence objectives We reveal what we have, and we conceal what we have to keep our adversaries guessing.” Eventually, however, both for deterrence and to satisfy Congress’ need to understand the whole picture, USAF will have to put all its cards on the table. ✪



Airmen assigned to the 347th Rescue Group drop flares from an HH-60 Pave Hawk in a celebratory fini flight for the group's commander, Col. Bryan Creel, at Moody Air Force Base, Ga. By long-standing tradition, fini flights are a final send-off when pilots depart a command. Creel's next assignment: Incirlik Air Base, Turkey, where he will command the 39th Air Base Wing.



USAF Col. Bob Behnken (far left) and Navy Capt. Chris Cassidy (far right) prepare for a June 26 spacewalk aboard the International Space Station. Behnken and Flight Engineer retired Marine Col. Doug Hurley (middle left), seated next to cosmonaut Ivan Vagner, were the first astronauts to enter space from American soil since 2011 when they rode SpaceX's Crew Dragon spacecraft to the ISS May 30.



Sarayuth Pinthong/USAF

Pilots train on a virtual reality flight simulator as part of the Pilot Training Next program at Joint Base San Antonio-Randolph, Texas. Technology and lessons from that program contribute to efforts to streamline pilot training.

ACC Aims to Train Pilots in Half the Time

By John A. Tirpak

The Air Force plans to launch a new fighter pilot training program that could cut the time it takes to transform a new student pilot into a fighter flight lead roughly in half.

The new concept of operations exploits the in-jet simulation capability of the new T-7 Red Hawk, paired with ground-based virtual reality and artificial intelligence (AI), to accelerate student progress.

Air Combat Command boss Gen. James M. Holmes signed the new CONOPs, called “Rebuilding the Forge,” or “Reforge” for short, on June 2. If tests are successful, it will lead to the most radical transformation of USAF fighter pilot training since the 1950s, according to its authors. The switch to dual-track, Specialized Undergraduate Pilot Training in the 1980s was a far less dramatic restructure, they said.

“Part of what we’re trying to do is see if we could create more capacity without spending more money,” Holmes said during an AFA Mitchell Institute for Aerospace Studies virtual event. If Reforge works, fewer F-22s, for example, will be needed for basic skills training in the jet. “We can take some of that training-coded iron and turn it into combat-coded iron. We already paid for it, we already paid for the people that fly it.”

Holmes said Reforge combines the fighter fundamentals course with the Fighter Training Unit (FTU) process, eliminating at least one change of station move for fighter pilots and using new technology

“Part of what we’re trying to do is see if we could create more capacity without spending more money.”

—Gen. James Holmes, ACC commander

to accelerate their proficiency. That would translate to fewer F-22s being needed for basic skills training and more tails available either for combat exercises or, in the case of older jets, as opponents for more upgraded versions of the Raptor.

The new system potentially could reduce the time it takes for a student to go from starting SUPT to as little as 18 months. Specialized Undergraduate Pilot Training now takes about 12 months. After that, fighter-bound pilots go to the Fighter Fundamentals course, flying the T-38, and then on to a Formal Training Unit in their particular fighter. The whole journey now takes about 40 months before the pilot reaches fighter qualification, including change-of-station moves and refreshers.

The new CONOPs implements an Initial Tactical Training (ITT) Course that merges the latter two phases and slices about a year off the program.

ITT graduates will arrive at their Formal Training Unit “with a higher level of tactical skills,” sharply reducing what the FTU must teach in expensive, high-end fighters. The new process also will give pilots more stability by reducing the number of change of station moves they have to make during their pilot training period. They would move after winning their wings and do ITT at the same base where they join their first fighter squadron.

Cost savings of the new plan have not yet been vetted, but savings are not the goal, said David Timm, a contractor on the ACC staff and a co-author of the CONOPs.



Boeing

An image from the Boeing T-7 Red Hawk cockpit-reveal promotional video shows the advanced glass instrument panel in the front seat of USAF's newest trainer.

“According to the F-22 community, they’re spending 60 to 70 percent of their sorties” teaching their new pilots basic skills and upgrades, Timm said in an interview. “Teaching those skills sooner, with an advanced trainer, you’re able to save 50 percent of the training days; or 60 percent of the F-22 sorties that we allocate for training in an FTU, and squadrons can use that money to focus on combat training.”

The reduced FTU training timeline allows USAF to double the pilot production in the same time and increase throughput. That should help USAF work off the fighter pilot shortage, Timm said.

“We’re not looking to cut hours. We’re looking to repurpose them,” said Lt. Col. Luke Schneider, another of the CONOPs’ authors. “If I cut hours, I don’t increase readiness beyond ... what it is right now.” The aim is to use the hours better, teaching pilots how to employ the fighter, instead of “how to take off, land, and do patterns,” as well as operate sensors like radars and targeting pods, he said.

The CONOPs—the first step in overhauling fighter pilot training—acknowledges that the existing program “is not working for us today and will not work in the future,” Timm asserted. The fighter fleet is being “burned out” by using it for training basic skills instead of for near-peer engagement, he added.

The ITT course will include augmented or virtual reality and artificial intelligence-enhanced instruction, permitting pilots more opportunity to learn and advance in a way that best suits their learning styles. Schneider said AI will adapt instruction to the individual, reducing sorties and simulator events in skills where a student is already proficient, and adding them in areas where more work is needed. The high fidelity of simulation will also allow far more repetitions of needed maneuvers at far less expense than in the real airplane, so fewer real-world events are needed to progress.

Moreover, technology has made advanced fighters better able to synthesize multiple sensor inputs into simple tactical displays, making them “easier to fly,” according to the CONOPs. Schneider noted the T-7 itself, which “mimics” those jets, is easier to fly. Students raised on electronic devices are also more comfortable and experienced with high technology, further reducing training times. In the T-38, by comparison, “we spend a lot of time teaching guys not to die,” Schneider said.

The Air Force is planning a Reforge Proof of Concept (RFX) program to put the CONOPs to the test. In March, the service began a move to lease Lockheed/Korea Aerospace Industries T-50 advanced trainers or Leonardo M346 trainers for a

five-year program to test and prove the CONOPs. That source selection is underway, but no decisions have been made about where the first Reforge test base will be. Those who go through the program first will be the instructor cadre and refine the model through subsequent iterations.

Holmes “wants to prove this, and not wait until the T-7 gets produced,” Schneider said. “Renting eight airplanes ... is a cost that was not planned for in the POM,” or Program Objective Memorandum budget document, but it has support “at the four-star level.” Getting on contract and conducting the RFX is the “next step” in Reforge, he said.

USAF also may have to purchase additional T-7s from Boeing. The existing contract provides options for up to 100 more than the 341 called for in the deal. The T-7s needed for Reforge could be different than those built for undergraduate pilot training, and might warrant a different designation, such as TF-7, which could demand a separate engineering and manufacturing development program.

The authors note that the shift is not simply taking advantage of new technology, but addressing an urgent operational shortfall. “We are not making new fighter pilots fast enough, and we are not retaining enough of those we do make in the force,” the Reforge authors wrote.

“There are three aspects” to the pilot shortage, Schneider explained: production, absorption, and retention. Reforge addresses those by increasing the throughput of new pilots, getting them experienced more quickly, reducing their change of station moves, improving their quality of life and, thus, retention.

The new system will give the Air Force more bang for its pilot buck. The new CONOPs gets as much as 10 percent more combat-qualified time from each pilot’s first 10-year commitment, since each will be a trained combat pilot sooner, Schneider asserted. Also, there could be 300 hours of basic skills savings per front-line fighter per airplane per year. Multiplied across all fighter fleets, the hours redirected to true readiness would be “huge,” Schneider said.

“Current tactical training development is not keeping pace” with new technology, according to the document. Reforge is meant to change this.

The new CONOPs has been in the works a long time. Holmes penned an op-ed 17 months ago saying Reforge will exploit the opportunities presented by the T-7 and new technology “to reshape the entire fighter training enterprise and rebuild the forge in which we temper the world’s greatest combat aviators.” Timm said Holmes has been briefed on five iterations of the CONOPs since then. ★

Bass is Air Force's First Female Enlisted Leader



By Rachel S. Cohen

Chief Master Sgt. JoAnne S. Bass will become the 19th Chief Master Sergeant of the Air Force, and the first woman to serve as the highest-ranking noncommissioned officer of any U.S. military service.

Gen. Charles Q. Brown Jr., who will take over as Chief of Staff in August, picked Bass to follow outgoing CMSAF Kaleth O. Wright. Bass' selection sets up a historic leadership slate for the Air Force: It will become the first military branch run by a Black flag officer and a female enlisted Chief.

Bass is also the first Asian American to serve as the highest-ranking noncommissioned member of a U.S. military service.

"I'm honored and humbled to be selected as the 19th Chief Master Sergeant of the Air Force, and follow in the footsteps of some of the best leaders our Air Force has ever known," Bass said in a June 19 press release. "The history of the moment isn't

"I'm honored and humbled to ... follow in the footsteps of some of the best leaders our Air Force has ever known!"

—Chief Master Sgt. JoAnne Bass

lost on me; I'm just ready to get after it. And I'm extremely grateful for and proud of my family and friends who helped me along the way."

Brown said Bass brings the right skills, temperament, and experience to the job, plus "an outlook on leadership that meshes with his own," according to a release.

"She has unique skills that will help us both lead the Total Force and live up to the high expectations of our Airmen," he said. "She is a proven leader who has performed with distinction at every step of her accomplished career. I have no doubt that Chief Bass will provide wise counsel as we pursue and implement initiatives to develop and empower Airmen at all levels."

Bass, who will take over the CMSAF post in an Aug. 14 ceremony, beat out more than a dozen other candidates based on her experience, recommendations, and career performance. As CMSAF, she will oversee more than 410,000 enlisted Airmen.

"General Brown knocked it out of the park with this selection," CMSAF Wright posted on Twitter. "Proud moment in history, great to be an Airman!"

Bass currently serves as command chief master sergeant for Second Air Force at Keesler Air Force Base, Miss. She is the top non-commissioned adviser for Air Force-run training courses that graduate 150,000 military personnel each year. Second AF encompasses four training wings and 18 groups across 76 locations worldwide, and manages 13,000 enlisted, officers, civilians, contractors, and 36,000 basic military trainees annually.

"Throughout her career, she has held a variety of leadership positions serving at the squadron, group, wing, and major command levels," according to her 2nd AF biography. "She has significant joint service and special operations experience and has participated in several operations and exercises, as well as deployments in direct support of Operations Southern Watch, Enduring Freedom, and Iraqi Freedom."

The decorated leader most recently served as chief of Air Force enlisted developmental education at the Pentagon.



CMSgt. JoAnne Bass, then-2nd Air Force command chief, speaks to Airmen at Goodfellow Air Force Base, Texas (left), and at Keesler Air Force Base, Miss., (above and below), in 2019.



With Bass and Air Force Secretary Barbara M. Barrett in two of the service's top three leadership positions, women will occupy seven of the 49 highest posts across the Air Staff, Secretariat, and major commands.

Brown, Bass, and Barrett—who became Secretary in November—are taking the helm as the Department of the Air Force pivots toward potential conflict with Russia and China while continuing to suppress extremist groups in the Middle East and Africa. The service must also navigate the challenges posed by the ongoing coronavirus pandemic while balancing an expensive slate of modernization programs, building a more equitable and diverse workforce, and standing up the new Space Force.

Goodbye Wings, Hello Deltas

The Space Force finalizes organizational changes.

By Rachel S. Cohen

The Space Force announced June 30 it will organize its personnel into three levels: field commands, deltas, and squadrons.

The decision eliminates groups and Numbered Air Forces. Space Force officials argue a flatter organization will make it more flexible than its predecessor, Air Force Space Command.

“This is the most significant restructuring of space units undertaken by the United States since the establishment of Air Force Space Command in 1982,” said Secretary of the Air Force Barbara M. Barrett in a release.

Squadrons will focus on missions, such as satellite operations or intelligence, and will report up to new deltas, named for the triangular symbol often used in space logos.

A colonel will lead each delta, built to handle functions like operations, installation support, and training. People who previously worked in groups or numbered Air Forces will move to jobs elsewhere, and some of their daily tasks will be repurposed.

The Space Force will have three field commands: Space Training and Readiness Command (STARCOM), Space Operations Command (SpOC), and Space Systems Command (SSC).

STARCOM supplants Air Education and Training Command as the organization in charge of the training pipeline, starting in 2021. In the meantime, a colonel-run delta at Peterson Air Force Base, Colo., will oversee training and readiness.

“This unit will serve as the parent organization for a number of education, training, and operational test and evaluation units transferring to the Space Force in summer 2020,” the service said.

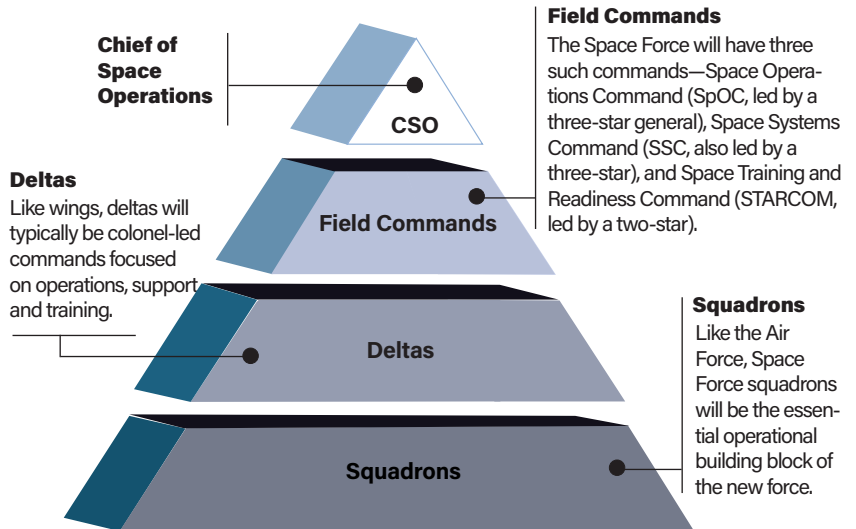
SpOC will be headed by a three-star general and will supply Space Forces’ personnel and combat resources to commanders across the globe. It will replace today’s Space Operations Command at Vandenberg Air Force Base, Calif., and include the Space Force’s staff and operations already located at Peterson.

SSC will oversee research, development, and acquisition and encompass the Space and Missile Systems Center, the Commercial Satellite Communications Office, and other space system program offices from across the Defense Department. The three-star command will oversee military rockets, satellites, radars, and other space-related assets from creation to retirement.

Space Force field commands will begin life as deltas later this summer. It’s not clear when its operations and

Streamlined Structure

The new Space Force eliminates two echelons of command to create a flatter organizational structure than the Air Force. Field commands will be the equivalent of Air Force major commands and deltas will replace wings.



materiel organizations will be fully open for business. The Space Force has not announced what it plans to call Space Force personnel.

The Space Force, which falls under the Department of the Air Force, is the U.S. military’s response to the growth of commercial and military technology in space, as well as the proliferation of weapons that could threaten American space assets. It is expected to grow to around 15,000 personnel from across the Defense Department, and may eventually become a military department on par with the Air Force, Army, and Navy.

In the Senate Armed Services Committee’s version of the fiscal 2021 defense policy bill, lawmakers backed the creation of a new training and readiness command to handle doctrine and education. But senators also urged the Space Force to use as many Air Force resources as possible to cut costs and red tape.

“The committee commends the Space Force on the combined organizational model planned for the Air Force Research [Laboratory],” lawmakers added. Some AFRL employees will continue to pursue projects that benefit air combat, while others, like sensors and space vehicles researchers, will report to Space Force officials.

“By combining efforts and managing priorities of both the Air Force and Space Force, the Department of Defense achieves synchronized effects with a very limited bureaucracy. The committee recommends the use of this combined model to the maximum extent possible in places such as the Air Warfare Center and the National Air and Space Intelligence Center.”



An F-22 Raptor intercepts a Russian Tu-95 bomber in the Alaskan Air Defense Identification Zone on June 10. Russian military aircraft approached U.S. airspace at least six times in June and 10 times over the first half of the year.

A Spike in US, Russian Intercepts Heats a New Cold War

By Amy McCullough

North American Aerospace Defense Command fighters intercepted Russian bombers, fighters, and maritime patrol aircraft at least 10 times this year off the coast of Alaska, with the majority of those encounters taking place in June, NORAD and U.S. Northern Command boss Gen. Terrence J. O’Shaughnessy said. U.S. aircraft, also in June, encountered Russian aircraft several times while operating in international airspace in the U.S. European Command theater of operations.

NORAD F-22s, supported by KC-135 tankers and an E-3 Airborne Warning and Control System, intercepted four Russian Tu-142 reconnaissance planes as they encroached on the Alaskan Air Defense Identification Zone (ADIZ) on June 27, marking the second intercept in a week and at least the sixth off the Alaskan coast in June.

The Russian aircraft loitered in the ADIZ south of Alaskan Aleutian island chain “for nearly eight hours,” however, they did not cross into U.S. or Canadian airspace, according to a NORAD release.

The June 27 intercept following by a day Russian fighters intercepting a U.S. Navy P-8 Poseidon, a U.S. Air Force KC-135, and a USAF KC-135 tanker over the Black Sea. It was the second such intercept in the Black Sea region in about a month. On May 29, Russian Su-27 and Su-30SM fighters intercepted USAF B-1s that were flying with Ukrainian Su-27s and MiG-29s in the area.

NORAD F-22s, supported by a U.S. Transportation Command KC-135, again intercepted a pair of Russian IL-38 aircraft as they crossed into the Alaska Air Defense Identification Zone late on June 24.

The maritime patrol and anti-submarine warfare planes got within 50 miles of Alaska’s Unimak Island—the largest of the Aleutians—and spent about four hours in the zone, the command announced on June 25.

As the intercepts increased, the U.S. on June 14 sent three B-52Hs from Barksdale Air Force Base, La., to Eielson Air Force Base, Alaska, for a Bomber Task Force deployment. The U.S. also sent two B-52s from Minot Air Force Base, N.D., to Europe to participate in the NATO-led BALTOPS exercise.

Russian fighters also intercepted a B-52 flying over the Sea of Okhotsk on June 19, and on June 15, Russian Su-27s intercepted two B-52s that were flying in international airspace in Eastern Europe.

The bomber deployment came after U.S. F-22s—with help from KC-135 Stratotankers and an E-3 Airborne Warning and Control System—intercepted two separate Russian bomber formations off the Alaskan coast on June 10.

The first included two Tupolev Tu-95 bombers, two Sukhoi Su-35 fighters, and a Beriev A-50 airborne early warning and control aircraft, which flew “within 20 nautical miles of Alaskan shores,” according to a NORAD release. The second formation was made up of a pair of Tu-95s and an A-50, and came within 32 nautical miles of the coast, it added.

O’Shaughnessy recently told reporters that Russia is testing the U.S. military to see if the new coronavirus has created any weaknesses. But the U.S. remains ready, he said, “24 hours a day, seven days a week, 365 days a year.”

The June 10 intercepts were the command’s first interaction with Russian aircraft since April, a NORAD spokesperson said. However, Russian military aircraft activity prompted a string of U.S. intercepts earlier this year, Air Force Magazine previously reported.

In February, O’Shaughnessy told the Senate Armed Services Committee that adversaries, such as Russia and China, want to avoid direct military conflict, but he cautioned “their growing assertiveness increases the risk of miscalculation and gives rise to a threat environment more complex and dynamic than we have seen since the end of the Cold War.”

Senators Resist Trump's Plan to Retrench from Germany

By Brian W. Everstine

President Donald J. Trump on June 30 approved a Defense Department plan to withdraw 9,500 troops from Germany, as a group of bipartisan senators introduced a measure to block the move.

Defense Secretary Mark T. Esper and Chairman of the Joint Chiefs of Staff Gen. Mark A. Milley presented the plan to Trump on June 29. Pentagon spokesman Jonathan Hoffman said the plan not only meets Trump's directive to remove the troops, "it will also enhance Russian deterrence, strengthen NATO, reassure allies, improve U.S. strategic flexibility, and U.S. European Command's operational flexibility, and take care of our service members and their families."

Hoffman did not explain how it would accomplish these goals. He said the Pentagon will brief congressional defense committees soon. U.S. Air Forces in Europe commander Gen. Jeffrey L. Harrigian told reporters June 29 he has not been given any orders to make or plan any changes.

A bipartisan group of senators on June 29 introduced an amendment to the fiscal 2021 defense policy bill to block the move, saying such a step would be a "gift" to Russia. The measure is supported by Sens. Mitt Romney (R-Utah), Lindsey Graham (R-S.C.), Marco Rubio (R-Fla.), Chris Coons (D-Del.), Tim Kaine (D-Va.), and Jeanne Shaheen (D-N.H.). The House Armed Services Committee adopted a similar provision in its own version of the authorization bill.

Before funds can be freed up for a troop reduction, the amendment calls on Esper to consult with allies and then submit a report to Congress certifying the reduction:

- Is in the national security interest of the U.S.
- Would not undermine the security of the U.S. and its allies.
- Would not undermine NATO's defense posture.
- Would not pose "unacceptable risk" to executing contingency plans.
- Would not adversely effect operations in the Middle East and Africa.
- It would not negatively effect military families.
- Would not result in new costs for the redeployment and relocation of troops.

"In addition to undermining our NATO alliance, a withdrawal would present serious logistical challenges and prevent our military from performing routine military readiness exercises," Romney said in a statement.

After learning of Trump's desire to withdraw troops, NATO Secretary General Jens Stoltenberg emphasized that the U.S. presence on the continent not only protects Europe, but also enables the U.S. to project power beyond Europe.

"We have seen that bases like the Ramstein base, the Landstuhl medical facility, and many other U.S. bases in Germany, they are essential for what the U.S. has done over decades in the Middle East, Afghanistan, Iraq, and in Africa," Stoltenberg said on June 16 prior to the latest defense ministerial meeting in Brussels.

Trump, in a White House appearance alongside Polish President Andrzej Duda, said Germany does not meet the NATO goal of spending 2 percent of its gross domestic product on defense, and in turn "we're going to be reducing



David Vergun

Defense Secretary Mark Esper addresses Johns Hopkins School of Advanced International Studies' Philip Merrill Center for Strategic Studies in Washington, D.C., on Feb. 6.

Germany very substantially." Poland does meet that mark, and that country would welcome additional U.S. forces. However, Duda urged the U.S. not to completely pull the troops out of Europe.

Stoltenberg, speaking during the June Brussels Forum, said Trump remains committed to the alliance, and noted that eight of the 30 member countries currently spend 2 percent of gross domestic product on defense. He also noted that European allies have invested \$130 billion more than originally planned since 2016, according to a DOD release.

Rep. Adam Smith (D-Wash.), the chairman of the House Armed Services Committee, told reporters June 30 the announcement was "unilateral" from Trump, with the Pentagon then coming in to "backfill the plan." While the White House has said there would be a reposition to Poland, there is not yet a specific plan.

"It is possible that there is a scenario where repositioning troops out of Germany is in our national security interests," Smith said. "The President has not made that case to date. The DOD has not made that case, and ... the President is doing it in a very haphazard manner."

There are about 9,377 Active-duty Air Force troops at Ramstein Air Base, with another 4,000 at Spangdahlem Air Base. The Pentagon announcement did not provide specific departure timelines or destinations for the 9,500 troops, nor specify how many might come from the Air Force or Army, but said it "will be providing timely updates to potentially affected personnel, their families, and communities as planning progresses." ✪

Two Pilots Killed in June Crashes

By Amy McCullough

Two fighter pilots were killed in separate crashes roughly two weeks apart in June—the latest in a series of USAF accidents over the past few months.

First Lt. David Schmitz, an F-16CM pilot assigned to the 77th Fighter Squadron at Shaw Air Force Base, S.C., was killed on June 30 when his aircraft crash-landed around 11:30 p.m. during a routine training mission at the base. Videos posted online showed emergency crews attempting to put out a large fire on the flight line.

On June 15, 1st Lt. Kenneth Allen, assistant chief of



Senior Airman William Brugge

Members of Team Charleston on July 4 honor 1st Lt. David Schmitz, an F-16CM pilot who died in a crash at Shaw Air Force Base, S.C., June 30.



Roland Bailik

The remains of 1st Lt. Kenneth Allen, of Perry, Utah, during a dignified transfer June 18 at Dover Air Force Base, Del.

weapons and tactics at the 493rd Fighter Squadron at RAF Lakenheath, U.K., was killed when his F-15C crashed into the North Sea during a routine training mission, the 48th Fighter Wing announced.

Both incidents were still under investigation as of early July, with the causes of the crashes unknown. The Air Force did not immediately say whether it is considering a safety shutdown.

On May 19, an F-35 from Eglin Air Force Base, Fla., crash-landed at the base. Days earlier, an F-22, also from Eglin, crashed north of the base. Both the F-35 and F-22 pilots successfully ejected.

The last time a Shaw aircraft crashed was in July 2015, when an F-16CM from the 55th Fighter Squadron collided with a civilian Cessna 150M, killing two aboard that plane, though the F-16 pilot was able to eject. The June 30 mishap is the first F-16 crash since a Viper assigned to the 49th Wing at Holloman Air Force Base, N.M., crashed on Oct. 29, 2019, southeast of the base. That pilot was able to eject.

The June 15 F-15 crash marked the first time since 2014 a 48th Fighter Wing aircraft crashed, and the first time since June 2018 an F-15 crashed. An investigation found that in 2018 the F-15C pilot from the 44th Fighter Squadron at Kadena Air Base, Japan, made improper maneuvers caus-

ing the aircraft to enter an uncontrollable spin and crash into the Pacific Ocean near the base. The pilot ejected and was seriously injured; the aircraft was destroyed at a loss of \$42.36 million. ✪

RPA Training Next Overhaul

By Jennifer-Leigh Oprihory

Air Education and Training Command’s RPA Training Next (RTN) effort aims to overhaul how the Air Force builds future RPA pilots and sensor operators, giving Airmen more personalized journeys through the RPA training pipeline instead of making them adhere to a one-size-fits-all path to their careers.

“What we determined we needed to do was take a holistic approach to training, take a look at the entirety of the pipeline from what we’re calling ‘cradle to combat,’ and to find better ways of learning [and] better technology to increase the realism of the training in order to produce a higher-caliber pilot and sensor operator for remotely piloted aircraft platforms,” said Maj. Adam Smith, the initiative’s former director, in a recent AETC podcast episode about the endeavor.

This new class—deemed the RPA Course, or RPAC—will frame training objectives in the context of mission goals, and is expected to reduce the length of the course by 22 days, he said.

“Students are not just flying a teardrop hold as the FAA might ask them to do, but there is a reason why they are holding—it’s to talk to a joint terminal attack controller on the ground, or to avoid a threat, or wait to get clearance,” Smith said in the release.

Teaching these future pilots about Joint Terminal Attack Controller’s roles and how to interact with them earlier on should enable formal training unit instructors to teach Airmen more advanced skills.

Future sensor operators usually take their own introductory class, called the Basic Sensor Operator Course, Smith said in a recent interview with Air Force Magazine. The RTN team is examining how it can combine that course with the RPA Course, which will eventually be an umbrella introductory course for both types of trainees.

Once pilot and sensor operator trainees graduate from RPAC, the plan is to send them to formal training units.

MQ-9 Reaper pilots will ship out to Holloman Air Force Base, N.M., March Air Reserve Base, Calif., or Syracuse, N.Y., where Smith said their training will center around Combat Air Force-relevant skill sets, such as using munitions and working with JATCs. Sensor operators will be



Staff Sgt. Ramon Adelan

An RQ-4 Global Hawk at Beale Air Force Base, Calif., in 2018. Beale will host Global Hawk pilot and sensor operator training for high-altitude ISR and transoceanic crossings.

sent to Holloman, AETC spokesperson Daniel E. Hawkins told Air Force Magazine.

Pilots destined for the RQ-4 Global Hawk will head to Beale Air Force Base, Calif., where Smith said their training will revolve around “high-altitude intelligence, surveillance, and reconnaissance,” as well as “transoceanic crossings.” Future Global Hawk sensor operators also will finish their training at Beale, Hawkins said.

The plan should let USAF train new RPA pilots or sensor operators in approximately one year and give pilots and sensor operators about a month of side-by-side training during the undergraduate phase of the pipeline, Smith noted on the podcast.

“The sensor operator is an integral component to how we operate and fly RPAs in the Air Force today and well into the future, so we need to ensure that they are getting the training that they need to be that combat-ready aircrew coming out of training,” he said.

RPA Training Next also aims to change how USAF uses technology by exposing Airmen to the tools they’ll use in the field starting in early stages of training, Smith said. This includes additions to T-6 simulators currently used for RPA training, such as targeting pods, chat functions, and more screens that’ll provide Airmen with a “moving map display” from which to navigate. The initiative also wants to give Airmen early exposure to artificial intelligence.

The RPA Training Next team and 19th Air Force are on track to start small-group training experiments this summer, Hawkins said. However, the timeline and methodology for rolling out the proposed changes to the USAF’s overall pipeline have yet to be determined, since the results of the test runs and COVID-19 pandemic impacts must be taken into account, Hawkins added.

USAF plans to establish a new RPA wing by 2024 to allow another squadron to take a hiatus from combat and focus on training. However, the Government Accountability Office released a report in June questioning whether the service will have enough RPA pilots and sensor operators to pull that off. ✪

COVID-19 Patient Transportation System Ready For Service

By Alyk Russell Kenlan

The first Negatively Pressurized Conex (NPC) ready for service landed at Ramstein Air Base, Germany, on June 24.

The NPC is a steel shipping container adapted so air can flow into the capsule. It can be loaded onto C-17 Globemaster IIIs and C-5M Super Galaxies, and it can transport up to 23 COVID-19 patients without risk of contaminating the crew, according to a USAF release.

When the COVID-19 pandemic began, the Air Force increased training on the Transport Isolation System (TIS)—a chamber developed during the 2014 Ebola outbreak. However, the TIS can only carry two to four patients at a time.

A smaller variation, the Negatively Pressurized Conex-Lite, can be used on C-130 Hercules aircraft.

In early April, Air Mobility Command and Air Force Materiel Command leaders started looking for ways to move large numbers of COVID-19 patients, should the need arise.

“In less than 30 days, the NPC went from an idea on a napkin to a proven concept, ... and only 88 days from that idea to the delivery of an operational system,” said Lt. Col.

Paul Hendrickson, Air Force Life Cycle Management Center Chemical, Biological, Radiological, and Nuclear Defense material leader.



Airman 1st Class Alexi Myrick

Master Sgt. Arenda Jackson, 931st Aircraft Maintenance Squadron crew chief, marshals a KC-46A Pegasus at McConnell Air Force Base, Kan.

KC-46 Full-Rate Production Pushed Back to 2024

By Brian W. Everstine

A full-rate production decision for the KC-46 tanker is delayed until 2024, while Boeing works through problems plaguing the jet’s Remote Vision System (RVS), the service announced June 8.

The Air Force and the Pentagon’s Director of Operational Test and Evaluation decided the KC-46’s initial operational test and evaluation will only conclude after the RVS deficiencies are resolved, and the Air Force Operational Test and Evaluation Center has tested the aircraft in its final production configuration, the service said in a statement.

KC-46 full-rate production was originally slated for June 2017, and has been pushed back multiple times. The latest delay will not add any “contractual cost or delivery impacts,” the service said.

The expected announcement comes after Air Mobility Command boss Gen. Maryanne Miller said last fall that while the tanker had entered the beginning of initial operational test and evaluation, the aircraft would “not come out of IOT&E until RVS is fixed.” Service leaders have said the new tanker is not deployable for another four years because of the issues.

In April, the Air Force and Boeing agreed on an overhaul of the RVS—a collection of cameras, sensors, and screens the operator uses to remotely control the aircraft’s refueling boom. The current system is problematic in multiple ways, including issues with lighting, low-quality imagery, and warped views of aircraft. The new system includes 4K color cameras with proper viewing geometry, larger and higher definition screens, a laser ranger for refueling aircraft distance measurement, and augmented reality. Boeing expects to spend \$551 million of its own money on the design and implementation of the new system, with fielding planned in 2023. ✪

Lengyel: Military Should Stay Out of Civil-Unrest Missions

By Jennifer-Leigh Oprihory

Civil-unrest response efforts should be undertaken by law-enforcement authorities, not U.S. troops, National Guard Bureau Chief Air Force Gen. Joseph L. Lengyel said July 2 during an event hosted by the Brookings Institution think tank.

"In my opinion, uniforms, I don't care what flavor they are—Title 10, Active-duty, National Guard, Reserve—uniforms being out there in law-enforcement situations is not optimal," Lengyel told Brookings Senior Fellow Michael E. O'Hanlon during a livestreamed conversation about the state of the Guard. "We should do as little of it as we can, and it should be predominantly a law-enforcement, police operation. And when they need us, we can—and we will—come. But we should do what we can to avoid that."

According to Lengyel, Guard operations in response to civil disturbances that broke out across the nation after George Floyd died in police custody in Minnesota on Memorial Day are "beginning to recede." But the Guard is prepared to ramp up its support of state governors and law enforcement authorities "should events turn sideways and our system need it."

About 570 Guard personnel—including about 60 Air Guardsmen—were still activated in six states and the nation's capital July 2, backing up law enforcement in case unrest broke out, NGB spokesperson Army Master Sgt. W. Michael Houk told Air Force Magazine via email.

"This is a significant drop from a peak of roughly 41,500 Air and Army Guard on duty at the beginning of June," Houk wrote.

Lengyel also noted that investigations into the potential



Sgt. John Stephens

Air Force Gen. Joseph Lengyel, Chief of the National Guard Bureau, thanked Soldiers and Airmen assisting civil authorities in June.

misuse of Guard air assets—including a District of Columbia Army National Guard helicopter and Air National Guard RC-26 aircraft—during the Guard's unrest response are ongoing.

"Those ongoing investigations are still happening, and when they're done, we'll make sure everybody knows what they said," Lengyel said.

Civil-unrest missions are the most challenging in NGB's domestic portfolio, he said.

"Frequently, there are members of one family on one side of the line and other members dressed in civil riot gear on the other side, and it is a difficult, difficult situation for our men and women to be in," he said.

Going forward, he said, the Guard will "train better" for these kinds of situations and equip its personnel with de-escalation techniques so they can feel more prepared for these kinds of operations. ★

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Gen. Thomas S. Moorman Jr., 1940-2020

By John A. Tirpak

Retired Gen. Thomas S. Moorman Jr., a key leader in the formation of Air Force space organizations and a former Air Force vice chief of staff, died June 17 at age 79.

Gen. John W. “Jay” Raymond, U.S. Space Force Chief of Space Operations and head of U.S. Space Command, described Moorman as “a friend and long-time mentor” whose legacy will be “forever ... etched in the establishment of U.S. Air Force Space Command.” Raymond said Moorman “played a pivotal role in establishing both national and Defense Department space programs, while laying the foundation for today’s U.S. Space Force.”

Moorman was born in Washington, D.C., the son of Lt. Gen. Thomas Moorman Sr., who served as superintendent of the Air Force Academy. Moorman Jr. earned his bachelor’s degree at Dartmouth and entered the Air Force through the Reserve Officer Training Corps in 1962. He held a number of intelligence-related positions as a

junior officer, serving in Thailand during the Vietnam War as a reconnaissance mission planner.

He earned two master’s degrees: one in business administration from Western New England College and another in political science from Auburn University.

As a major, he embarked on a space specialty. He was director of space operations for the North American Aerospace Defense Command, deputy director for space defense in the Pentagon, and he held a number



USAF

Gen. Thomas S. Moorman Jr.

of positions managing development of space systems for surveillance, communication, navigation, and weather, including as staff director for the National Reconnaissance Office. While at the NRO, he led a series of analyses that eventually led to the creation of Air Force Space Command.

In 1987, Moorman became director of space systems for the joint-service Strategic Defense Initiative, and returned to USAF to continue working on SDI for Air Force Systems Command.

In March 1990, Moorman was named commander of Air Force Space Command at Peterson Air Force Base, Colo., where he was responsible for organizing or reorganizing and equipping all aspects of the Air Force’s space enterprise, early warning systems, and military space launch, as well as the intercontinental ballistic missile force.

In 1994, he was chosen to be vice chief of staff. Chief of Staff Gen. Ronald R. Fogleman said at the time that Moorman was selected because he was “the right man” for the job, but also to highlight the rapidly growing importance of space capabilities and organizations in the Air Force and defense-wide. As vice chief, Moorman was USAF’s representative on the Joint Requirements Oversight Council and the Air Force’s point man for the Quadrennial Defense Review



National Archives

Then-Air Force Chief of Staff Gen. Norton Schwartz presents retired Gen. Thomas Moorman Jr. (center) with the Gen. James E. Hill Lifetime Space Achievement Award in 2012. With them is Martin Faga, then-chairman of the board for the Space Foundation.

of service missions and capabilities.

Moorman retired from the service in 1997. In retirement, he served on a number of industrial boards, as well as the board of the Space Foundation, and was its vice chairman. He was also a partner with Booz Allen Hamilton, working for that organization from 1998-2008, developing the company’s Air Force and NASA business. He served on the congressionally chartered Space Commission, which in 2001 presented recommendations for an overhaul of the Defense, Intelligence Community, and National Oceanographic and Atmospheric Administration space enterprise.

Moorman received numerous awards, including the Gen. Thomas D. White Space Trophy; the Robert H. Goddard Memorial Trophy; the American Astronautical Society’s Astronautics Award; the Defense Intelligence Agency’s Director’s Award; the Space Foundation’s Space Achievement Award and Lifetime Achievement Awards; and two awards of the NRO’s Gold Medal. The Moorman Space Education and Training Center at Peterson is named for him, as is Air Force Space Command’s award for Best Operational Wing. ★

■ The War on Terrorism

Casualties:

As of July 6, 2020, 94 Americans had died in Operation Freedom’s Sentinel in Afghanistan, and 98 Americans had died in Operation Inherent Resolve in Iraq, Syria, and other locations.

The total includes 188 troops and four Defense Department civilians. Of these deaths, 87 were killed in action with the enemy, while 105 died in noncombat incidents.

There have been 571 troops wounded in action during OFS and 230 troops in OIR.

FACES OF THE FORCE



Staff Sgt. Dylan Nuckolls



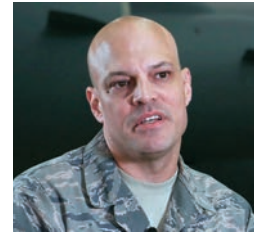
Tech. Sgt. Kat Justen



Courtesy photo



Tech Sgt. Brooklyn Greenwood



Master Sgt. Jessica Young

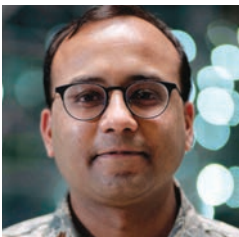
SECAF Barbara M. Barrett earned "Spirit number 732" on a B-2 stealth bomber training mission during a June 11 visit to Whiteman Air Force Base, Mo. During the nearly two-hour flight in a radius of about 200 miles ... **Lt. Col. Nicola C. Polidor** "introduced the Secretary to the procedures of a typical training mission," 509th Bomb Wing spokesperson Tech. Sgt. Alexander Riedel told Air Force Magazine. Barrett, an instrument-rated pilot, took the controls of the stealth bomber during flight.

Capt. Emily Thompson, an F-35A pilot from the 388th Fighter Wing at Hill Air Force Base, Utah, recently became the first woman to fly the Air Force's Joint Strike Fighter variant into combat. "This is my first deployment ... so for me it was a pretty big deal. ... Of course being the first female, it's a pretty big honor," she said. A four-woman maintenance crew worked with Thompson the day of the flight. Before flying the F-35A, Thompson trained on and completed a tour in the F-16 Fighting Falcon.

Candice Hatcher-Solis, a research scientist in the AFRL's 711th Human Performance Wing, won Women of Color Magazine's 2020 STEM Technical Innovation in Government award. She leads the lab's Neurobiology of Cognitive Performance team, mentors budding engineers and scientists, and is passionate about getting more women and minorities into STEM careers. "Diversity in STEM benefits all and engenders innovation and creativity to address questions and solve problems," she said.

The 561st and 558th Aircraft Maintenance Squadrons paint teams from the Warner Robins ALC joined forces to memorialize **1st Lt. Kenneth Allen**, an assistant chief of weapons and tactics who died June 15 when his F-15C crashed into the North Sea. They stenciled Allen's name on the side of an F-15E that was bound for RAF Lakenheath, U.K. "This is our way of honoring a fallen warrior and sharing our grief ... with our warfighting teammates at Lakenheath," said 561st AMXS Director Jim Kelly.

Tennessee ANG **Senior Master Sgt. Thomas Crider** (pictured) and **Tech. Sgt. David Hill** are collaborating with the Warner Robins ALC and the augmented reality/virtual reality development studio Moth+Flame—with support from ARCWERX—to let maintainers practice repairing F-15C, F-15E, C-130H, C-17A, C-5M, and JSTARS aircraft engines using VR. The effort is expected to save USAF money, improve training quality, and boost the overall mission-capable rate, Crider said.



Courtesy photo



Airman 1st Class William Rio Rosado



USAF



USAF



USAF

When the Air Force Reserve put out a call for backup as part of its COVID-19 response to hotspots, 349th Medical Group doctor **Sanjiv Baxi** volunteered to deploy to New York City. "I had been working on COVID-19 for a few months before it hit," said Baxi, an infectious disease physician who teaches epidemiology at the University of California, San Francisco in his civilian time. "Because of my background, ... I felt I had something to bring to the fight"

Staff Sgts. Anthony and Hunter of Creech Air Force Base's 432nd Aircraft Maintenance Squadron saved a U.S. Marine whose leg was caught by a wheel used to help tow a UH-1Y Venom helicopter, when the aircraft started dragging them across the flight line. After a rescue attempt by other U.S. troops failed, they lifted the helicopter by its tail so the Marine could be freed, and cared for them until help arrived. "It makes a lot of the danger for the jobs we do more real," Hunter said.

The Little Rock Air Force Base, Ark., **61st Airlift Squadron** was awarded the General Joseph Smith Trophy as AMC's top airlift squadron in 2019. The squadron backed up seven combatant commanders in five different AORs, flew 5,500 tactical airlift sorties, and moved over 24,000 people and 14 million tons of cargo. "This win is concrete feedback ... [to] all the effort the squadron has put into the combat airlift enterprise," said squadron Commander Lt. Col. Andrew Miller.

Air Force Office of Special Investigations rookie **Special Agent Jonathan Parker** spotted an overturned chemical tanker truck on an Alabama highway. Parker located the unconscious, injured driver, got bystanders to call for help, and reached out to the tanker company to get information needed to evaluate the safety of the scene. "I'm proud to be a part of an organization that values the safety of others ... and makes service simply a way of life," he said.

The U.S. Air Force Academy added a new member to its Falconry Team. The **female gyrfalcon**—whose name hadn't been determined by press time—was hatched in May, USAFA spokesperson Maureen Welch said. Her initial training will be getting used to sitting on falconry cadets' gloved hands and becoming accustomed to having a hood put on and removed. She'll also be trained in the flying skills necessary for football game halftime performances at USAFA.

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

Leveling the Field

Black Airmen advance slower at almost every rank, analysis shows.

By Rachel S. Cohen

Tech. Sgt. Miles Starr began her Air Force career with a lofty goal: She wanted to be the service's first Black, female fire chief. It was a chance to embody change. She tried to climb the ladder, looking for teams to lead and programs to run that would make her a prime candidate for promotion. But she hit a common Catch-22: Each time she sought new opportunities to broaden her experience, she was told she needed more experience to earn those opportunities.

Starr endured other problems. In 2007, a white, male supervisor called her "Aunt Jemima" in front of her peers. Some, she said, perceived her as intimidating, or as an "angry Black woman" who was unqualified for higher posts. When she approached a different, white boss seeking classes she could pursue, hoping not to let a year pass without professional growth, he argued she wasn't ready. He then chose her white, male colleague to attend a class she had wanted to take.

"I felt like I was constantly bumping up against a wall, while others are able to move freely into positions that would get them to the top," she told Air Force Magazine.

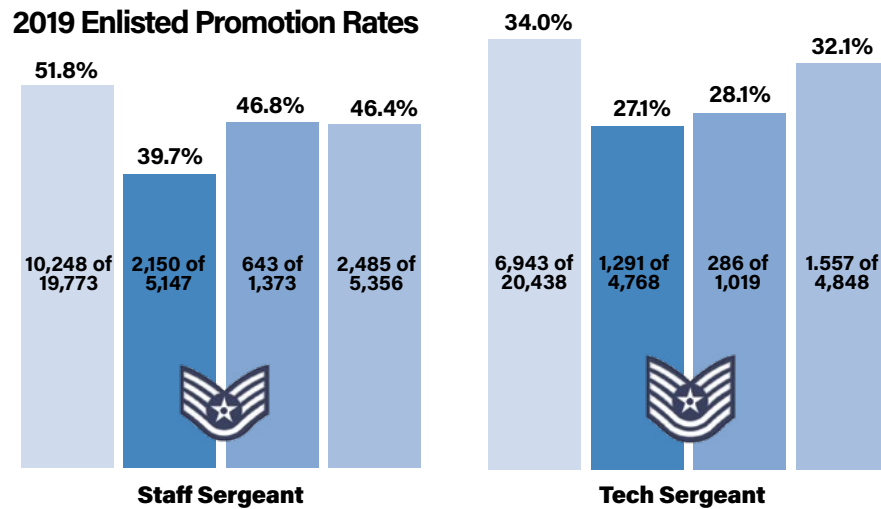
Eventually, Starr dropped her dream of being a minority face atop the firefighting field and switched careers. She rose to noncommissioned officer in charge of retention at Hill Air Force Base, Utah.

"In my new career field, I have opportunities for growth and I've been placed in those positions, but there are still some people who make it hard," she said. "There are enough people

Higher Rates at Higher Grades

The Weighted Airman Promotion System (WAPS) relies on testing for the E-5 through E-7 (Staff Sergeant through Master Sergeant). But at the top enlisted grades, a board process similar to the officer system is used. The 2019 Senior Master Sergeant and Chief Master Sergeant boards both selected Black NCOs for promotion at higher rates than white NCOs.

2019 Enlisted Promotion Rates



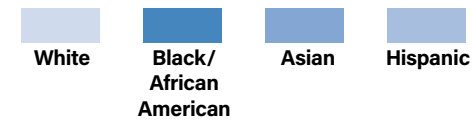
Staff Sergeant

Tech Sergeant

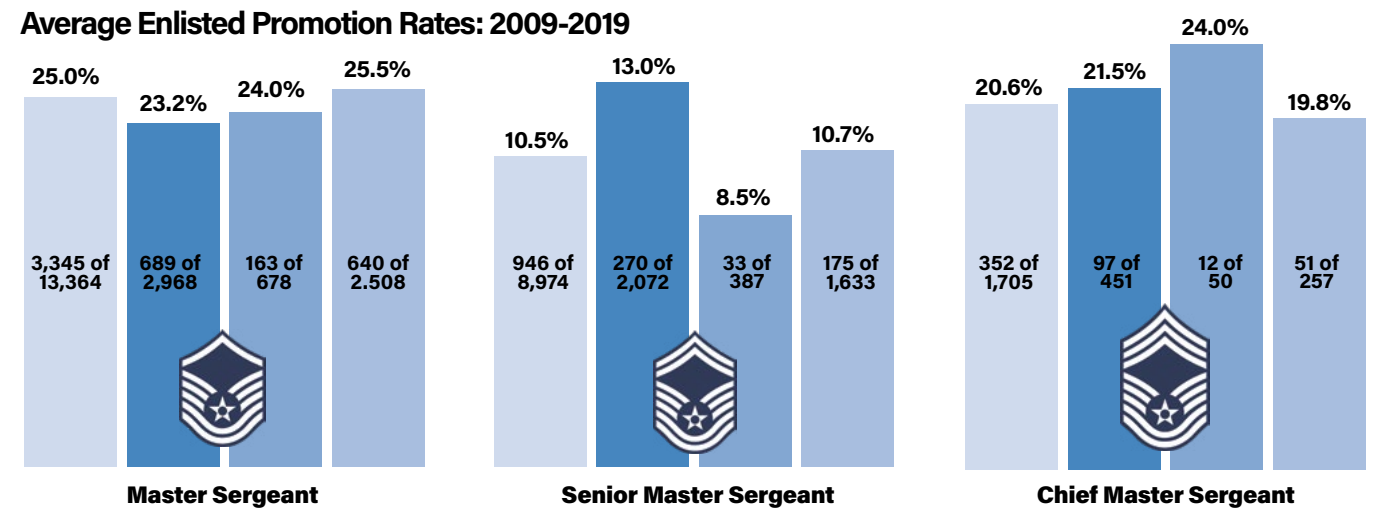
at my new job that believe in me and what I bring to the table."

Racial disparities have persisted in the Air Force's promotion system, even as the Air Force has tried to level the playing field. Over the past decade, white Airmen were promoted up the ranks more often than Airmen who are Black or members of other minority groups, according to Air Force promotion data provided in response to an Air Force Magazine query.

Among officers, average promotion rates for majors and colonels are more than 5 percentage points higher for white



Average Enlisted Promotion Rates: 2009-2019



Master Sergeant

Senior Master Sergeant

Chief Master Sergeant

Airmen than Black officers, and the gap widens to around 10 percentage points for lieutenant colonels.

For example, on average over the past decade, the Air Force chose 74.2 percent of white officers for promotion to lieutenant colonel, compared to 64.4 percent of Black or African American Airmen. In 2019 alone, 73.3 percent of white officers and 62.4 percent of Black officers who sought promotion to lieutenant colonel were selected: 857 white officers and 53 Black officers.

These numbers describe "in-the-zone," or on-time, promo-

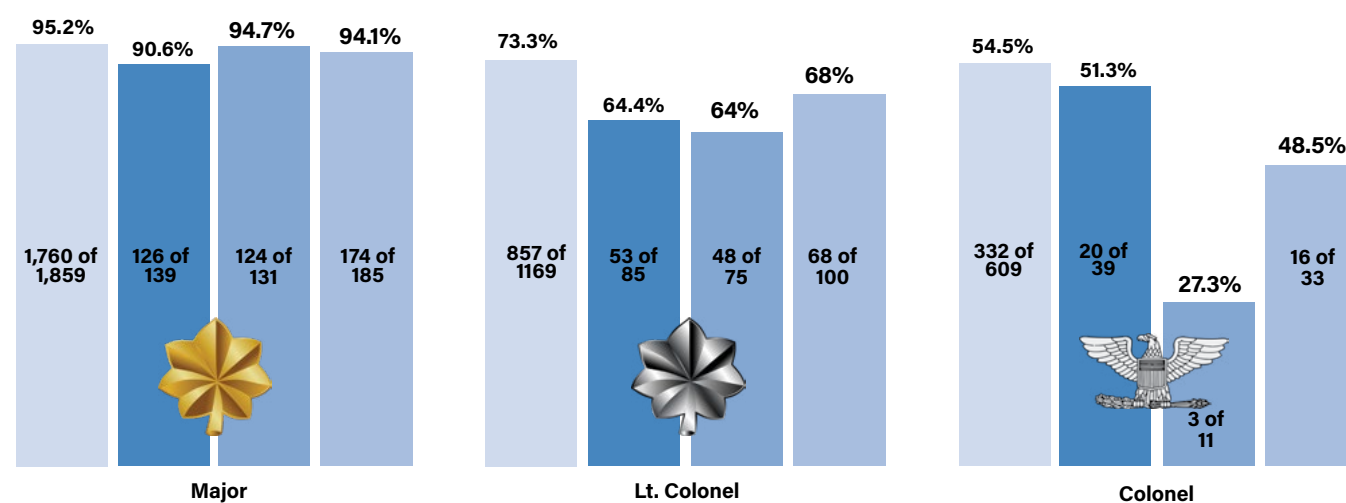
tions within the "Line of the Air Force" category, comprising about 90 percent of Active-duty officers. The Air Force did away with that category late last year; beginning with this year's promotion boards, officers will instead compete within six new categories combining similar career fields.

Trends are similar in the enlisted force. Slightly over half of white enlisted Airmen eligible for promotion to staff sergeant in 2019 were selected, compared to about 40 percent of eligible Black Airmen. As eligibility pools shrink at higher ranks,

Lagging Indicators

The percentage of eligible Black officers promoted lags behind white officers at every rank. One likely reason: Far fewer Black officers pursue flying careers. Recent changes to the promotion system's competitive categories could improve those chances by setting aside more jobs for non-flyers. Increasing the number of Black pilots could also have an impact.

2019 Officer Promotion Rates

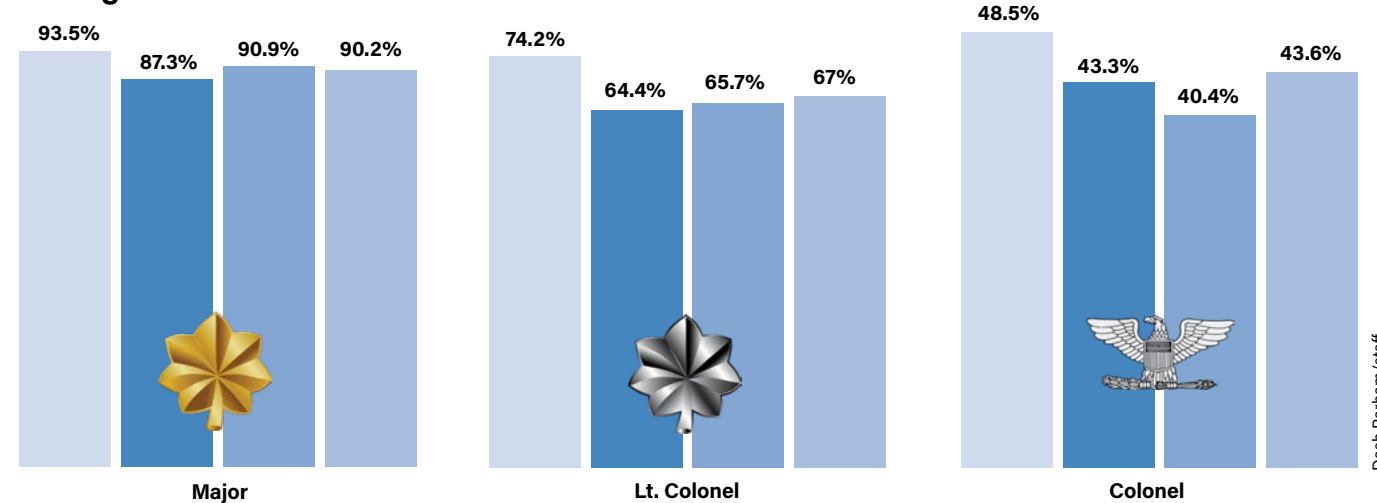


Major

Lt. Colonel

Colonel

Average Officer Promotion Rates: 2009-2019



Major

Lt. Colonel

Colonel

however, promotion rates appear to even out: 20.6 percent of white Airmen were promoted to chief master sergeant in 2019 compared to 21.5 percent of Black enlisted.

CAUSE AND EFFECT

Several factors contribute to the racial gap in promotions: access to professional development opportunities, lack of mentorship, biases that affect an Airman's record and the people promoting them, and less minority representation in careers that are the fastest track to the upper echelons of Air Force leadership.

Lt. Gen. Brian T. Kelly, Air Force deputy chief of staff for manpower, personnel, and services, said that without instituting quotas (which are illegal), the service's goal is to reach approximately the same promotion rates across all demographic groups. In other words, if about 70 percent of eligible Airmen are selected for promotion, that figure should be roughly the same for every demographic profile.

"Our promotion boards, both on the officer and enlisted side, we think do a really good job of picking the most deserving Airmen based on the records and based on the information that comes to the promotion board," Kelly said. "Everything that happens ... prior to the promotion board are the things that we concentrate our work on, because those are the things that influence the record that shows up at the board."

President Harry S. Truman desegregated the armed forces in 1948, nearly two decades before the U.S. enacted its landmark Civil Rights Act in 1964. As of March 2020, Black Air Force personnel made up 15 percent of Active-duty officers and enlisted and about 13 percent of civilian employees. That's slightly more than the Black or African American population in the U.S., which the U.S. Census Bureau estimates at 13.4 percent.

Seven percent of Americans who are eligible to become Air Force officers are Black, Kelly said, versus 71 percent who are white. In comparison, 6 percent of the USAF officer corps is Black or African American.

"You look at it on its face and say, that's pretty close. But that's not necessarily the way we like to look at it," Kelly said. "We ought to be at least 7 percent or better across the entire rank structure. So we might be pretty good at entry level, at lieutenants, but by the time we get to higher rank structures, does it look the same? The simple answer is no."

For example, Gen. Charles Q. Brown, the only Black four-star Air Force general today, is one of about a dozen four-stars overall. He is also one of 12 Black general officers, the lowest



Staff Sgt. Hailey Haux

"I can't fix centuries of racism in our country, nor can I fix decades of the discrimination that may have impacted members of our Air Force. ... I'm thinking about how I can make improvements personally, professionally, and institutionally."

—Gen. Charles Brown, incoming USAF Chief of Staff



Mike Tsukamoto/staff

"Our promotion boards, both on the officer and enlisted side, we think do a really good job of picking the most deserving Airmen based on the records and based on the information that comes to the promotion board."

—Lt. Gen. Brian Kelly, deputy Air Force chief of staff for manpower, personnel, and services

ing the same flight suit with the same wings on my chest as my peers, and then being questioned by another military member: 'Are you a pilot?'"

Lt. Gen. Richard M. Clark, a bomber pilot and the deputy chief of staff for strategic deterrence and nuclear integration, said he meets people who are often surprised to see a Black pilot. He tries to turn that into an opportunity for outreach to the next generation.

"I take that opportunity to go, 'Yeah, do you want to be a pilot?'" Clark said. "If we have success in doing that, in building a more diverse corps of pilots or any other career field, it will breed more success, because then it won't be so uncommon to see a person of color or a woman or a Latino."

number since at least 2014 and down from 18 in 2018.

Overall, barely 4 percent of the Air Force's general officers, or those with one to four stars on their shoulders, identify as Black or African American. None are Black women.

One driving factor may be diversity within specific career fields. Pilots have long dominated the service's leadership. Every chief of staff was a pilot first. Pilot candidates must volunteer; the Air Force does not assign those duties unless candidates first apply. The vast majority of those volunteers are white men. Indeed, fewer than 2 percent of USAF pilots are Black, limiting diversity higher up the ranks. Of those 300 or so Black pilots, less than 20 are women.

Lack of exposure is part of the problem. Retired Gen. Larry O. Spencer, a former Air Force Vice Chief of Staff (and a former Air Force Association president) had never set foot in an airport before he flew from his native Washington, D.C., to Texas for Basic Military Training in the early 1970s.

"In my neighborhood ... flying an airplane was not on anybody's radar, not because they didn't think it was a good thing, or that it would [not] be fun," he said. "There was nobody there to tell me about it."

Those hurdles persist in minority communities nationwide. Today, the Air Force offers aviation scholarships to underrepresented communities, reaching young people through the Junior Reserve Officers' Training Corps, and pitching air, space, and cyber operations careers at job expos and community events. The U.S. Air Force Academy now has recruitment goals for each incoming class. In the Class of 2023, 10 percent is African American, up from about 7 percent for the Class of 2020.

Yet the percentage of Black Airmen who choose to become pilots is still small, and Black pilots fight for visibility and acceptance. In his video, Brown, a decorated fighter pilot, recounted "wear-

As long as the Air Force wants pilots to occupy the vast majority of its senior positions, Spencer said, there must be a much greater push to recruit and train minorities and women to fly. Spencer, who was a career finance officer, was one of only four non-pilots to rise to Vice Chief. Building interest in science and technology among minority students earlier in grade school could help, he said, but the service could also do more to woo the families of prospective Airmen to convince them that an Air Force career could be a good choice. He also said that times are changing, and perhaps a future Chief of Staff could hail from a different career path.

One recent change could also have an impact on the number of minority officers attaining higher ranks in the Air Force. Last year, the Secretary agreed to eliminate “below-the-zone,” or ahead-of-schedule promotions. Historically, up to 2 percent of officers selected for the next grade have been chosen a year or two ahead of others in the same commissioning year group. Candidates who are promoted from that pool have largely been white, Kelly said.

The Air Force’s six new promotional categories—air operations and special warfare, space operations, nuclear and missile operations, information warfare, combat support, and force modernization—can also be a boon for diversity.

Under the old system, everyone was judged by the same standards, such as having combat deployments or building a varied portfolio of experience. But those standards worked better for some career fields than others—such as those where staying in the same program for a long time is valuable—leading to lopsided representation among senior staff. The new categories aim to reward the unique career paths for each field.

“When you’re overrepresented in some [Air Force specialties] and underrepresented in others, it gives you an opportunity to not have to develop in the same ways or be compared in the same ways,” Kelly said.

THE BURDEN OF BEING FIRST

That it took until 2020 for the Air Force to choose a Black officer as its Chief is a testament to a decades-old, complex set of factors that reflect societal challenges and military concerns, as well as specific issues with the way the Air Force recruits and promotes its officers and enlisted leaders.

“My nomination provides some hope, but also comes with a heavy burden,” Brown said in a June 5 video. “I can’t fix centuries of racism in our country, nor can I fix decades of the discrimination that may have impacted members of our Air Force. ... I’m thinking about how I can make improvements personally,



Airmen 1st Class Ryan Brooks

“If we have success ... in building a more diverse corps of pilots or any other career field, it will breed more success, because then it won’t be so uncommon to see a person of color or a woman or a Latino.”

—Lt. Gen. Richard Clark, a bomber pilot and the deputy chief of staff for strategic deterrence and nuclear integration



Mike Tsukamoto/staff

“In my neighborhood ... flying an airplane was not on anybody’s radar, not because they didn’t think it was a good thing, or that it would [not] be fun. ... There was nobody there to tell me about it.”

—Retired Gen. Larry Spencer, a former Air Force Vice Chief of Staff (and also the former AFA president)

told her he didn’t “see anything I recognize ... that compels me to pour [effort] into you.” But he took her on anyway and later offered some of the best career advice she ever got.

“He said, ... ‘Coming out of [the equal employment opportunity office], you need to have an operational position,’” Allen said. “‘If you don’t have operational expertise, your name is never going to come into the room when we’re doing succession planning.’ How would I have known that? I was just chasing my passion.”

Kelly pointed to the Air Force’s MyVector program, an online mentor-mentee matchmaking tool, as one way the service is trying to address the shortage of minority mentors. But he acknowledged that such programs aren’t bearing as much fruit as the Air Force would like.

“We certainly emphasize at all levels that it’s a responsibility

professionally, and institutionally.”

High-ranking Black military leaders are still outliers. Normalizing minority achievement depends on developing a consistently deep and diverse talent base. It’s a problem that frustrates Lt. Gen. Anthony J. Cotton, the No. 2 officer at Air Force Global Strike Command.

Cotton was only the second African American officer to run the 341st Missile Wing at Malmstrom Air Force Base, Mont., and the 45th Space Wing at Patrick Air Force Base, Fla.; he was the first Black officer to serve as deputy director of the National Reconnaissance Office, to command the 20th Air Force, to command Air University, and to be a three-star deputy commander at AFGSC. No African American has held any of those posts since, he said.

“What I tell ... folks who I mentor is, are you taking advantage of everything that you can take advantage [of] to get in a place where you can have a seat at the table and be an influencer, as opposed to sitting on the sidelines?” Cotton said. “As you do that, then more opportunities will come.”

For minority Airmen, mentors with similar backgrounds can be especially valuable to help them navigate military life and careers. But that’s not always possible, since there are relatively few non-white Airmen serving in senior leadership roles. Airmen of color can also seek out white mentors who can advise and teach them as they rise through the ranks, and then can pay that knowledge forward by sharing their experiences with other minority Airmen in the future.

Many Airmen said they owe their growth and success to mentors, often remaining in touch and considering them family. But finding a mentor in the same career field can be every bit as important as sharing demographic traits.

When Antoinette Allen, who retired as a major in 2014, asked her white Army colonel boss to be her mentor, he initially

of leaders to be mentors and coaches to the people around them,” Kelly said. “It may not always be comfortable mentoring somebody who doesn’t come from your background or doesn’t look like you, but it’s really important. And so I’m not yet convinced that we’re getting everything out of our mentoring and coaching that we need to.”

Black Airmen who spoke to Air Force Magazine said they have to fight the stereotypes and expectations they encounter in their majority-white workplaces.

Tech. Sgt. Myeshia Tucker, an intelligence analyst with the 324th Intelligence Squadron at Joint Base Pearl Harbor-Hickam, Hawaii, consciously tried smiling more so her colleagues wouldn’t assume she was perpetually angry.

“A lot of people were like ... ‘You’re much funnier than I thought,’ or like, ‘So much nicer than I thought,’ and a lot of times, it would be people that I’ve actually never really met before then,” Tucker said. The interactions left her wondering: “Why did you think I wasn’t funny? ... We’ve never spoken before.”

Unconscious bias is part of everyone’s daily lives, and the Air Force is developing training through professional military education to address that, Kelly said.

“It’s not getting to all the right places, so there will be lots of people who are potentially writing evaluations as supervisors in places who haven’t had that training,” Kelly said. “We’re trying to figure out the best way to scale that, make it effective, and go forward.”

Bias is often insidious, planting seeds of doubt about prowess and worth. Clark has wondered why he’s missed out on certain opportunities, or why others who seemed well-qualified were passed over. Was it because of their race? Because they were women? Were other unknown factors at play?

“The problem with this unconscious bias is you don’t know,” Clark said. “It leaves a question in your mind, especially when there’s not a lot of people that look like them that get those opportunities.”

Until Brown’s ascent to CSAF, Clark was the only Black general officer in Air Staff senior leadership. “Building a solid cadre of a diverse group of people across the board, it really helps us ... to encourage others, but it also helps us to relate to others and provide the opportunities that we all need to have,” he said.

Bias plays a role in potential discharges as well. Early in his Air Force career, then-Airman Basic Mike Feggans was sent before an advisory board at Sheppard Air Force Base, Texas, after



Senior Airman Taylor Hunter

“What I tell ... folks who I mentor is, are you taking advantage of everything that you can take advantage [of] to get in a place where you can have a seat at the table and be an influencer, as opposed to sitting on the sidelines?” Cotton said. “As you do that, then more opportunities will come.”

—Lt. Gen. Anthony Cotton, AFGSC deputy commander



Sarayuth Pinthong/USAF

“While we can’t change the world, we can change the communities we live in and more importantly, those where our Airmen strive to be seen, heard, and treated as human beings.”

—Chief Master Sergeant of the Air Force Kaleth Wright

struggling in an aerospace ground equipment mechanic course, he recalled. Once before the board, the questions weren’t just about his job performance. The board asked why an African American had red hair, he said, and told him he’d be going “back to the hood to bag groceries.”

Selected for discharge, Feggans fought the decision and convinced his commander to help him find a new assignment in the medical field. Success followed: Now Feggans is a master sergeant, and superintendent of the 71st Healthcare Operations Squadron at Vance Air Force Base, Okla.

“I had no issues, no disciplinary issues, anything like that,” Feggans said. “I felt like I had to work three times as hard just to stay in.”

In an impassioned social media post that sparked conversations across the military about being Black in today’s America, Chief Master Sergeant of the Air Force Kaleth O. Wright highlighted racial disparities in the military justice system and the lack of diversity among the service’s officer ranks. He added that a diverse group of 25 friends is mulling ways to address racial disparities and discrimination.

In June, the Air Force Inspector General opened an investigation into racism in military justice and the promotion system, digging into racial disparities and the cultural and policy factors behind them. The IG will then issue recommendations for “impactful and lasting change,” the service said.

Shortly after the Air Force announced its own review, Defense Secretary Mark T. Esper announced a new Defense Board on Diversity and Inclusion in the Military to consider ways to increase diversity and opportunities across all ranks, create an independent “Defense Advisory Committee on Diversity and Inclusion in the Armed Services” to guide the Pentagon, and gather immediately actionable ideas from civilian and uniformed military leadership.

As national outrage about the killings of black Americans has snowballed, particularly after George Floyd died at the hands of Minneapolis police in May, hard conversations about systemic racism have rippled through the Air Force and the rest of the armed forces. Those discussions are not just for minorities, but for people of all backgrounds. It will take effort on everyone’s part to achieve a

lasting impact and for the military to be more representative of the people it serves.

“At every level ... there needs to be periodic training to, if nothing else, understand what women and people of color, what their challenges are,” Spencer said. “I don’t know of anyone that wants a handout or wants something that they have not earned. ... All folks want is an equal chance.”



Black Airmen Speak Out

In a force where color shouldn't matter, inequality persists.

Staff Sgt. Ryan Campbell/AFMAG

Lt. Col. Paul Lopez, then-F-22 Raptor demonstration team commander, salutes a Raptor crew chief at Langley Air Force Base, Va. Pilots, intelligence, and Space Professionals are among the career fields that skew white.

By Rachel S. Cohen

Lt. Gen. Anthony J. Cotton is tired of being tired. Cotton, the first Black three-star deputy commander of Air Force Global Strike Command, has seen police lights flash in his rearview mirror, has needed to convince people he was a wing commander, and has been told not to park in his own spot among spaces reserved for base leadership.

He has explained to others, over and over, what it's like to be Black in America. He wants people to listen. He wants them to get uncomfortable. He wants them to act.

"Here I am as a lieutenant general in the United States Air Force, but ... I have a common bond," he says. "When I see what happened to Ahmaud Arbery, Breonna Taylor, George Floyd, Rayshard Brooks—and the list goes on and on—it's visceral to me," he said, running through the recent history of Black Americans killed. "That could be my son. That could be my daughter. That could be me."

As civil unrest swept the nation following the death of George Floyd in May, a Black man who died after a Minneapolis police officer knelt on his neck for nearly nine minutes during an attempted arrest, Black Airmen are wrestling with their own reality in an Air Force that still suffers from its own racial blind spots and systemic discrimination.

A dozen Black Airmen—including current and for-

"I've been called every name in the book you can think of"

—Master Sgt. Cederic Hill, a space operator at Vandenberg Air Force Base, Calif.

mer officers, enlisted members, and civilians—shared their experience with Air Force Magazine in June, describing how race has influenced their lives and careers, and how the Air Force still needs to evolve.

Being Black in the Air Force, they said, can mean straddling the line between being respected and suspected. They described constantly moderating themselves to meet the expectations of others, and embracing the nation's needs—despite feeling uncertain the nation they protect embraces them in return.

While some praised understanding and diverse leaders throughout their careers, others said they struggled to find a place among unwelcoming colleagues and commanders. They could feel included at work but face racial slurs and suspicion from their communities and neighbors. Some said they never felt passed over for promotion or otherwise slighted by the Air Force bureaucracy, but most pointed to racist comments, insensitive jokes, and other forms of discrimination as far back as their earliest days in Basic Military Training.

The Airmen interviewed joined the service because they wanted a meaningful job or they grew up in a military family. Some sought educational benefits or travel opportunities. For Master Sgt. Cederic Hill, a space operator at Vandenberg Air Force Base, Calif., it was a chance for change he couldn't get at home.

"I've been called every name in the book you can think of," he said of growing up in a mostly white area outside Atlanta. "I've had bottles thrown at me as I



Airman 1st Class Charles Welby

Lt. Gen. Anthony Cotton, then-Air University commander and president, salutes the Air Force's newest commissioned officers as part of Officer Training School Class 19-07 during their graduation ceremony Sept. 27, 2019, in Montgomery, Ala.

walked down the street. My next-door neighbor, his uncle ... was a Grand Dragon in the [Ku Klux] Klan. ... I didn't feel like I was part of the nation."

When Hill joined the Air Force, he gained opportunities and a sense of acceptance he hadn't experienced in Georgia. But he still faced frustrations and fears, often as the only Black man in his workplace. One supervisor dubbed him "Token" and called him "the whitest Black person that he knows," words that cut at his sense of belonging in his workplace and in the Black community.

Tech. Sgt. Miles Starr, noncommissioned officer in charge of retention at Hill Air Force Base, Utah, said she has been mocked, ignored, and held back by security guards that didn't believe she belonged to her own unit.

Master Sgt. Michael Feggans, superintendent of the 71st Healthcare Operations Squadron at Vance Air Force Base, Okla., said superiors may demeaningly address Black Airmen as "boy." Staff Sgt. Phillip Felton, who works in explosive ordnance disposal at Edwards Air Force Base, Calif., said he was once told: "I think you're a [N-word], but it's not a bad thing."

Sometimes the speaker doesn't understand how hurtful such comments can be. Other times, problems are deeply rooted.

Black Airmen described being discouraged from applying for jobs where they wouldn't be welcomed, or repeatedly skipped over for professional opportunities and awards. They spoke of leaving bases that proved to be toxic environments, and of feeling like their chain of command wouldn't take discrimination reports seriously.

Tech. Sgt. Myeshia Tucker, an intelligence analyst at Joint Base Pearl Harbor-Hickam, Hawaii, began basic training with short, natural hair that rolled into tight curls against her scalp. Although she was in line with service dress regulations, a white, male instructor told her it was "unprofessional," she said, and sent her to the salon to get it straightened. Then, when her natural curls returned in the Texas humidity, Tucker was reprimanded.

Another time, a supervisor told her she received a coveted opportunity only because "they can't turn down a Black fe-



Staff Sgt. Krystie Martinez

Then-Tech. Sgt. Michael B. Feggans, left, teaches a student how to use a camera at the Uventus School in Bishkek, Kyrgyzstan, Nov. 6, 2013.

male." And in still another incident, a colleague joked that the quality of an important briefing she was preparing wouldn't matter because she was a pretty Black woman.

"Even when I did well, it was so discounted," she said. "I was told that I got it because I was a Black woman and they needed to diversify. ... That's a trend I noticed early on."

Some Black Airmen say they face more discrimination when stationed in the United States than when serving overseas. One even said that Black service members deployed overseas sometimes worry more about family back home than they do about their own lives in combat zones.

The race-relations chasm between military and civilian life can seem just as wide. Hill said there's more accountability and teamwork in the military than in a civilian community, which helps ensure people are treated fairly.

Feggans said carrying a military ID card can provide a level of protection that a driver's license does not.

"My military ID has helped get me out of many incidents that never should have happened," he said, such as "getting pulled over with me and my friends, being told that you're in the wrong neighborhood, being accused of having guns and

In light of recent nationwide events, Master Sgt. Cederic Hill decided to share his story as a black man in America and the military. He explains how, at times, it is hard for others to talk through issues that have to do with racial bias, misconceptions or prejudices because military members are often told to not talk about race, religion and politics within the workplace.



“ I SERVE BECAUSE I SEE A CHANGE ON THE HORIZON. I DO IT BECAUSE I HAVE TO BE STRONG FOR MY FAMILY AND THOSE WHO LOOK TO ME AS A MENTOR AND STRIVE TO BE SOMETHING DIFFERENT THAN WHAT SOCIETY TELLS THEM THEY ARE. MOST IMPORTANTLY, DESPITE MY EXPERIENCES, I DO IT FOR WHAT I KNOW AMERICA CAN BECOME.

MASTER SGT CEDERIC HILL
614TH COMBAT OPERATIONS DIVISION
COMBINED SPACE OPERATIONS CENTER THEATER WATCH CHIEF

Photo Illustration 1st Lt. Kaylee Schanda

drugs in your vehicle, asking, ‘How can you afford such a nice luxury car?’ ... It’s almost like my background and everything changes as soon as they see my military ID.”

In both the military and civilian worlds, Black Airmen moderate themselves to fit others’ expectations. They are told, in words and in actions, to be as loud or as quiet as the people around them, to smile so as not to seem threatening, to speak a certain way. Lt. Col. Ja Rai Williams, assistant executive officer to the Air Force’s Judge Advocate General, said her true feelings are covered by a mask that she only feels comfortable dropping around trusted family and friends.

Added Feggans: “It’s a duality of serving in the military and serving as African Americans. You’re used to looking at yourself from the outside as, ‘How is my hair gonna be perceived? How’s my accent going to be perceived?’ The mannerisms—am I going to come off as the angry Black woman or the angry Black man? So it’s a constant battle with yourself of trying to find a way to appease and to lead.”

From the start, many Black Airmen feel the need to excel to prove they belong, knowing others are scrutinizing their progress.

“You’re in a fishbowl,” said A.G. Hatcher, the Air Force’s acting deputy chief information officer who retired from Active duty as a colonel. “You’ve always got to be on your ... A-game. You’ve always got to show up. You’ve just got to produce, because you have to over deliver.”

Growing up in the Deep South, in Selma, Ala., Hatcher said he learned early on that “one, life wasn’t fair, and two, if you’re Black, you’ve got to be better.” It also instilled in him a sense that everyone should get an equal shot at success.

As a company-grade Air Force officer years ago, Hatcher noticed he wasn’t being offered the same opportunities as some of his peers. So he started nominating himself instead, hoping to pave his own way up the ranks. Once in leadership positions, he mentored others and diversified a staff of all white men to include more women and people of color.

Having a diverse array of mentors matters. Mentors of any race can show Black Airmen a path to leadership they may not have known existed, while building a cadre of Black leaders who can help others in the future. Taking on Black mentees, and putting more Black Airmen in leadership positions, helps build a more inclusive wing culture.

Sometimes an invitation declined can be misinterpreted,

Cotton said. If a white flight commander invites newly arrived Airmen to come out for a weekend of elk hunting, a “young Airman who just came from the inner city or from an urban environment, who’s never picked up a rifle in their life, might say, ‘Yeah, I think I might pass,’” Cotton said. “That person could then get assessed by that flight chief: ‘He’s not a team player. ... I did my part, I asked them to join us.’” Meanwhile, that Airman might only feel more isolated.

VALUE OF DIVERSITY

Diverse workplaces can inspire and uplift people of all colors and offer a support structure when Airmen are struggling and need someone to talk to. That could be a matter of confronting a neighbor over a child using a racial slur or upset over constant news coverage of shootings and protests. Especially now, Black Airmen said they feel nervous, numb, exhausted, and sometimes silenced by their uniform.

“Because emotions are heightened, I’ve had to police myself,” Hill said. “I still have a job to do. I still have to project a professional image, but I also have to deal with the emotions that come from people within our community yelling and saying that, ‘We’re being shot, we’re being killed.’”

At one point during a shift at the Combined Space Operations Center shortly after Floyd’s death, Hill struggled to regain his composure when thinking about his family and current events. A friend online helped him calm down; he worried about being perceived as a stereotypical “angry Black man” in the workplace. He said his supervisor supported him by talking through those feelings during every shift.

Antoinette Allen, a former Active-duty Airman who later served in the National Guard until 2014, said it’s been heartbreaking to watch people’s reactions to the thousands of Guardsmen who were deployed to support local law enforcement at protests around the country. She recalled a video of Black protesters taunting a Black Guardsman, telling him to drop his weapon and join the protests. The Guard is there to protect, not suppress, she said: “These are not two opposite sides.”

Black Airmen are heartened by the conversations about their long-standing challenges taking place across the service. But the experience of being Black in America, particularly for those who are the only Black person in their units, is still isolating.

“When I talk to them about the anxiety I have with my

husband leaving the house every day and possibly not making it home, they're not going to be able to relate," Tucker said. "They'll listen to me and I know they will, but there's so much value to being able to relate to someone. So it's very, extremely lonely for me right now."

Sometimes friends and family ask: "Why are you serving a country that doesn't care about you?" It's a question Tucker can't answer. "I don't know what I'm going to do at the end of my contract. ... If I do not stay, it won't be because I didn't do well," the Hawaii-based Airman said. "Right now, I don't feel valued. ... If my contract was up next year, I know I would not renew."

At Edwards Air Force Base, Felton said he's proud to have a job in uniform where he can help people, but that it's hard to justify the actions of the country he serves.

"I'm asked, 'How can you work for a military who has conducted injustices in the past?'" he said. "That makes it difficult to accept those situations or to speak on them, but does that make it harder for me to do my job? No."

Lt. Gen. Richard M. Clark, the Air Force's deputy chief of staff for strategic deterrence and nuclear integration, knows those voices are out there.

Clark is dealing with America's recent turmoil both as a high-ranking military officer and as a father. His 18-year-old son took off on his bike one night for a Black Lives Matter protest in Washington, D.C., proud of his history and hungry for change. Tens of thousands of Airmen may feel the same way, Clark said.

"There's probably an anger that we don't even know about, that some of these Airmen who don't have someone to talk about it with, or someone to help guide them through this," Clark said. "But I am encouraged by what my kids saw: That this is everyone's solution, and that there are a lot of people who are angered by this, not just Black people, but a lot of people who want to do something about it."

He and other Air Force leaders said they are heartened by the service's decision to thoroughly study racial disparities in promotions and the military justice system, along with other factors that may block Black Airmen from feeling heard and rising through the ranks.

JUSTICE DESERVED

The military justice issue hits home for Brandon Glover, a former Airman who left the service in 2009 amid a law-enforcement mixup. Glover said he was accused of a crime off-base he didn't commit, then discharged from his post in Japan within days, despite officials realizing he wasn't at fault. Now a civilian intelligence employee with the Army, Glover argues the Air Force needs more impartial oversight of its military justice processes.

"I think the process of putting people out should have a certain time requirement as far as research, investigating, getting all the details," he added.

Others agree the first step toward understanding what Black Airmen face is allowing difficult conversations to take place. That was part of the aim of Chief Master Sergeant of the Air Force Kaleth O. Wright's public statements on race, as well as his live discussions on the topic with Chief of Staff Gen. David L. Goldfein.

Felton said one supervisor "wasn't aware of how bad the situation was, just because he wasn't exposed to it." The discussion helped open his eyes, he said. "He was having a moment of reflection in his life," Felton continued. "I see that as a step in the right direction, because three years ago,



Staff Sgt. Anthony Hyatt

Lt. Col. Ja Rai Williams, then-70th ISR Wing Staff Judge Advocate, begins First-Line Supervisor training, April 12, 2018, at Fort Meade, Md.

I don't think that would have happened."

Others suggest support groups or open forums can help air feelings and problems in work and home life. Some units are creating task forces and distributing educational materials. While the Marine Corps is banning the Confederate flag and related imagery, the Air Force, so far, has not said if it will follow suit.

Retired Gen. Larry O. Spencer, the former Air Force Vice Chief of Staff and Air Force Association president, recalled the Air Force's race relations courses in the 1970s. "They were very intense, very emotional," he said. "Nobody liked it, and they ... did away with it."

But there's broad agreement on the need for periodic training at all levels to increase understanding of the lived experiences of women and people of color.

The new Space Force has a chance to build diversity and inclusion into its culture from the beginning. The space career field skews white, much like pilots and intelligence.

Hill wants to see the Space Force do a better job of celebrating Black history. He said he's never seen a base celebrate Juneteenth, the annual commemoration of the end of slavery, observed on June 19. He's also tried—and failed—to highlight the achievements of prominent African Americans like music icon James Brown or political activist Malcolm X.

"When you are told you can't discuss or showcase influential and celebrity figures that played a significant part [in] our struggle, it is very discouraging," Hill said. "If we genuinely believe in diversity, we should take time to address it at different times of the year, not just the 'traditional' one or two times it is mandated."

Black Americans see the tide of public opinion turning, and some are cautiously optimistic that concrete action will follow. They stress that healing the divisions is a call for everyone—all Airmen, not just the Black community—to advocate for representation and fair treatment.

Cotton hopes the U.S. can reach a point where he doesn't have to talk to his adult children about how to stay safe every week.

"I am cautiously optimistic that we'll get after this ... not necessarily only from a Department of the Air Force perspective," he said. "It's time for our nation to really dive into this and get after it—once and for all. And hopefully, you know, I don't have to have those conversations with my kids." ✪



Scott Ash/USAF

Gen. David Goldfein's wife, Dawn, and daughter, Diane Glass, pinned on his fourth star in 2015 as he became the service's 38th Vice Chief of Staff. A year later he became Chief, beginning a four-year tenure that saw his multi-domain command and control concept gain currency among the Joint Chiefs and U.S. Space Force lift off as an independent military branch.

The Goldfein Years

Chief 21's Legacy is His Vision for the Future: A Highly Connected Joint Force.

By John A. Tirpak

Throughout his tenure as the Air Force's 21st Chief of Staff, Gen. David L. Goldfein sought to tie every fighting domain together—land, air, space, sea, and cyber—convinced that the force most able to do so would have the edge—maximum situational awareness. He's convinced that goal is well on its way to being achieved.

Goldfein's tenure also saw the Air Force define its need for 386 operational squadrons, the creation of a new Space Force, and the real-time adjustment to a global pandemic, but his vision for tightly integrated command and control will be his principal legacy. Over his four years in office, the nomenclature morphed, but the concept crystallized, gaining credence across the joint force. What began as multi-domain command and control finally seemed to take root in the Pentagon late last year, renamed as the service-agnostic joint all-domain command and control (JADC2).

The challenge is to ensure that JADC2 survives his departure. "I think the secret of success is not to align it with me," Goldfein said in an interview with Air Force Magazine. "If this is going to succeed, it has to have roots in the [Defense] Department."

Goldfein said he's been assured by the other Joint

"I listened, I traveled, I watched, I read, I talked to industry leaders. ... This is exactly where we need to go."
—Gen. David Goldfein, outgoing Air Force Chief of Staff

Chiefs that JADC2 will persist. It has to, Goldfein said: Joint wargames have shown that, without it, victory against a peer military is uncertain. Both JCS Chairman Army Gen. Mark A. Milley and Vice Chairman USAF Gen. John E. Hyten endorse the concept. Hyten will have particular influence as the head of the Joint Oversight Requirements Council, which referees joint capabilities for the services.

In his four-year tour as Chief, Goldfein's focus went beyond that single theme, and he did as well in the interview. He spoke of his drive to bolster the role of squadron commanders; fielding the F-35 and developing advanced fighters; the Air Force's "pass-through" budget burden; the pilot shortage; and USAF's relationship with Congress.

JADC2 aims to be nothing less than a universal, high-speed network connecting all U.S. military sensors, platforms, commanders, and operators to rapidly characterize the battlespace, share and prioritize targets, and get inside adversaries' decision cycle. In short, it is intended to give U.S. forces the first-mover advantage.

"We've taken it to the point now where we're no longer discussing 'whether.' We're now in a debate about 'how,'" Goldfein said.

A driving force in that adoption is USAF's effort



Senior Airman Jeff Parkinson

Air Force Chief of Staff Gen. David Goldfein (left) met with Air Force Special Operation Command personnel at Hurlburt Field, Fla., in 2016.

to replace the E-8 Joint STARS platform—used since 1990 to track moving targets on the ground—with the Advanced Battle Management System (ABMS), a network of systems to collect and fuse battle information from a multitude of sensors. “ABMS and JADC2 are interlinked,” Goldfein said. “Something’s got to tie all these systems together so we can communicate ... and truly operate across the joint team.”

While USAF spearheaded the concept, Goldfein said, it’s “critically important ... that we don’t lose sight, ever, of the ‘J’ in joint all-domain command and control.” Single-service solutions are “guaranteed to fail,” he said. Other services’ investments in C2 systems “will be protected,” he added, but they will have to adapt “to some common standards.”

No horse-trading was necessary to get joint buy-in, he noted, because JADC2 grew directly out of USAF’s responsibility to provide the ground moving target function.

“For us to be able to provide that to them, not only on Day One of a campaign, but Day minus 30 ... we had to move from a platform to a network solution,” Goldfein explained. “So many of the game-changing technologies that we all talk about—hypersonics, directed energy, long-range fires, precision fires, space capabilities, artificial intelligence—you actually don’t get to do any of those things” without that network.

Hyten, as vice chairman, will provide that guiding discipline through the Joint Requirements Oversight Council, Goldfein said.

“We’re going to get the ‘J’ in JADC2 right,” Goldfein insisted. ABMS is proceeding through experimental iterations. The most recent of these, run last December in support of U.S. Northern Command, has since evolved into what Goldfein called the “alpha” version of JADC2. Using the COVID-19 pandemic as a test bed, NORTHCOM Commander Gen. Terrence J. O’Shaughnessy has been able to collect and fuse COVID-19 pandemic response data from hospitals, the Centers for Disease Control, the defense industry, and other stakeholders. He was able to track individual Airmen and deploy Navy hospital ships and medical units, Army field hospitals, Federal Emergency Management Agency teams, and National Guard units using the experimental system.

“We just swarmed the entire ABMS/JADC2 team to support NORTHCOM,” Goldfein said. “That’s in operation today. ... This is real, this is not lightning bolts on PowerPoint charts. ... It’s up and saving lives right now, in New York, in New Orleans, everywhere that NORTHCOM is operating, as they

lead the national effort” for the Department of Health and Human Services. Its success has “actually given us legitimacy” in pursuing JADC2.

The next ABMS experiment is slated for early September, mainly in support of Space Force.

ON TO THE SPACE FORCE

Goldfein admits he wasn’t an early fan of creating a separate Space Force.

“I had my own personal journey,” he said. At the outset of the discussion about creating the new sixth service, “I was concerned about separating space” from joint combat plans and practices, worried that it would “derail years’ worth of work to integrate space” in all aspects of joint force. His litmus test was that he’d be open to it if it propelled “joint warfighting excellence,” and be opposed if it didn’t.

His turnaround came about a year into the debate. Speaking with Schriever Space Fellows at the Air War College, Goldfein asked for a show of hands: Who thinks a separate Space Force is a good idea? “And all but two hands shot up,” he recalled. “So I listened to them. And that was a changing point for me.”

It took another six months “to become a true believer,” he said. “I listened, I traveled, I watched, I read, I talked to industry leaders.” Now, he is certain. “This is exactly where we need to go. We’re going to be better at joint warfighting excellence with two separate services than we would have if we’d kept it as a single service.” He’s sure it can be done without “breaking ... the integration of warfighting.”

FIXING THE BUDGET

The creation of the Space Force is an opportunity to fix a burden USAF has struggled with for decades: the so-called “pass-through” budget idiosyncrasy. The “pass-through” account is money—\$39 billion in 2020—that seems to be in the Air Force budget, but isn’t controlled by the service and goes directly to secret programs, mostly space intelligence. It makes USAF’s true buying power look a lot bigger than it really is.

The Air Force has asked Congress “for permission to have the discussion” with the Intelligence Community and other stakeholders to do away with the pass-through, Goldfein said. A guiding principle, he noted, will be to “not cause damage.” If the conversation is somehow seen as a way to boost USAF’s own budget, it’s “doomed to fail,” he said, but he’s sure eliminating the pass-through will “make us more combat-capable.”



Senior Airman Kaylee Dubois

Goldfein takes a photo with Airmen at Bagram Airfield, Afghanistan, during a tour of the U.S. Central Command's area of responsibility with Chief Master Sgt. of the Air Force Kaleth Wright in 2018.

COVID'S PERMANENT IMPACT

The COVID-19 pandemic has affected every aspect of the Air Force. Reacting to it has spurred—or accelerated—many changes in how the service does business.

“I don’t think training and education will ever be the same,” he said. “I think we have learned new ways of doing business that in many ways are actually better than the old ways.” The new virtual education model—improvised over the last few months—“actually reaches a larger audience and is quite effective,” he said.

Student pilots, for instance, are now issued “essentially, a portable simulator that you can take home.” It allows many practice sessions at the student’s own pace.

“It’s all about repetition,” Goldfein said. Providing students with a laptop, virtual reality goggles, and an ersatz stick and throttle allows them “to go home and fly the entire profile,” in a good facsimile of the real T-6 trainer. “You do 50 loops in your room. And then you go in the real airplane, and, guess what? Your first real loop is pretty good.” That means fewer real-world sorties, saving time and money.

More simulation time may trigger alarm among some who fear USAF will slash actual flying hours, he said, but “what we’re really doing ... is improving our product.”

Similarly, “there will be a point at which I don’t think we’re going to need the same instructor force.” He’s asked Lt. Gen. Marshall B. Webb, Air Education and Training Command boss, to look at consolidating the number of simulator instructors and their locations. He sees little need for them to be in close physical proximity to students. Over a digital link, the instructor can be anywhere and still “dial a disaster” for one or more students. The debrief can happen over a video connection, with graphics.

“What an opportunity for us to build some simulator cells, perhaps in places where the airlines have hubs,” Goldfein said, so that Air National Guard pilots who fly for the airlines “can come in and do simulator duty” as instructors while waiting for their next commercial flight.

“It’s not just flying. ... In the maintenance career field, you can put the VR goggles on ... and it basically points you to everything you’ve got to do to complete a maintenance action.” With repetition, and learning at a student’s own pace, “you’re just going to be a better quality product.”

Similarly, for health care delivery, “telemedicine and telepharmacy” operations, coupled with curbside pharmacy service, are proving more effective, and using fewer people, at remote locations like Minot Air Force Base[N.D.], Goldfein said. “I don’t know if we’ll go back.”

Teleworking is also waking up the Air Force to new ways of thinking about basic work functions. “This is going to make us better, quite frankly,” he said.

FOCUS ON THE SQUADRON

Another of Goldfein’s coming-in goals was to “reinvigorate” the squadron, which he called the most essential “warfighting formation ... where you generate readiness [and] combat capability ... and where we succeed or fail as an Air Force.”

His aim was to give squadron commanders greater flexibility to do their jobs, provide them with more resources to take

care of issues unique to their location or situation, and “drive down” decision-making authority to their level.

“I’m pretty satisfied with where we landed,” he said, but “I would not say ... we’re done. ... It’s a journey, not a destination.”

Feedback shows squadron commanders today feel they have more latitude to act without waiting for permission and that USAF is investing in them.

“In the past ... we may have been guilty at times ... of handing a commander the flag and just seeing if she can swim, as opposed to investing in her every day ... to make sure she has the tools to succeed and lead,” he said. Squadron commanders know now that they’ll be allowed to “succeed wildly, and also stumble, fall, and get up and learn, and move on again. I think that’s been successful,” Goldfein acknowledged.

Investing more money at the squadron level is paying off. “We have successfully unleashed the innovative spirit,” he said. By providing squadrons with “not an insignificant amount” of money to solve local problems, commanders don’t have to wait for higher-up approval. The message: “I trust you, so ... take some risk and move out.”

For example, some bases have developed software apps to answer specific local needs. At Offutt Air Force Base, Neb., a squadron “put up an emergency operations center in a truck bed,” Goldfein said. “They got their design completed and were firing up the generators two weeks before the flood hit Offutt,” and the vehicle became “the major C2 node” in Offutt’s disaster recovery.

F-35 HEADWAY

Goldfein is the sixth Chief to preside over USAF’s F-35 program. The service asked for just 48 of the jets per year, but Congress added a dozen more airplanes in each of the last few budget cycles. At the current rate, USAF’s program of record—1,763 airplanes—won’t be fulfilled until the 2040s. Given that the Air Force is already embarked on the Next-Generation Air Dominance (NGAD) project, will the service throttle back on the F-35?

“The program of record hasn’t changed,” Goldfein said. “Signaling any reduction on the program of record right now” would be a mistake, he argued, especially when countries “on NATO’s Eastern flank” and partners in the Pacific are signing up to buy the F-35. “We need every country that’s

even considering purchasing the F-35 to get into fifth gen,” he insisted. “We need more teammates in the game. ... The last thing I want to do as an international air chief is signal any weakening.”

Goldfein is not concerned about the F-35’s relevance in the near term. “For the next 10 years, our force will be extremely viable,” he said. The NGAD program is focused on providing a range of new technologies that will “not only outfit a next generation of capability, but also ... [could] be retrofitted into some of our current platforms and weapon systems.”

At more than \$16 billion a year, the Air Force’s “black budget” for secret programs is “orders of magnitude” bigger than that of any other service, he allowed, but Congress is supportive when the programs are explained. Members of Congress and cleared staffers briefed on NGAD “have an ‘aha’ moment,” he noted, and quickly grasp why it’s “so critically important for our future.”

Keeping such programs shrouded is essential to keep potential adversaries guessing. It’s a “reveal and conceal” strategy, he explained. “We reveal at a time of our choosing, based on our deterrence objectives.”

These secret programs are “based on a significant amount of wargaming,” Goldfein said. Without them, peer adversaries often prevailed and “quite frankly, it did not end well for us,” he said. The injection of JADC2, along with other emerging secret capabilities, changed the game. “We actually turned the tide and began winning far more often,” Goldfein said. This convinces him the Air Force is now on the right track.

JOINT OPPORTUNITIES

Getting more USAF officers into Joint command positions was another early goal, and he claims success.

As director of the Joint Staff in 2013-2015, Goldfein had to review every candidate from which the Chairman of the Joint Chiefs would choose Joint leaders.

The Air Force candidates tended to be “too new and too blue,” he said. “Too new” meant that USAF officers, who tend to be promoted earlier than their other-service brethren, were younger and had not had as many different experiences. “Too blue” meant “we tended to stay in our tribe much longer than our joint teammates. So we were very deep, but we were not as broad as we needed to be.”

On Goldfein’s watch, USAF has worked to build officers with greater breadth and depth, and he argues it’s working. “We’re filling a significant number of positions, and the Joint leaders we have out there are doing superb work,” he said, pointing to officers such as O’Shaughnessy and Gen. Tod D. Wolters, Supreme Allied Commander, Europe, as examples of USAF leaders shining in key joint assignments. More USAF officers are deputies and senior staff in Joint organizations, as well, he said.

At the middle ranks, the long-term pilot shortage continues to put a drag on USAF manning. While the pandemic has prompted more pilots to re-up because airline hiring has dried up, this alone can’t solve the problem. “I’ve got to keep the demographics right,” he said. “While I’m eager to allow talented flyers to stay in with us,” it also tends to raise



Chief Master Sergeant of the Air Force Kaleth Wright, left, presents Air Force Chief of Staff Gen. David Goldfein with the Order of the Sword at the Air Force Association’s Air Warfare Symposium in Orlando, Fla., on Feb. 27. The Order of the Sword is the highest award USAF personnel can bestow. Goldfein was only the fourth Air Force Chief to receive the award.

Mike Tsukamoto/staff

the average age of the force, creating an unmanageable age imbalance. USAF constantly needs “new blood,” he said.

The pandemic is also exacerbating training challenges. To comply with social distancing, pilot production has been cut in half, an unsustainable reduction. Plans called for pilot production to start increasing again by the end of June, with a goal of reaching 75 to 80 percent of the pre-pandemic rate.

That, combined with increased retention, “can actually sustain [a] healthy force ... until we get a vaccine,” he said. But a permanent fix to the pilot shortage will have to come through longer-term approaches.

With much fanfare, the Air Force released “The Force We Need” white paper on Goldfein’s watch: requirements for 386 combat squadrons—or about 25 percent more than USAF has now—to carry out the National Defense Strategy. The near certainty of flat budgets ahead, though, means such growth will likely not occur in the near future, although the Senate has taken moves to compel USAF to start structuring for it.

Goldfein said the plan is “not aspirational,” and clearly answers Congress’ request to set a needed level of capability, rather than an affordable one. But JADC2 may offset the numbers of people and machines needed, by creating the effect of more capacity through connectivity. Efficiencies and the retirement of some legacy systems will free up billets for growth in space, command and control, and logistics, Goldfein said.

The Air Force’s relationship with Congress had been problematic since well before Goldfein became Chief, but he sees progress.

“All I can tell you is that all of my experiences on the Hill have ... been very positive,” he said. The dialogues “have gone much better.”

“I don’t go into any negotiation or presentation expecting that we’re going to get 100 percent of what we’re asking for. But if our story is true, it’s accurate, it’s backed up by analytical rigor, and you’re respectful of Congress’ oversight by having a dialog instead of trying to issue them a fully baked solution. ... I think you’re going to be successful,” he said. Hearing and incorporating congressional advice is “the way you win.” ✪



Capt. Monika Brohaugh waits after completing a buddy check, putting on Chemical, Biological, Radiological, and Nuclear and Explosive (CBRN) equipment during training for an upcoming exercise which will include agile combat employment concepts at RAF Mildenhall, U.K. Wings across the Air Force are required to conduct an "ability to survive and operate" exercise for CBRN threats.

Coping With COVID Across the Force

USAF is keeping the tip of the spear sharp, despite pandemic challenges.

Senior Airman Benjamin Cooper

By Brian W. Everstine

As the new coronavirus pandemic upended daily life across the globe, and its restrictions changed how the Air Force trains and flies, service leaders began to see an opportunity.

The nature of COVID-19, especially how contagious it is and how it spreads, posed some similarities to how a military would face biological threats. A restriction of movement order meant bases were forced to operate in a more isolated way. A gas mask could serve as a type of face covering, a required piece of personal protective equipment (PPE) in the coronavirus era.

"Just below the surface in our history and culture is a great starting point from which to adjust operations

"Just below the surface in our history and culture is a great starting point from which to adjust operations in this new environment." —Air Force Chief of Staff Gen. David Goldfein

in this new environment," Air Force Chief of Staff Gen. David L. Goldfein wrote in an April 28 letter to commanders. "It's time to dust off those Ability to Survive and Operate manuals. Many of us grew up in the age of Apple Orchards, MOPP levels, operations with PPE, aircraft decontamination procedures, etc. While we have not required it in recent years given our focus in the Middle East, the ability to survive and operate [ATSO] in a CBRN environment is in our DNA."

Goldfein sent out an order: Major commands and wings should take advantage of the "new abnormal" and plan new exercises to adjust procedures for operating in that chemical, biological, radiological, nuclear, and explosive threat environment. Because experts don't project a vaccine to be widely available until as late as December 2021, the Air Force needs



Airman Megan Estrada

Airmen at Moody Air Force Base, Ga., check their mission-oriented protective posture (MOPP) gear during chemical, biological, radiological, nuclear, and explosive defense training on Feb. 4. During CBRN training, they learn the different alarm colors and which MOPP gear corresponds with each alarm.



Airman 1st Class Jesse Jenny

Air Force Chief of Staff Gen. David Goldfein bumps elbows with Airmen of the 91st Missile Security Operations Squadron at Minot Air Force Base, N.D.

to “find ways to survive and operate with a virus likely to return a few times between now and then. I certainly hope I’m wrong and a vaccine comes earlier ... but hope is not a course of action. We must prepare for the long haul.”

The pandemic has hit different regions and communities differently, and each base has a unique mission, so Goldfein’s directive provides wide leeway to individual commanders.

“No two bases will be exactly the same,” he wrote. “Different missions. Different demographics. Different communities. Different leadership. It is why we have continually worked to push decision authority to you and your subordinate commanders. ... We must have trust throughout the organization. [Air Force] Secretary [Barbara] Barrett and I absolutely trust you to get the job done. ... As we have said since the beginning, don’t wait for us. Take the decision authority you have been given and move out as you in turn push decision authority to your subordinate command teams.”

Commands and wings quickly followed through. Some are

following in the momentum of previous exercises, while others are creating new, large-scale training events or changing the overarching goals of planned events.

BRINGING CBRN TO THE FOREFRONT

CBRN defense has long been a part of the Air Force, with groups of dedicated Airmen researching and training for the threats. However, this has been back of mind for the bulk of the service, relegated to once a year exercises and computer-based training. As COVID-19 spread, however, it became a major focus quickly.

“The CBRN community has always been there, always working, and there’s a ton of expertise in the world. But ... CBRN and the WMD threat weren’t front and center,” said Maj. Ryan Ruediger, the chief of air operations in the Air Force’s countering weapons of mass destruction division. “And then, as we’re working in the periphery and continuing to build capabilities, design better equipment, better detectors, do all of these things, all of a sudden COVID gave us an opportunity to bring these capabilities front and center.”

In the past few years as part of an overall push toward full-spectrum readiness, the Air Force has taken a closer look at CBRN defense, rewritten guidance, and thought more deeply on what needs to be exercised, said Col. Leanne Moore, the chief of countering weapons of mass destruction in the office of the deputy chief of staff for strategic deterrence and nuclear integration.

“Our role is to optimize air power, and one of the unique things that we try to do at the Air Staff is to understand the science and behavior of the threat and characterize the hazard,” she said.

At the outset of the outbreak, CBRN experts received calls constantly, asking about the right protective equipment to wear, about how to properly sanitize aircraft, and other protective measures to take. For the Airmen responsible for training for the threats, there was a lot of “connective tissue” between the outbreak and what CBRN threats the service needs to be ready for, Ruediger said.

“We have incredible masks, equipment, and capability that will protect our Airmen in a dangerous chemical or biological environment. But it’s overkill for COVID,” Moore said. “We had a lot of people who wanted [to] pull out their chem gear



Staff Sgt. Cristina Allen/NIANG

Senior Airman Michael Ottaviano (left) and Staff Sgt. Brandon Staines make masks in the aircrew flight equipment shop at the New Jersey Air National Guard Base in Atlantic City in April. The shop sewed and distributed face masks for mission-essential Airmen, their families, and the wider community in response to COVID-19.

and get suited up from head to toe and operate that way. When we realized that the threat really could be (mitigated) with washing your hands, wearing gloves, and just wearing a cotton face mask, we could protect our Airmen so they could continue to operate.”

The COVID-19 reality gives the Air Force the chance to better educate itself about CBRN threats, and real-world training to more effectively face similar threats in future CBRN scenarios, said Lt. Col. Paul Hendrickson, the Agile Combat Support Directorate's AF Chemical, Biological, Radiological, and Nuclear Defense Systems Branch materiel leader.

“So, how do we leverage this new focus on the B in CBRN and turn it into a comprehensive readiness look so that we can make sure that we’re ready for when it really is that chemical or biological interchange with a peer adversary trying to deter or demoralize us,” he said.

The Air Force needs to “deliberately train the right way,” by leveraging its experts at the base-level, he said. Training is needed so Airmen understand that if they face a CBRN threat, they can still operate.

“There seems to be a pervasive belief that when a chem attack or a biological attack happens, the whole base is slimed and you just can’t operate, which couldn’t be further from the truth. With proper warning, sensing, and communication, there is a whole spectrum of operations that can continue.”

Several months into the outbreak, COVID-19 has shown where the Air Force was not ready and the service is working to ensure it is ready in the future to meet a threat, no matter what it is, said Chief Master Sergeant Joseph Trenholm, the Air Force emergency management career field manager. The outbreak “opened up the aperture now on how do we do business” with the threats that exist, he said.

“So, if the CBRN Defense community is given the opportunity to share and shape with what we have available, then the momentum's not lost,” Hendrickson said. “That’s really where you get your bang for the buck. It’s all fun and games to say we’re going [to] practice it, but if we’re going to do it, we have got to do it in the right way. And I think if we can—if we can get over that hump and make it a part of our DNA again

we can ensure our forces are prepared for the next conflict where a CBRN threat is employed.”

177TH FIGHTER WING

New Jersey was among the hardest-hit states in the early stages of the COVID-19 outbreak in the United States, and that created a unique challenge for the Air National Guard’s 177th Fighter Wing at Atlantic City International Airport.

The wing’s F-16s sit alert for the North American Aerospace Defense Command’s Operation Noble Eagle mission, ready to launch to protect the nation’s airspace in a region including New York City. The wing acted early to adjust its operations—having pilots quarantine before coming in for alert duty, for example—while also sending Guardsmen out into New Jersey’s communities to help where needed as cases multiplied.

Coronavirus created a “biologically contested environment right here in our backyard,” said Wing Commander Col. Bradford Everman, in an interview. “We can’t just shut down for a week or for a month. ... We don’t have that option. We have to continue getting the job done.”

The 177th was forced to cancel a major exercise—an agile combat employment event in which the wing was to “forward deploy” to a base in Michigan and quickly stand up operations—but with that off the books, the wing is reshaping its October exercise to practice operating in a biological threat environment at home. Wings across the Air Force are required to conduct an ability to survive and operate exercise for CBRN threats, and this will be it.

“We’re going to look at it—rather than looking at it as being in Central Command, or being in Pacific Command, or somewhere around the globe—now we’re gonna look at it as what if we had to operate right here in a true biological warfare environment on the 177th Fighter Wing proper, defend it in three dimensions, and then go out and do our mission from our local base,” Everman said. “And you really can’t write the script any better than in a biologically contested environment, which is the world that we live in, day in and day out right now.”



Senior Airman Jonathan Valdes Montijo

F-22 Raptors, E-3 Sentrys, C-17 Globemaster IIIs, C-130J Hercules, and C-12F Hurons form up for a "Moose Walk" at JB Elmendorf-Richardson, Alaska, in a show-of-force display intended to demonstrate readiness in the region, despite COVID-19 complications.

ALASKA DEFENSE

Like the 177th, the 3rd Wing at Joint Base Elmendorf-Richardson, Alaska, stands alert to protect the homeland. Indeed, the wing's F-22s launched several times in response to Russian aircraft encroaching on Alaska's airspace this past spring and summer. The wing has adjusted daily operations and worked with social distancing to safely keep pilots on alert, and in May, joined with the Air National Guard's 176th Wing at JBER to launch 26 F-22s, two C-12s, two C-130s, two E-3 Sentrys, and three C-17s in a giant "Moose Walk" to demonstrate readiness. Pilots and maintainers worked through distancing and PPE requirements, along with the need to sterilize cockpits, to conduct the event.

"The message is that we're ready—we've always been ready," said 3rd Wing Commander Col. Robert Davis in an Air Force Magazine interview. "And the challenges associated with COVID-19 have not prevented us from being ready to defend the nation in our NORAD alert mission, or to be able to project air power, to deliver air power to combatant commanders."

The "Moose Walk"—an Alaskan tweak to the more familiar "Elephant Walk"—was the first major exercise for JBER in the COVID-19 environment. The wing does CBRN-related training events on a "routine basis," Davis said, and while recent training was canceled as the pandemic began, the wing is rescheduling to train "some of the CBRN skills" soon.

The 176th Wing has kept track of COVID-19 impacts to its operations, relative to operating in the CBRN threat environment, said Wing Commander Col. Anthony Stratton.

"COVID is, to a lesser degree, very similar to how we operate in a chemical and biological environment," he explained. "In that environment we typically double the amount of time that it takes us to do a task, just as our base-level planning factor." Every step needed to generate

a sortie—supply, fuel, operations, and maintenance—had to work through the complications imposed by requiring PPE and social distancing in setting up the Moose Walk.

"We want to illustrate to anybody that's out there, that may be considering that our combat capability or capacity to generate [air power might be] ... degraded due to COVID: That's absolutely not the case," Stratton said.

OUT IN THE PACIFIC

Pacific Air Forces is planning to focus on CBRN and potential outbreaks in multinational training exercises. Future training events in 2021 and 2022 with the Philippines and Thailand will focus on the CBRN threat, applying lessons from the COVID-19 experience, including aeromedical evacuation.

MOBILITY

Air Mobility Command is applying its CBRN training experience to its COVID-19 response.

"AMC wings have been conducting local, large-scale exercises that emphasize ATSO skills, including proficiency in MOPP levels and use of personal protective equipment," AMC spokeswoman Capt. Nicole Ferrara said in a statement. "Now, AMC is applying these skills to the current operating environment, to help mitigate the threat posed by coronavirus."

For example, the day after Goldfein's letter, McConnell Air Force Base, Kan., assigned a KC-46 aircrew to test the aircraft's intercom voice communications while wearing chem-bio flight gear. Engineers from Edwards Air Force Base, Calif., remotely monitored the test, collecting data with which to create TTPs [tactics, techniques, and procedures] for operating the aircraft in a CBRN environment.

The command hosts its premier exercise, Mobility Guardian, every two years, and trained extensively for a



Master Sgt. Matthew Plew

A KC-135 refuels an F-15 during Exercise Point Blank 20-02, normally a quarterly exercise between the RAF and USAF aircraft stationed in the U.K. It was the first Point Blank exercise held during the COVID-19 pandemic.

CBRN environment in 2019, including decontamination procedures. The command is planning more of that for its next event scheduled for summer 2021.

Air Force CBRN experts tout Little Rock Air Force Base, Ark., as the standard-bearer for CBRN training. The base conducts monthly ATSO “rodeos” including representatives from many career fields and its C-130s, along with regular radiological recovery training, and exercises to deploy and operate in a threatened environment. The base even has “Thunder Thursdays” when an alarm goes off during a regular day, and Airmen who are a part of the exercise need to quickly put on their protective gear and continue working.

“You roll on base on a Thursday, it’s not weird to see somebody walking around in their gear,” Hendrickson said. “Everybody just says ‘Oh yeah, well, that poor soul’s part of the exercise this quarter.’”

The pandemic prompted research into how CBRN threats affect mobility aircraft and a study on the airflow in mobility aircraft to understand how a virus could spread from the cargo hold to the cockpit, and what can be done to stop it. A new Negatively Pressured Conex system approved for production this spring will be able to transport more highly contagious patients than the existing Transport Isolation System developed after the 2014 Ebola outbreak.

“From adapting aircrew protection measures to implementing aircraft decontamination procedures as needed, AMC has and will continue to seek ways of reducing risk to personnel and passengers flying on our aircraft,” Ferrara said.

Bases across U.S. Air Forces in Europe-Air Forces Africa were among the first to face the COVID-19 threat. For example, Aviano Air Base, Italy, locked down in early March as the pandemic hit northern Italy hard. The base had to change its flying schedule so pilots and maintainers could alternate on-days to avoid crowding and personal contact. The base’s F-16 squadrons, used to flying alongside Italian aircraft and other local allies, instead focused on local training in its own ranges.

FIGHTING COVID IN THE U.K.

The story was similar at RAF Lakenheath, U.K., where the 492nd Fighter Squadron broke into teams that operated on alternating weeks. That decreased flying time by about 50 percent, said Capt. Alexandra Deerr, flight commander and instructor pilot with the 492nd FS.

By late May, USAFE had canceled 14 exercises, but decided it needed to go forward with large-scale training amid the

pandemic and conducted a major exercise in the North Sea with 38 aircraft from Lakenheath, Aviano, and Spangdahlem Air Base, Germany, along with a NATO E-3 AWACS and the 603rd Air Operations Center at Ramstein Air Base, Germany. Planning was done remotely, with aircrews operating as if facing biological threats. Maintainers worked in shifts and aircraft were decontaminated.

“This is really the first large force exercise (LFE), that I know of, since COVID started,” Capt. Alex Travers, the 52nd Fighter Wing’s electronic combat pilot who flew in the exercise, said in an interview. “All things considered, with the displaced planning and different units coming together for the first time in several months, it went off very well and we got some great training out there. There’s nothing like being at 1.2 Mach and 30,000 feet, and looking over and just seeing all the [USAF] contrails and thinking: ‘This is America ... This is awesome.’ So, I had a great time today.”

“The goal of this was to integrate across multiple platforms, multiple fighters in this case, to ... get into some contested, degraded operations where we can essentially go to another airspace where we’ve never met the people, in person, that we’re fighting with, and actually integrate with them and apply our joint tactics and doctrine with those guys, without having to be physically present for the mission planning,” said Capt. Michael Shaw, an F-16 pilot with Aviano’s 510th Fighter Squadron, in an interview.

The May LFE was the first in a series of similar events to be held throughout the year across USAFE, with each wing taking turns planning.

USAFE Commander Gen. Jeffrey L. Harrigian told Air Force Magazine that the pandemic provides a chance to get back to “our fundamentals” and train in a way “that forces our Airmen to work through problem sets.”

“As we look at these large force exercises and some of the other internal exercises that we’re going to do inside of USAFE I think, ultimately, what we want to look at is: Recognize that the virus is not going away, it’s gonna come back,” Harrigian said in an interview. “We’re gonna have to work our way through that. And so as we look at these exercises, how do we continue to employ the techniques that we’ve learned over the last couple months, to be able to generate sorties, generate combat power, while operating in this environment? That’s ultimately the key to our success while also looking at some of the other challenges associated with a chem or bio environment.”

STAND IN, STANDOFF

The Right Balance for the
Future Bomber Fleet.



A stealth B-21 and B-2, top, penetrate an adversary's air defenses as a B-1B and B-52 launch long-range strike weapons from standoff distances and a pair of hypersonic missiles launched from over the horizon close on their targets.

Mike Tsukamoto/staff; photos USAF

America's global interests are threatened like never before. China and Russia now pose security challenges that the United States has not confronted since the Cold War—some potentially existential in nature. At the same time, mid-tier powers like North Korea and Iran now have ballistic missiles and aspire to develop the ability to deliver nuclear warheads over long ranges. Added to this, non-state actors such as al Qaeda, the remnants of the Islamic State group, and Hezbollah continue to plot attacks against the United States and its allies. The concurrency of these threats has stretched American military resources to their breaking point. With vital interests on the line, U.S. leaders must ensure the U.S. military is equipped to deal with the weighty demands of national defense strategy.

Global long-range strike—the ability to attack targets anywhere, at any time—must be among our highest priorities. When paired with an effective campaign strategy aimed at vital targets on which an enemy's military depends, long-range strike is one of the most effective tools available to America's military commanders.

History offers clear proof. After Allied forces stormed the beaches of Normandy in June 1944, it took just 11 months to reach Berlin and put an end to the war. In contrast to World War I, when that very same territory bogged down opposing armies in bloody trench warfare from 1914 to 1918, Allied long-range strike bombers reduced Germany's ability to sustain combat operations on the ground, in the air, and at sea. In the Pacific, long-range strikes executed by 20th Air Force B-29s and two atomic airstrikes achieved unconditional victory without a costly invasion of Japan's home islands.

Since then, precision guided munitions (PGMs), improvements in aircraft range, and stealth technologies radically enhanced what combat aircraft could achieve in the battlespace. Today, one stealth B-2 sortie can strike 80 individual targets with pinpoint accuracy—without needing accompanying support aircraft to assure it survives.

Long-range strike follows one of two approaches: Stand-in strikes employ stealth aircraft to penetrate enemy defenses and release munitions in proximity to targets, while standoff strike attacks target from a distance by launching long-range missiles, either from aircraft, ships, submarines, or land.

Each has strengths and weaknesses, with recent debates pressing to go “all-in” on investments for one or the other. Today, the Army and Navy are starting to bolster their strike capacity by procuring new long-range standoff missiles. These investments are often viewed as a panacea for anti-access, area denial (A2/AD) defensive strategies used by our adversaries. Yet, it is simplistic to think that lobbing a missile at range will negate A2/AD challenges, and doing so puts at risk other options available to U.S. commanders.

A key insight from post-Cold War government and non-government analyses is that both standoff and stand-in strike capabilities are necessary. Air Force Chief of Staff Gen. David L. Goldfein recently noted

that after a significant number of USAF wargames, the force that wins in Defense Department planning scenarios “has a combination of that which works from inside and that which works from outside ... a balance” of penetrating and standoff strike forces. Goldfein continued: “As I've shared with other leaders who have talked about just shifting to an all-outside force ... show me your analysis, this can't be a gut feeling for us in terms of investment.”

The Air Force is the only service that operates long-range, penetrating bombers. America's allies do not have such aircraft. While DOD can depend on a range of standoff strike options from other services and allies, this USAF capability is unique, making it imperative that DOD adequately size and modernize the Air Force's penetrating bomber force, considering today's force of only 20 stealth B-2s is woefully inadequate. At the same time, it is also important to maintain the Air Force's standoff bomber force, which is now sized about right, but whose B-1s and B-52s must be modernized.

THE LONG-RANGE STRIKE ARSENAL

America has long relied on the Air Force's bombers to rapidly project power globally, but the bomber force is aging. USAF's 76 B-52Hs, 62 B-1Bs, and 20 B-2s—158 planes in all—constitute the oldest and smallest bomber force since the branch's founding in 1947. Multiple studies have concluded the United States cannot generate enough long-range strike sorties for a single major conflict with a peer adversary, recommending a force roughly 50 percent larger, with at least 220 bombers. B-21s, now in development, must constitute the bulk of this modernization effort. B-21s represent the next generation of stealth—a fifth-generation-plus bomber in which sensors, processing power, stealth, and connectivity deliver a powerful mix of mutually reinforcing capabilities.

While current plans call for at least 100 B-21s, there is also lingering interest in a new nonstealth, standoff platform that some believe could cost less than the B-21s. Some have suggested the Air Force could either modify existing cargo aircraft to launch cruise missiles or develop a new, clean-sheet standoff “arsenal plane.” Neither of these options would be cheaper than procuring additional B-21s, nor is it likely that a new standoff bomber could be fielded faster than the B-21 program can achieve full-rate production. More importantly, seeking to rebuild the bomber force with arsenal planes could reduce long-range strike options available to theater commanders in the future, as well as wasting resources by overinvesting in standoff strike capacity, which other services also intend to procure. Simply stated, money directed to standoff aircraft will limit the Air Force's ability to overcome its more significant deficit in long-range, stand-in strike capacity.

At the end of the Cold War, the Air Force's bomber force totaled about 400 aircraft. In the ensuing years, budget cuts and confidence that a much smaller bomber force would suffice for conflicts with rogue states such as Iran and North Korea led to reductions, including DOD's 1997 decision to cap the B-2 program at 21 aircraft instead of the 132 B-2s sought by the Air Force. Bomber cuts continued into the 2000s when



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the Air Force retired an additional 33 percent of its B-1Bs and 20 percent of its B-52Hs. These retirements continued even as demand for bombers surged, with DOD's bomber fleet tasked with nonstop deployments. This hard use literally broke the B-1 fleet in 2019.

Now facing budget challenges akin to the 1990s and early 2000s, the Air Force wants to retire another 17 B-1Bs to help free-up funding to sustain its remaining bombers, according to acquisition chief Will Roper and Deputy Chief of Staff for Plans and Programs, Lt. Gen. David S. Nahom in testimony to Congress in February. This would leave 45 B-1Bs in the force, of which an estimated 26 will be primary mission aircraft assigned to combat squadrons. We have been down this path before. Chronic underfunding of sustainment and modernization after the Cold War led to divesting older bombers to free resources to sustain the remaining aircraft. Then, even as these additive resources disappeared over time, the remaining bombers were flown harder to meet operational requirements. The toxic combination led to more bomber sustainment challenges, which drove the next round of force cuts. The arguments made today to rationalize B-1 cuts are the exact same as those made in the early 2000s justifying the retirement of two dozen B-1s.

The Air Force's budget-driven choices today will create a period of increased risk in its ability to conduct long-range strikes. The B-21 program is the first opportunity to correct its overall lack of bomber capacity and standoff/penetrating strike imbalance. Yet it will take time to offset 30 years of bomber divestments and delayed modernization. Assuming B-21 production ramps to a modest five to 10 aircraft per year by the late 2020s, fewer than 40 B-21s could be on the ramp by 2030. At this rate, it would take another decade before the Air Force gains back the number of bombers it is surrendering today. It will be well into the 2040s before it reaches its stated requirement for at least 220 total bombers. If the B-21 is delayed by budgetary or technical challenges, USAF's bomber bathtub could be even deeper and last longer.

PRIORITIZING PENETRATING CAPABILITY

DOD is now faced with a set of challenges that are radically different than the regional threats it confronted over the last 30 years. Defeating Chinese or Russian forces that are operating under the umbrella of integrated air defense systems (IADS) and other anti-access, area-denial threats will require U.S. forces to go on the offensive "from the very beginning of hostilities." USAF stealth bombers must be able to penetrate these contested areas on Day One of a conflict; taking multiple weeks to build up a ground force before launching a counter-offensive in a war with China or Russia would cede them the time and freedom they need to prevail. The failure to invest in the right capacity and mix of capabilities could be devastating.

Both long-range standoff and penetrating strikes can be effective against targets in contested areas—but not equally so. Like penetrating systems, standoff bombers can deploy within hours to launch long-range weapons. These platforms can also reduce U.S. force attrition early in a fight when enemy defenses are at full effectiveness.

In comparison, stealth aircraft can penetrate contested areas and approach targets closely enough to deploy short-range, standoff and direct attack weapons. These munitions are smaller than long-range standoff weapons that have ranges greater than 400 nautical miles (nm). To fly long ranges, weapons typically need power plants, wings that deploy after launch, one or more guidance systems, and other design features that increase their size. As size increases, the number of weapons an aircraft can carry decreases. A B-2 can carry 80 short-range Small Diameter Bombs (SDBs) or 16 much larger Joint Air-to-Surface Standoff Missile-Extended Range (JASSM-ER) weapons. With fewer weapons per sortie, theater commanders need either more time or aircraft to achieve desired effects, time that an enemy can use to press its advantage or even prevail. A future force mix weighted toward penetrating bombers would increase weapons available per sortie, helping theater commanders achieve a decisive advantage.



Three U.S. Air Force B-21 bombers fly over Fiery Cross Reef, a Chinese People's Liberation Army base in the South China Sea in this illustration.

Mike Tsukamoto/staff; Greg Davis/USAF; map Google Earth



Lockheed Martin

B-52s are envisioned carrying four AGM-183A Air-launched Rapid Response Weapon (ARRW) hypersonic missiles, as shown in this photo illustration.

The potential for weapons to be intercepted or rendered ineffective by enemy defenses is also a factor. China, Russia, and other potential adversaries have developed countermeasures, such as layered air defenses that can intercept incoming weapons; increasingly mobile ground-based systems that are harder to locate and track; and bunker-style installations buried deep underground to make them harder to locate and destroy.

In the past, the probability that a weapon would be intercepted after launch was small. During the 2003 Operation Iraqi Freedom air campaign, coalition air forces used an average of 1.5 precision guided munitions (PGMs) per target. But today, advanced Chinese and Russian defenses can track legacy cruise missiles and other weapons, making it possible to intercept and defeat them. In this contested environment, three, four, or more PGMs may be needed to ensure at least one survives to hit a designated target, meaning the total number of weapons—and aircraft—needed to attack tens of thousands of targets in a peer conflict would be far greater than DOD can afford to procure.

While enemy countermeasures increase the number of weapons needed to strike targets from all ranges, they have a greater impact on long-range, standoff weapons. Launched from 500 to 800 nautical mile (nm) standoff distances depending on the threat environment, these weapons must fly hundreds of miles through enemy defenses before they hit a target, increasing the probability they will be detected and intercepted. By contrast, direct attack weapons with flight times of just a few minutes reduce an enemy's ability to respond.

From long-range, standoff distances, it is also more difficult to find, fix, track, target, engage, and assess mobile/relocatable targets such as missile transporter-erector-launchers (TELs). A subsonic (Mach 0.8) long-range, cruise missile launched 500 nm from a target would need nearly an hour to reach it, affording an enemy the time needed to detect and stand off attacks and simply change locations. Penetrating aircraft with on-board sensors and other capabilities are better suited to complete the entire kill chain against such time-sensitive

targets.

Standoff weapons are also too small to kill targets that are structurally hardened or deeply buried, while penetrating bombers can deliver very large, direct attack weapons specially designed to kill such targets. For instance, a B-2 can deliver 5,000-pound direct attack "bunker buster" weapons and even the 30,000-pound GBU-57A/B Massive Ordnance Penetrator on hardened targets. It is simply impractical to design air-launched weapons with comparable weights to fly very long distances.

The problem grows with distance. A bomber that must stand off 800 nm from the Chinese coastline would need weapons with more than 1,600 nm range to attack targets located 800 nm inland — well outside the reach of a JASSM-ER with a range of over 500 nm. Standoff distances would be a major constraint in a war with China or Russia, considering the scale of their landmasses and ability to deploy ballistic missile launchers, anti-satellite weapons, and other high-value assets deep in their interiors.

Then there is the matter of weapon cost. Affordability is a critical consideration, given potential requirements to attack tens of thousands of aimpoints in a conflict with China or Russia. As a point of reference, Allied air forces attacked about 40,000 aimpoints during Operation Desert Storm against a third-rate Iraqi military. Target lists in a war with China or Russia would be much greater. A future force that must use tens of thousands of very long-range, standoff weapons—each costing \$1 million or more—is not affordable.

While some suggest the cost of long-range weapons could be offset by buying less-costly standoff aircraft, this is not borne out by analysis. A 2010 RAND Project Air Force study by Thomas Hamilton, "Comparing the Cost of Penetrating Bombs to Expendable Missiles over Thirty Years: An Initial Look," concluded that a penetrating bomber delivering direct attack weapons for at least 20 days, over a 30-year period, would actually cost less than expending an equivalent number of more expensive standoff cruise missiles. To put this in context, 20 days of airstrikes is less than half the length of



Senior Airman Thomas Barley

Maintainers assigned to Whiteman Air Force Base's 509th and 131st Bomb Wings in Missouri watch a sunset near a B-2 Spirit Stealth Bomber, Oct. 24, 2019. Stealth provides the penetrating capability to launch direct attacks in the face of anti-air defenses.

the 43-day Desert Storm air campaign and is far less than the combined duration of all U.S. air campaigns over the past 30 years. This finding was instrumental in DOD's decision to begin the B-21 program. The cost crossover point would be even more in favor of penetrating bombers if the price of a new standoff aircraft is included in the comparison. Assuming that buying and sustaining a new standoff bomber would run into the hundreds of millions of dollars, the crossover point could be as short as 10 days of combat. In this light, investing in penetrating bombers instead of additional standoff strike capacity is a bargain.

RECOMMENDATIONS

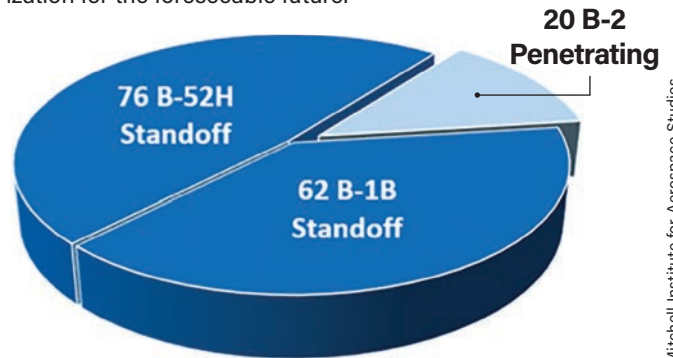
Assessments to determine USAF's future, long-range strike requirements must consider the effectiveness, as well as the cost, of using standoff and penetrating weapons against very large peer adversary target sets in contested areas. As noted by Marine Corps Commandant Gen. David Berger: "There is an argument to be made by some who feel that two great powers can stand off with long-range precision weapons and hold each other at bay. ... I am not in that camp."

In the end, it comes down to how the Air Force should invest its finite budget to field the most effective and efficient set of capabilities to support the National Defense Strategy. To this end, the Mitchell Institute offers the following recommendations:

1. The Air Force should significantly increase its long-range strike capacity. A total inventory of at least 316 bombers is needed to support the U.S. National Defense Strategy, the vast majority of which should be penetrating aircraft. DOD's 1997 decision to stop buying stealth B-2s created a bomber force that is now too small, too old, and overweighted toward standoff aircraft. This force was adequate against lesser regional militaries in the past, but in contested conflict with peer adversaries, it will not be sufficient. The Air Force must buy at least 240 B-21 stealth bombers.

The Bomber Fleet

USAF cannot generate enough long-range strike sorties for a single major conflict with a peer adversary. B-21 stealth bombers, now in development, will constitute the bulk of modernization for the foreseeable future.



Mitchell Institute for Aerospace Studies

2. The Air Force should prioritize penetrating strike platforms. Success in warfare comes down to inflicting rapid, overwhelming attacks against key targets. Sustaining such operations demands an affordable means to conduct strikes. Today's B-1Bs and B-52Hs cannot penetrate Chinese or Russian IADS with an acceptable degree of risk, nor can any nonstealth aircraft. Without the ability to penetrate, bombers must launch standoff weapons from hundreds of miles away, delaying impact and reducing effectiveness against relocatable targets. These weapons are smaller, lack the warheads capable of destroying hardened or deeply buried targets, and are also more expensive than direct attack munitions. To avoid redundancy, since the other U.S. military services also are investing in new standoff capabilities, the Air Force must ensure it can provide commanders with options to penetrate deep into contested areas and strike a large number of targets per sortie.

3. Hypersonic weapons are needed but will not be a panacea. Advanced integrated air defenses will be effective against legacy subsonic cruise missiles as well as nonstealth aircraft, making hypersonic (Mach 5 or greater) weapons attractive. Due to their high speeds, maneuverability, and other characteristics, they will be better able to survive high-risk threat environments. These more survivable weapons could reduce the total number of standoff weapons needed to attack defended targets. However, hypersonic weapons launched from standoff distances will still be less effective against mobile targets than direct attack PGMs that can reach targets in minutes. Hypersonic weapons will also be expensive. Like other standoff munitions, investments in hypersonic weapons should be informed by tradeoffs between survivability, size, weapons per sortie, and effectiveness against challenging targets—in addition to cost.

4. Allocating modified airlift aircraft to conduct strike missions does not make operational sense. There are already indications of a growing shortfall in the Air Force's capacity to provide heavy airlift to rapidly deploy and sustain forces. Allocating some number of modified airlifters to conduct strike missions instead could have a major impact on the U.S. military's ability to prevent China or Russia from achieving a quick victory.

5. Developing a new standoff bomber is not a quicker or cheaper option. The notion that a new, standoff arsenal aircraft with large payload capacity could be developed quickly and at less cost than buying the B-21 is a myth. Restarting a production line for a military airlifter like the C-17 would require years and billions of upfront investment. Modifying a C-17 or existing commercial cargo aircraft to carry standoff weapons would also require

even more funding and time. Consider the effort needed to develop the Navy's P-8 maritime patrol-strike aircraft from a commercial design and continued struggles surrounding the Air Force's KC-46A tanker: The resulting cost of a weapons-carrying, wide-body aircraft could equal or exceed the B-21's cost, while providing a less operationally flexible, single-mission capability. It is likely that a clean-sheet design, standoff bomber would be even more expensive than a program that modifies a mature airlifter to launch weapons.

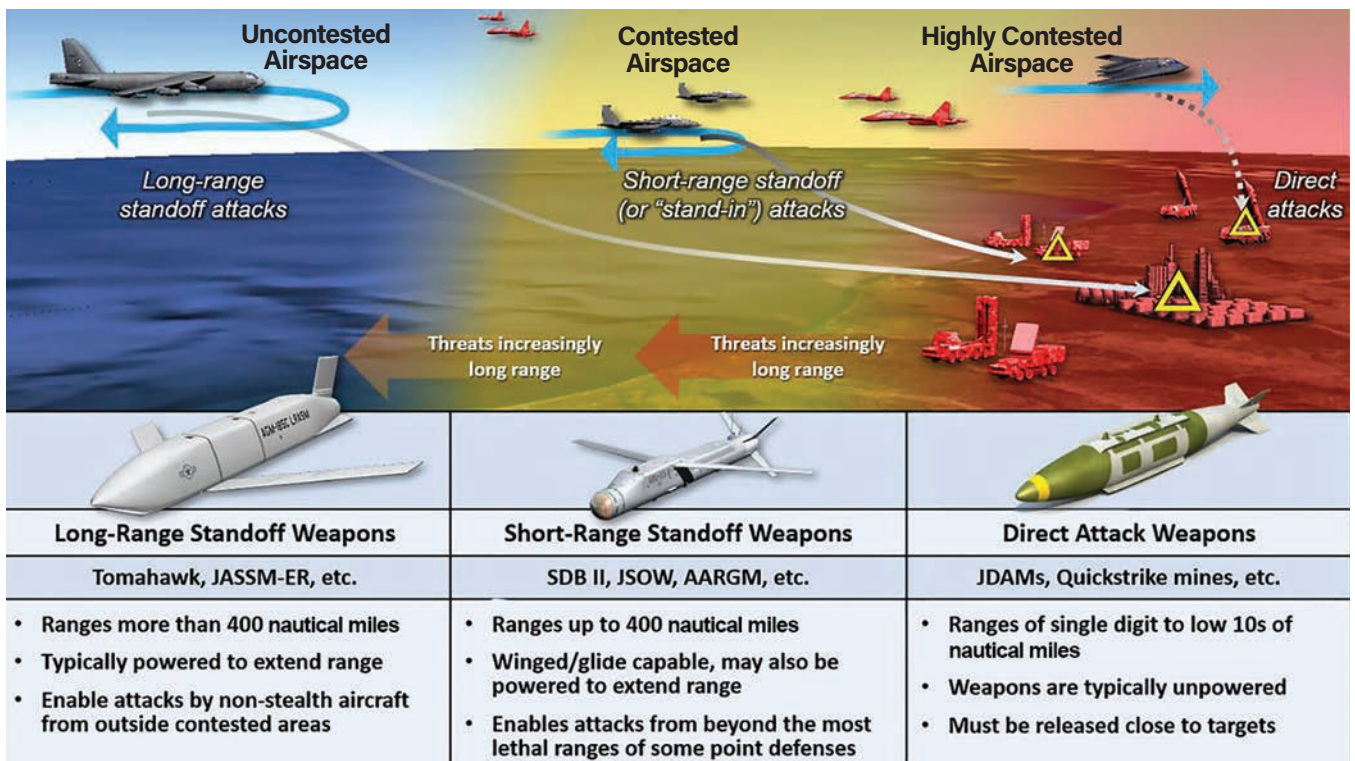
CONCLUSION

America's penetrating long-range strike force today consists of 20 stealth B-2s—the rest of the bomber force and all of the other services are limited to launching long-range strikes from outside contested areas during a conflict with a peer adversary. This reality invites China and Russia to field even longer-range air defenses that would drive USAF's nonstealth bombers and other aircraft further out in the battlespace. This in turn would require the Air Force to invest in new standoff weapons with even greater ranges and higher price points. Continued reliance on too much standoff strike capacity would create opportunities for peer competitors to invest in capabilities that would impose costs on the United States.

A force of at least 316 bombers is needed to support the U.S. National Defense Strategy. This force should consist of 76 B-52s and at least 240 fifth-generation B-21s. The choices made in coming years will fundamentally shape how our military will operate against great power aggressors. Long-range, penetrating strike bombers expand policy options, strengthening the hand of American leaders. Without this force, the United States will be at a severe disadvantage against peer competitors. ★

Range of Options

The closer attacking aircraft get to their targets, the greater the threat from integrated air defense systems. Only stealth aircraft can penetrate those defenses to deliver unpowered direct-attack weapons. Standoff weapons extend the reach of conventional platforms.





Let the Games Begin

The Air Force sees cooperative esports as both recruiting tools and boosts to resiliency.

By Amy McCullough

Well before the world locked down to stop the spread of COVID-19 and racial tensions boiled over across the United States, seven Airmen—a mix of officers and enlisted ranging from staff sergeants to captains—created a 24/7 gaming organization intended to connect Airmen regardless of rank, location, or Air Force Specialty Code.

Now the founders of Air Force Gaming (AFG) say their resiliency-focused organization is more important than ever.

“We’re trying to focus on getting people to continue to social distance without social isolation,” said Capt. Oliver Parsons, Air Force Gaming leader and chief. Parsons said Airmen between 18 and 39, collectively known as Generations Y and Z, often play video games alone in their rooms where “dark thoughts” can creep into their minds. “We’re trying to jump in there and be that support and community that everyone in those generations needs and wants.”

The grass roots team first pitched the idea of an Air Force Gaming organization to Air Force Recruiting

“What we've kind of realized through all these processes is there's a lot of bureaucracy when you're trying to get things going, especially things that are innovative, new, never been done.”

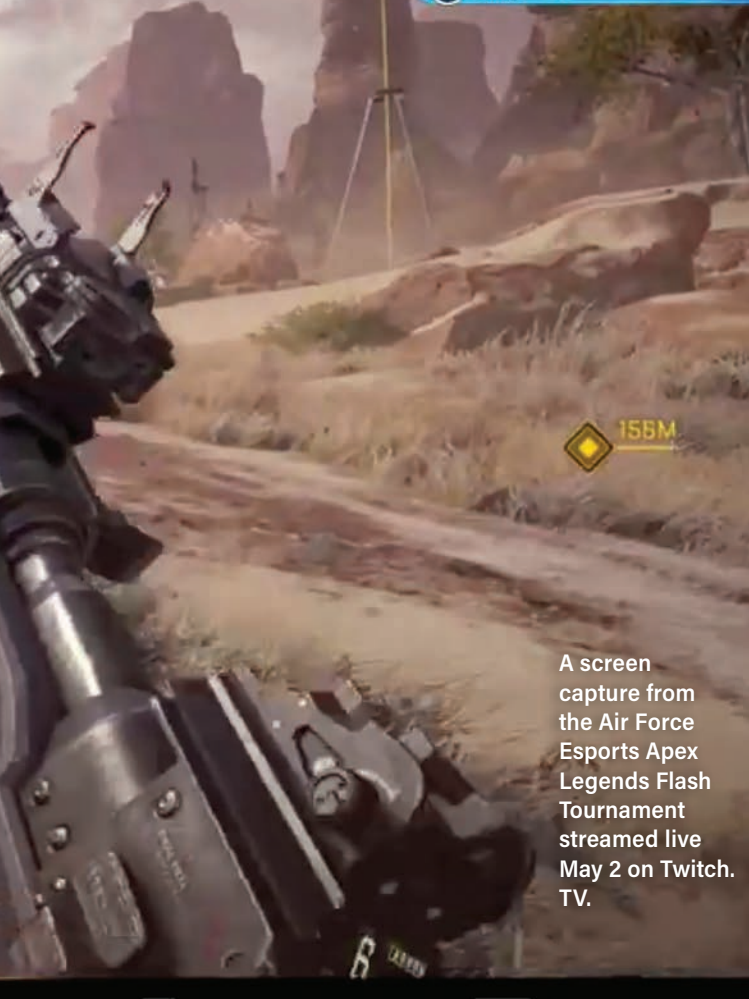
—Capt. Oliver Parsons, Air Force Gaming leader and chief

Services in February 2019, but “it kind of fizzled out from there,” Parsons said. Undeterred, Parsons and two other team members tried again in August 2019, reaching out directly to Maj. Gen. Jeannie Leavitt, then-commander of Recruiting Services. “I emailed her directly and I was like, ‘Well, shot in the dark. We’ll kind of see what happens,’” he said. “Thirty minutes later, I get an email reply back. I was even surprised that I got a response, but she’s like, ‘I love this idea. Let’s move forward.’”

The Air Force connected the team, then only three members, to another Airmen who had pitched a similar idea, and he joined the AFG team. In November 2019, the AFG concept got leaked to the Air Force amn/nco/snco Facebook group, and the AFG community saw explosive growth, increasing from only about 50 gamers to about 2,000 in just three days. A month later, the team made their official pitch to Leavitt via teleconference, but she thought AFG was a better fit for the Air Force Services Center, and the organization’s focus shifted from primarily recruiting to resiliency.

“What we’ve kind of realized through all these processes is there’s a lot of bureaucracy when you’re trying to get things going, especially things that are

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A screen capture from the Air Force Esports Apex Legends Flash Tournament streamed live May 2 on Twitch TV.

Air Force Esports Facebook page

innovative, new, never been done,” Parsons said. “You know a lot of leaders are skeptical at first, but then as soon as ... we kind of explain what we’re doing and what we’re all about they’re like, ‘Oh, I can get behind that.’”

Asked by an Airman at AFA’s 2019 Air, Space & Cyber Conference if he was aware of Air Force Gaming, Chief of Staff Gen. David Goldfein said he was. He said connecting with Airmen and creating an environment where they feel like they belong is challenging. Goldfein said he often stops at dining facilities when he travels, then finds Airmen sitting by themselves, usually with their back to him, “so they can’t run away” when he approaches. As he sits and talks, he keeps an eye on the stack of plates and Styrofoam takeout containers near the entrance, watching to see which ones people choose. His “unscientific surveys” suggest, he says, that Airmen increasingly choose to go back to their rooms alone.

“I worry sometimes we unintentionally incentivize a little loneliness in our Air Force,” Goldfein said. Gaming has the potential to help change that.

Since its founding, Air Force Gaming has held more than 10 resiliency engagements, collectively reaching 1.2 million people, including 20,000 unique livestream viewers. Airmen have spent at least 300,000 minutes talking to each other while playing or watching games.

In late March the team held its first livestream—a 36-hour gaming event dubbed “Operation Resilient Quarantine.” And in April, the grassroots Air Force Gaming team partnered with Air Force Recruiting Services for a community game night. Airmen played Call of Duty Warzone against Air Force-sponsored Indy 500 race car driver Connor Daly, said 1st Lt. Matt Matuszak, AFG assistant chief and gaming innovation leader. The roughly six-hour stream brought in around 10,000 unique viewers. Every Airman who wanted got a chance to play against Daly.

“We saw it as a way to connect with Airmen, and just give them an opportunity to play with each other and with Connor,” Matuszak said. “It was a very fun event ... and we were able to develop so many relationships to further continue our relationship with Air Force Services going forward.”

As the organization grew, so did its leadership team. All seven of AFG’s leaders today are mission-essential Airmen. They come from seven different bases across four time zones. Each works 40 to 60 hours a week trying to grow the gaming organization, none of that on Air Force time. They also balance family life.

Staff Sgt. Craig Bercsa, a 2A377B Green Flag MX Liaison at Nellis Air Force Base, Nev., for example, has five children, including two infant twins. “He’s the leader of our eSports program,” Parsons said. Matuszak is a missileer at Minot Air Force Base, N.D., who has been pulling two-week nuclear alerts since the start of the pandemic. When on alert, his work for AFG goes on hold.

“It’s definitely tough on the family life,” said Parsons, who teaches soon-to-be missileers at technical school at Vandenberg Air Force Base, Calif. He is transferring to the force support career field this summer so he can further pursue the team’s dream of incorporating AFG into the Air Force.

“Our end goal is to be able to get that manning and to be able to do this full time,” he said. “We can’t even fathom what the future holds and what the possibilities would be if this is our regular Monday through Friday day-to-day job.”

Esports, short for electronic sports, is a form of competitive gaming, where gamers can square off individually or as part of a team on livestreaming platforms such as Twitch that enable them to watch, play, or chat with millions of other players across the globe. Professional eSports tournaments are becoming more and more popular and usually pay out cash prizes, some in the millions of dollars for elite athletes. Esports origins can be traced back to the Space Invaders Championship in 1972, which had 10,000 participants. Fast forward to 2020, and eSports is now a \$1 billion industry.

NOT JUST FOR KIDS, ANYMORE

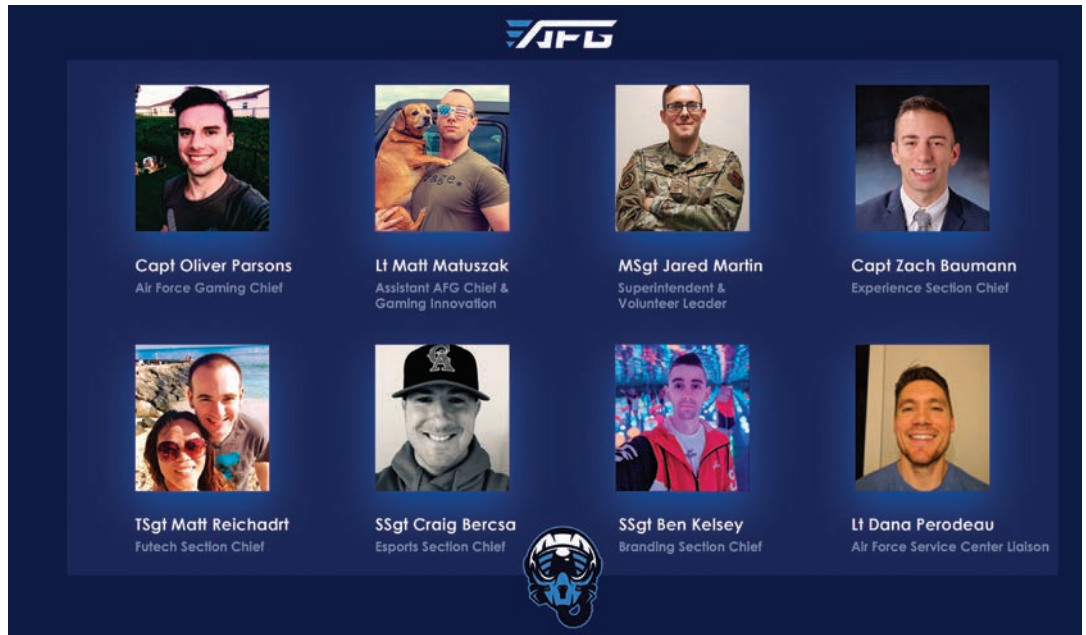
Sixty-five percent of American adults say they play video games, and nearly 80 percent say games provide mental stimulation and/or stress relief, according to the games and eSports analytics and market research site Newzoo. There are 450 million global eSports viewers, including 222.9 million enthusiasts and 272.2 million occasional viewers, meaning gaming is not only a way to connect, it’s also a great recruiting tool for the Air Force, said Parsons.

Air Force Gaming wants to utilize low-cost gaming and eSports activities and programs to offer virtual resiliency and indirect recruiting opportunities, which its leaders say will help build and strengthen the Total Force.

The Air Force Services Center (AFSVC) at Joint Base San Antonio-Lackland, Texas, is beta testing a USAF eSports team, where like other Air Force sports teams, Airmen will attend a tryout camp before making the team. Parsons is the first coach



The founding team and leaders of Air Force Gaming. Gaming is not entirely new to the Air Force—the Academy stood up a League of Legends (LoL) esports team in February 2018, as part of the Mountain West Conference, and the LoL World Championships in 2018 drew more viewers than that year's Super Bowl, according to an Academy team spokesperson.



Capt. Oliver Parsons

and is responsible for putting the team together. Air Force Gaming is serving as the team's training platform, said Col. Marc Adair, director of operations for Air Force Services.

"In early 2019, AFSVC initiated a review on how to implement eSports across the Air Force—in particular, how best to support our Airmen when it comes to delivering resiliency," Adair said. "Since we already had an existing working concept for an eSports program, Captain Parsons provided an opportunity to test the virtual concept, capture lessons learned, and allow AFSVC to deploy an eSports program in a deliberate manner that will best meet the Airmen's needs."

The service center aims to create a community services eSports program, and it plans to launch an Air Force All-Stars Series this summer, which Adair said would be an "Air Force E-gaming branded experience focused on readiness and resilience, featuring tournaments that link Airmen gamers against celebrity athletes." The All Star Series will include six professionally produced livestreamed episodes that will include commentary by "notable e-game sportscasters and content for NBA, MLB, NFL, and UFC segments," Adair said. "It is all very preliminary," he said.

Some Air Force leaders are imagining how gaming can help them connect and interact with the Airmen they lead. Last June, Air Combat Command boss Gen. James M. "Mike" Holmes, an F-15 pilot, fought his son, 1st Lt. Wade Holmes, an F-16 pilot, in a combat flight action game that was livestreamed on Twitch.

Thousands tuned in to watch the Holmes' dogfight and even crash their aircraft. But viewers had real questions, too. During the stream, the Holmes' discussed the pilot shortage, communications from the E-3 AWACS, the importance of air battle managers, and also answered questions about the aircraft they fly. They talked about the differences between real high-speed performance flying and arcade simulations, and offered advice to potential new recruits on joining the Air Force.

The younger Holmes was the clear winner in the virtual battle, but the wider Air Force won the day.

"This type of alternative interview format is a really great way to engage with our audience," said Michelle Clougher, chief



Capt. Oliver Parsons

Gaming can provide a social connection, mental stimulation, relaxation, and stress relief. For some deployed military members, gaming can be a lifeline.

of the ACC public affairs command information division, in a release. "We're always looking for a different way to tell the Air Force story, and these two rock-star pilots have a lot they can share. Ten years ago, we never would have thought to have our top fighter pilot play a video game while broadcasting it live to the whole world, but as our technologies evolve, so do we. We must communicate in a way that is meaningful and connects with people."

A few months later, Chief Master Sergeant of the Air Force Kaleth O. Wright gave gaming a shot during a resiliency-focused event dubbed "Friday Night Wright." During the stream, Wright talked about fostering an environment of inclusiveness and resilience.

"Be authentic, and be vulnerable," Wright said at the time.

He encouraged leaders to stay connected to their Airmen, even if it means pushing themselves outside of their comfort zone, later joking that he thought he "was going to be good because I asked him to play Tecmo Bowl 95," but [I] ended up getting "my butt kicked," said Wright.

"This wasn't a stretch for me. I don't play video games, but I do enjoy spending time with Airmen and spending time with people," Wright said. "A little time spent with our folks can go a long way." *

The Spaceplane: 60 Years On

The ultimate goal was to take off from Earth, fly a mission through space, re-enter the atmosphere, and land on a runway.

An artist concept of the X-30, the National Aerospace Plane (NASP), taking off. The painting ran on the cover of the June 1986 edition of Air Force Magazine.

By John T. Correll

When the X-15 rocket plane pilots got to the edge of space some 60 years ago, they carried two assumptions along with them: (1) that they would keep going, and (2) that their destiny lay above.

The idea of going into space had special appeal for the Air Force, which saw the “aerospace” domain as an extension of air operations closer to Earth. Airmen expected to fly in space and fight there.

It was understood, of course, that aerodynamics would not apply in deep space but hard vacuum was 1,000 miles out. That left plenty of margin to operate in low earth orbit, 60 to 300 miles above the ground.

"It is technically feasible for manned spaceflight to become routine in a very few years."

—Gen. Thomas White, Air Force Chief of Staff in 1958

"It is technically feasible for manned spaceflight to become routine in a very few years," said Gen. Thomas D. White, Air Force Chief of Staff in 1958. "In the not-too-distant future, efficient ballistic missiles and true piloted spacecraft will enter our forces as operational weapons."

Testifying to Congress in 1959, White said, "We foresee that we are not only going to have manned bombers and missiles, but that eventually we will have manned space vehicles as combat weapons in the future."

Early on, "the commonly held perception was that the airplane would itself evolve into a winged spaceship," said Richard Hallion, former historian of the Air Force.

The fighting vehicle of preference would be the “spaceplane” or “aerospaceplane,” and USAF pursued the concept for the next half-century. Some variants had pilots; some did not. Their wake is littered with failures and cancellations.

As it turned out, the military has numerous vital interests in space: communications, navigation, surveillance, early warning, weather. So far, however, it has not been established that there is a combat mission in space, or a military mission that requires a human crew.

Except for the space shuttle, no spaceplane yet has broken away from the X (experimental) designation.

TO THE MOON INSTEAD

The National Aeronautics and Space Act in 1958 directed that U.S. activities in space be “devoted to peaceful purposes” and created NASA, which—rather than the armed forces—would lead the leap into space.

Air Force’s “Man in Space Soonest” program was canceled, replaced by NASA’s Project Mercury. Also cut was the “Aerospaceplane”—all one word, no X designation—a loosely structured study conducted by the Air Force between 1957 and 1964 with 17 companies submitting proposals. Nothing came of it, and it ended when the funding was eliminated in 1964.

The Air Force managed to hang onto a few of its manned space programs, such as the X-20 Dyna-Soar spaceplane and the Manned Orbiting Laboratory, but these were overshadowed by and canceled in deference to NASA’s Mercury, Gemini, and Apollo projects.

The X-15 continued flying until 1968. It still holds the world’s record for highest speed ever reached by a manned, powered aircraft—4,520 mph, or about Mach 6.72. Its highest altitude was 67.0 miles. Astronaut wings were awarded for X-15 flights exceeding 50 miles.

After the moon landings, the manned space program lost focus. For NASA, the expedition into space was an end in itself and there was no real objectives other than science and exploration.

Emphasis eventually settled on the space shuttle, extremely useful but hardly the space combat vehicle that White had predicted.

LIFTING BODIES

The streamlined, elegant design of the X-15 was replaced

with the boxy fuselage of the X-20 and the blunt configuration of various “lifting bodies,” wingless spacecraft that could glide back from orbit and land on a runway. Aerodynamic lift, needed for flight in the atmosphere, was provided by the shape of the vehicle body itself.

One such was the manned X-24. It was carried aloft under the wing of a modified B-52, dropped off, and climbed from there on its own. It made 28 powered flights between 1969 and 1970, reaching Mach 1.6 and an altitude of 71,400 feet.

The Air Force had high hopes for the X-20 Dyna-Soar, which was to be launched atop a Titan missile but returned from orbit to an unpowered landing by a gliding style called “dynamic soaring.” The X-20 carried a single pilot in a forward cabin and was intended to perform multiple missions, including research, reconnaissance, and weapons delivery. It was envisioned as flying across the Soviet Union at an altitude of 50 miles, providing intelligence imagery faster and with better resolution than was possible from satellites.

In 1962, Secretary of Defense Robert S. McNamara stripped the X-20 program of weapons capability. Dyna-Soar never flew. It was canceled outright in 1964 before the first spacecraft could be built.

About the same time, the Air Force introduced the high-flying SR-71 Blackbird, with a design every bit as sleek as the X-15. However, it was a reconnaissance airplane, not a spaceplane. Its maximum speed was Mach 3.2 and its best altitude was 16.4 miles.

In 1969, the Air Force and NASA agreed to develop a reusable vehicle that would meet both civilian and military space requirements. This was the space shuttle. It was of enormous value, but it was basically a truck. It did not inspire visions of streaking across space on missions of glory. Nor was speed the primary consideration.

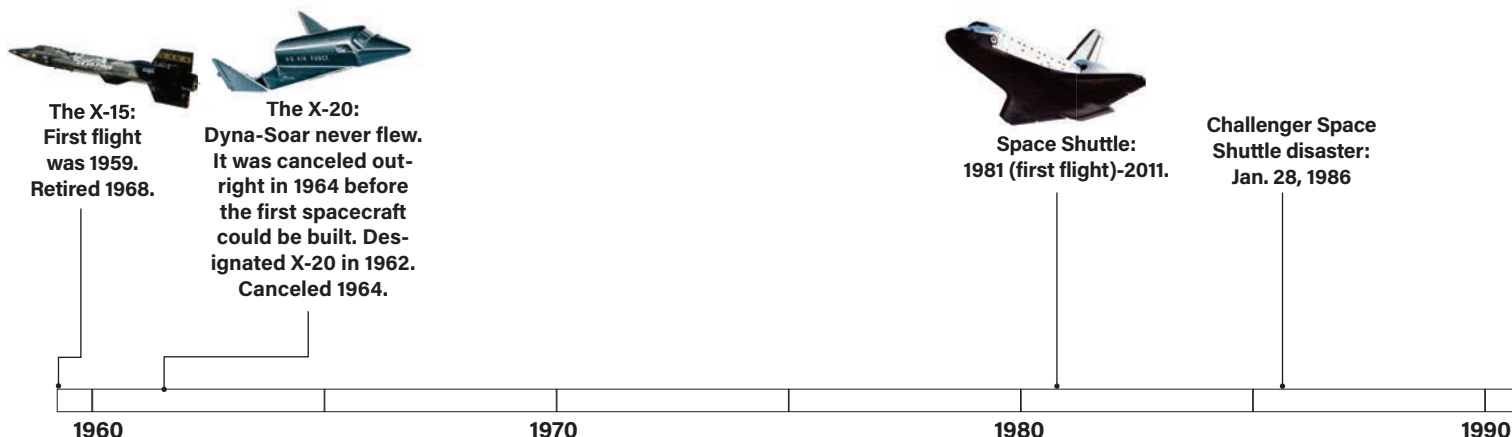
Between its first flight in 1981 and the last in 2011, the shuttle flew 135 missions in space, transporting people and cargo into orbit, launching and recovering satellites, and enabling access to the International Space Station.

ORIENT EXPRESS

The crown jewel of spaceplane concepts is the “aerospaceplane,” which takes off from a runway on Earth, reaches orbit in a single stage, flies through the transatmosphere at hypersonic speed—Mach 5 or faster—reenters the atmo-

Spaceplane Timeline

Of the dozens of spaceplane programs, only a few ever reached the stage of actual flight. The space shuttle was the only one to break away from the experimental “X” designation.





NASA

Crew members secure the X-15 rocket-powered aircraft in Nevada after a research flight in September 1961. The B-52 mothership used for launching this unique aircraft does a low fly-by overhead. The X-15s made 199 flights over nearly 10 years, set unofficial world speed and altitude records, and contributed to the Mercury, Gemini, Apollo, and space shuttle programs.

sphere, performs a mission, reenters space, and returns to land at a runway on Earth.

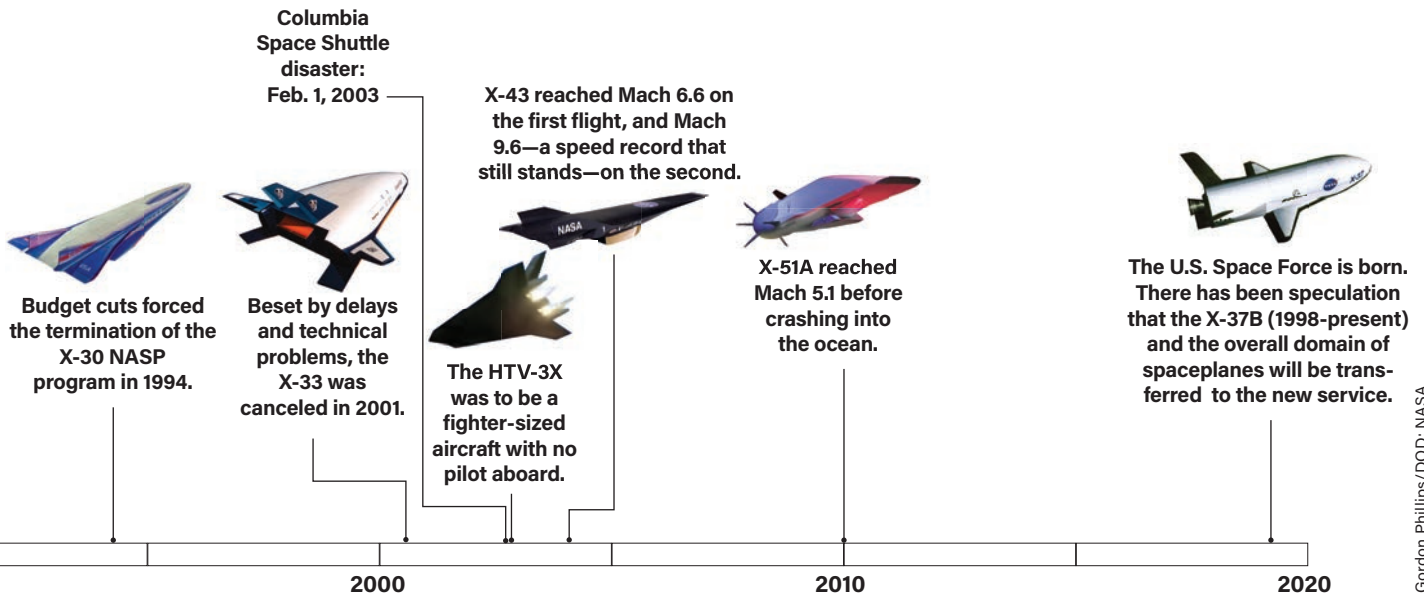
The most ambitious such program was the X-30 National Aerospace Plane, proposed by the Air Force in 1986. An Air Force Magazine cover from that year depicts the X-30 boiling up from a runway and headed straight for space. "As planned, the aerospaceplane will be capable of flight in two modes—single-stage into low-Earth orbit and hypersonic (Mach 12 to Mach 25) cruising in the transatmosphere at altitudes between 100,000 feet and 350,000 feet," the magazine said.

President Ronald Reagan was a strong supporter. In his

1986 State of the Union address, he predicted "a new Orient Express that could, by the end of the next decade, take off from Dulles Airport and accelerate up to 25 times the speed of sound, attaining low-Earth orbit or flying to Tokyo within two hours."

The expectation was that the X-20 might perform roles that varied from carrying satellites into orbit to reconnaissance, global interdiction, and interception of attacking forces in space and in the air.

"It offers strategic force survivability," said Gen. Lawrence A. Skantze, commander of Air Force Systems Command. "A



Gordon Phillips/DOD; NASA

The Boeing X-37B Orbital Space Vehicle landed at NASA's Kennedy Space Center, Fla., on Oct. 27, 2019, after a record-breaking 780 days in orbit.



NASA

fleet could sit alert like B-52s. We're talking about the speed of response of an ICBM and the flexibility and reliability of a bomber, packaged together into a plane that can scramble, get into orbit, and change orbit so [that] the Soviets can't get a reading accurate enough to shoot at it."

By the 1990s, though, the X-30 was behind schedule and 500 percent over budget. No compelling military requirement for it had been established, and budget cuts forced the termination of the program in 1994.

"MILITARY MAN" IN SPACE

The phrase "military man in space" was rendered obsolete in the United States in 1983 when Sally Ride flew on a Shuttle crew. The Russians had sent women in space even earlier. Nevertheless, the term continued in use for some time.

A "Military Man in Space" program was introduced in 1985 at the behest of Air Force Undersecretary (soon to be Secretary) Edward Aldridge. He acknowledged that efforts thus far had failed to identify a mission for military man in space, but he was determined to try again.

Studies and analyses over the next few years did not find such a requirement, and the program faded away in 1991. Uncrewed platforms did the job better and more reliably.

"Just look at the nature of things we do in space—communications, surveillance, warning systems, navigation. We don't use man for most of those things down on Earth, so why would we put man in space to do them?" asked Gen Donald Kutyna, commander of U.S. Space Command in 1990.

Kutyna noted that a great many satellites are at 22,300 miles distant, in geosynchronous orbits, and that it would cost far more to build the orbital transfer vehicles needed to "take Mr. Goodwrench out to those orbits" than it would to "build reliability into the vehicles [satellites] in the beginning. Every study we have ever done tells us to put the reliability into the vehicles, because we probably wouldn't be able to fix them once we got out there anyway."

In the 1990s, NASA and the Air Force sponsored research on a reusable launch vehicle, the X-33 VentureStar. It was to take off vertically and land horizontally, but no firm decision was made about whether there would be a pilot. Beset by delays and technical problems, the X-33 was canceled in 2001.

HYPERSONICS AND SCRAMJETS

Research into hypersonics—defined by scientific conven-

tion as movement at Mach 5 or higher—began in the 1950s. Speed was of inherent military interest and value, not only in aircraft and spacecraft but also in missiles and weapons.

"A hypersonic missile enables the seizure of opportunity against distant and perhaps fleeing targets," said historian Hallion. "In one minute, at Mach 6.5, a hypersonic missile flies approximately 73 miles, roughly eight times further than a conventional subsonic cruise missile. Thus in 10 minutes it can engage and destroy a target in excess of 700 miles from its launch point."

Hypersonics evolved toward new possibilities with the emergence of the scramjet, or supersonic-combustion ramjet, in the early 2000s.

Unlike a standard ramjet—in which the air intake reduces the flow before mixing it with fuel to ignite—a scramjet gulps in air at full supersonic strength. The difficulty of combustion, Hallion says, has been compared to "lighting a match in a hurricane."

Whereas ramjets operate from Mach 3 to Mach 5, scramjets enable flight at Mach 12 to Mach 15. A boost from an initial power source is necessary to accelerate the vehicle to supersonic speed, where the scramjet kicks in.

In 2004, NASA's X-43A technology demonstrator made aviation history with two successful flights of a scramjet aircraft at hypersonic speeds. The X-43A was launched off the coast of California by a B-52 and boosted further by a Pegasus rocket before the scramjet took over. It reached Mach 6.6 on the first flight, and Mach 9.6—a speed record that still stands—on the second.

The scramjet X-51A Waverider, a collaborative effort of the Defense Advanced Research Projects Agency and the Air Force in 2010, was likewise launched by a B-52 above the Pacific and traveled more than 230 nautical miles in just over six minutes, reaching Mach 5.1 before crashing into the ocean.

True believers have not given up entirely on the notion of an aerospaceplane. In 2003, DARPA and the Air Force began taking proposals for the HTV-3X Blackswift "hypersonic cruise vehicle." It was to be a fighter-sized aircraft—no pilot aboard—that would take off from a runway and fly at speeds up to Mach 15. It did not receive the necessary funding and was canceled in 2008.

BOOST-GLIDE WEAPONS

The Department of Defense has given hypersonics a high priority among critical modernization technologies. Extensive prototype testing of hypersonic missiles is underway in crash programs by all of the services to catch and surpass Russia and China, who have a head start. The Russians claim that their



46th Space Wing

The second X-43A hypersonic research vehicle, mounted to a (white) Pegasus booster attached to the right wing of a B-52 launch aircraft.

Avangard hypersonic missile can zoom at Mach 27.

The U.S. prototypes are mostly boost-glide systems rather than scramjets. A rocket boosts the weapon to hypersonic velocity at high altitude, after which it uses the speed of its gliding descent to hit and destroy targets. The advantage is not only in time alone but also the range that such a vehicle can achieve.

More reliance on scramjets is coming. "I entered this job thinking scramjet would probably be a step behind boost-glide, and I'm delighted to say that I was wrong. Scramjet is more mature and ready to go than I originally thought," USAF acquisition chief Will Roper said in April.

Repeatedly over the past several years, the Air Force has expressed its commitment to hypersonics, particularly in weapons. In February 2020, USAF announced that it would proceed with development of the Air-launched Rapid Response Weapon (ARRW). It will be carried by a bomber or fighter to altitude, where the glide body will detach and be accelerated to hypersonic speed by a booster.

Spaceplane development continues, although at a lesser priority, and the lineup of contenders has narrowed. In January, DARPA scrapped its XS-1 Phantom Express, an experimental spaceplane program in progress since 2013 as an effort to develop a reusable launcher to put medium-sized payloads into low-Earth orbit.

The XS-1 was to be an aircraft-like plane, taking off vertically with an expendable upper stage mounted on top of the fuselage and carrying the payload. After releasing the upper stage, the suborbital vehicle was to glide back to a runway landing. It was intended to fly a suborbital trajectory of about Mach 10.

THE X-37 IN ORBIT

Current attention to spaceplanes is focused on the Air Force's X-37B "Orbital Test Vehicle." It began in 1998 as a NASA technology demonstration, transferred to DARPA in 2004, and was taken over in 2006 by the Air Force, which developed its own variant, the unpiloted X-37B.

The X-37B is launched vertically into low-Earth orbit by an Atlas V rocket, returns to the atmosphere on command from

the ground, and lands horizontally on a runway.

USAF has two X-37B research vehicles, which between them have flown five missions in space since 2010. The spacecraft is shrouded in secrecy. The most astounding known feature is the duration of its flights.

At first launch in 2010, the Air Force forecast an on-orbit time of 270 days. Four of the five missions so far have done better than that. In October 2019, the X-37B landed at the Kennedy Space Center shuttle facility in Florida after a record-breaking 780 days on orbit. The flight has been nominated for the Collier Trophy, which recognizes great aerospace achievements.

The X-37B has been called "Space Shuttle Jr." Indeed, it does resemble the shuttle, although much smaller, and with one rocket bell instead of the shuttle's three. Two X-37Bs would fit inside the shuttle's huge payload bay. Their own cargo bays are about the size of a pickup truck bed.

USAF says little about the X-37B's purpose except that it is "testing out technologies for future spacecraft." Officials have denied that it is a weapon designed to attack or capture enemy satellites.

Last year, former Secretary of the Air Force Heather Wilson said the X-37B "can do an orbit that looks like an egg, and when it's close to the Earth, it's close enough to the atmosphere to turn where it is, ... which means our adversaries don't know—and that happens on the far side of the Earth from our adversaries—where it's going to come up next."

Jonathan McDowell of the Harvard-Smithsonian Center for Astrophysics added that, "The dip into the atmosphere causes a change in the timing of when it comes up next overhead. So [trackers'] predictions are off and [they] have to search for it all over again."

Since the creation of the U.S. Space Force, there has been speculation that the X-37B and the overall domain of spaceplanes will be transferred to the new service, but there has been no official indication of that thus far. ❖

John T. Correll was editor in chief of Air Force Magazine for 18 years and is a frequent contributor. His most recent article, "Japan's Last Ditch Force," appeared in the June issue.



AFA Nominees

2020-2021

Candidates for National Office and the Board of Directors.

The Air Force Association Nominating Committee met by video conference on May 2 and selected candidates to send forward for National Officer positions and National Director positions on the Board of Directors. The Committee consists of three past Chairmen of the Board, one person selected by each of the two Vice Chairmen of the Board, two representing each geographic area, and one person each representing the Total Air Force, Air Force veterans, and aerospace industry constituencies. The slate of the candidates will be presented to the delegates in September.

CHAIRMAN OF THE BOARD

Gerald R. Murray, King Mountain, N.C., nominated for a second-year term as Chairman of the Board, joined AFA in 1994, becoming a Life Member in 2002. Murray served 30 years in the Air Force, culminating as the highest-ranking



noncommissioned officer in USAF, the 14th Chief Master Sergeant of the Air Force. Prior, he performed various duties in aircraft maintenance and logistics with F-4,

F-16, and A-10 aircraft, and as a command chief master sergeant at wing, numbered air force, and major command levels. Murray's previous AFA involvement has been as a National Director, on the Membership Committee, Chapter 331 President, Force Capabilities Advisory Group member, AFA National Director at Large, and as the Georgia and Utah State Delegate. He earned a bachelor's degree in business administration from Saint Leo University in Florida and an associate of applied science in aircraft systems maintenance technology from the Community College of the Air Force. Murray has received the Air Force Distinguished Service Medal, a Bronze Star Medal, Defense Meritorious Service Medal, four AF Meritorious Service Medals, and three AF Commendation Medals. Additionally, he was the 1991 recipient of the Air Force Gen. Lew Allen Trophy. He has volunteered as an AFA Emerging

Leader Mentor, with the AFA Focus on Defense Forum, and with the Top of Utah Military Affairs Committee. Murray currently serves on the USAA Board of Directors, the Air Force Association National Board of Directors, the Air Force Museum Foundation Board of Trustees, the Air Force Enlisted Village Development Council, and the Air Force Memorial Foundation.

VICE CHAIRMAN OF THE BOARD, FIELD OPERATIONS

Peter E. Jones, Potomac Falls, Va., nominated for a first, one-year term as Vice Chairman of the Board, Field Operations, is a Life Member who joined AFA in 2000.



As the current Central East Region President, Jones has also served as President of the D.W. Steele Memorial Chapter (2009-2011); President of the Virginia State AFA (2011-2013); and as an AFA Director at Large (2013-2015). He is currently a member of the Field Council, Strategic Planning Committee, IT Subcommittee, and Field Leaders Development Subcommittee; he also serves as chair of the Region President's Subcommittee. He earned a bachelor's degree from Grove City College, Pa., in electrical engineering and a master's degree in systems management from the University of Southern California, in Los Angeles and Honolulu. As a career USAF communications officer, Jones was responsible for

designing, engineering, installing, testing, maintaining, and upgrading USAF communications/computer systems all over the world. He worked at base, Numbered Air Force, major command, and joint levels and held command positions at the squadron and group level. After retiring from the Air Force in 1997, he worked with industry partners developing and advocating for customer requirements and missions. He retired from industry in 2019 and now focuses exclusively on supporting and advocating for AFA and field initiatives.

Ross B. Lampert, Hereford, Ariz., nominated for a first, one-year term as Vice Chairman of the Board, Field Operations, is a Life Member who joined



AFA in 1975. He has held numerous AFA positions, including President Gerrity/Central Oklahoma Chapter; President Cochise Chapter, Arizona; President Arizona AFA; and

President Southwest Region. National AFA offices held by Lampert include: National Secretary (2017-18); member of the Field Council (2012-present); he created the Field Council Training Subcommittee in 2012, serving as Chairman until 2018, and continuing as a member to the present; and Chairman of the Field Leadership Development Team (2018-present). His has received the Oklahoma AFA Medal of Merit (2002); four Oklahoma Exceptional Service Awards; Oklahoma AFA Person of the Year (2003); and also an AFA Presidential Citation, two AFA Exceptional Service Awards, and two AFA Chairman's Citations. Lampert earned a bachelor's degree from the University of Colorado in physics, a master's degree from the University of Southern California in Geilenkirchen, Germany, in systems management, and a master's degree from the University of Central Oklaho-

ma in English, with honors. He retired from the Air Force in 2000 after serving in command and control and air battle management roles, receiving Defense Meritorious Service Medals, Air Medals, Aerial Achievement Medals, and an Air Force Commendation Medal. Lampert currently serves as a CyberPatriot Advocate for the Cochise Chapter in Arizona.

James W. Simons, Minot, N.D., nominated for a one-year term as Vice Chairman of the Board, Field Operations has been an AFA member and Community Partner since 1995. Simons has held AFA



positions including David C. Jones Chapter President and Treasurer, North Dakota State President, and the North Central Region President. He was a charter member of

the AFA Field Council and also served on the National Membership Committee. Simons has received the Air Force Association Medal of Merit; Exceptional Service Award; Chairman's Citation (2009); National Member of the Year (2014); and the Mary Anne Thompson Award (2009). He currently serves AFA as the National Director, Central Area. Simons earned a bachelor's degree in criminal justice from Michigan State University, a master's degree in systems management from the University of Southern California, and a master's degree in administration of justice from Wichita State University. A retired U.S. Army Military Police Officer of 18 years, Simons is currently a financial adviser for a financial services company. His volunteer work includes treasurer of a local community group and videographer at a community church. He is involved in Arnold Air Society/Silver Wings and is a member of the 2020 Wings Society.

VICE CHAIRMAN OF THE BOARD, AEROSPACE EDUCATION

James T. Hannam, Burke, Va., nominated for a third, one-year term as Vice



Chairman, Aerospace Education, an AFA Member since 1976. Hannam earned a bachelor's degree in engineering science from the United States Air Force Academy, a master's

degree in applied mechanics from Stanford University, and a master of business administration from Auburn University. He was a

fighter pilot with 100 combat missions over North Vietnam in F-105 Thunderchiefs. He also flew F-4 Phantoms in Southeast Asia and Europe and F-16 Falcons in Europe. Hannam served as an assistant professor in Engineering Mechanics and as a Flying/Soaring Instructor at the U.S. Air Force Academy, in Europe as Wing Director of Operations, IG Director of Inspection, and Aviano Group Commander, and on the TAC and Air Staffs in Fighter Requirements, retiring as a colonel. Hannam serves on the Executive Committee of the D.W. Steele Chapter, and previously as Steele Chapter President, Virginia State Secretary, Central East Region President, Director AFA Board of Directors, Long-Range Planning Committee, Chairman Strategic Planning Committee, and for the many years, Vice Chairman, Aerospace Education Council. AFA Awards include Medal of Merit, Exceptional Service Award, President's and Chairman's Awards, and AFA Member of the Year. After Air Force retirement he worked in business development. He is a member of the Red River Valley Fighter Pilots Association, MOAA, and Daedalians.

NATIONAL SECRETARY

Richard W. "Rick" Hartle, Layton, Utah, nominated for a third, one-year term as National Secretary. An AFA Life Member since 1998, Hartle has



served AFA on the national level as a National Director at Large from 2011 to 2014 and 2017 to 2018. He currently chairs the Audit Committee, has chaired the Devel-

opment Committee, and served on the Strategic Planning and Transition Constitution Committees. Hartle has been the Utah State President, Utah Aerospace Education Foundation President and Board Chair, AFA Utah Industrial Associates VP, and Ute-Rocky Mountain Chapter President. He has received a national-level Medal of Merit, the AFA Utah State Presidential Citation, and the Utah AEF Exceptional Service Award. He and his wife, Amy, are AFA Thunderbird Society members. His community involvement includes board positions with the Utah Defense Alliance, Strategic Deterrent Coalition, and the Top of Utah Military Affairs Committee. Hartle earned a bachelor's in electrical engineering from New Mexico State University and completed National Defense University and Boeing Leadership Center courses in management, business de-

velopment, finance, and leadership. Hartle is retired from a 35-year career with an aerospace contractor.

NATIONAL TREASURER

Charles L. Martin Jr., Fort Mill, S.C., nominated for a one-year term as National Treasurer. An AFA Life Member



since 1977, Martin has served as AFA National Treasurer, on the Finance Committee, and the Fresh Look Initiative Committee. Martin has received the AFA

Special Citation; AFA Medal of Merit; AFA Colorado Chapter Meritorious Service Award and Certification of Appreciation; and AFA Scheidecker Award. He earned a bachelor's degree in economics from Manhattan College, N.Y., and an MBA in accounting from Michigan State University. Retiring after 28 years of service in USAF as a comptroller, he served in executive staff or volunteer positions in national not-for-profit associations. Chuck holds certifications as an Internal Auditor and an Association Executive. His volunteer memberships now include the S.C. Governor's Task Force on Military Organizations, VFW, Indian Land Post-Investment Committee, Sun City Carolina Lakes Finance & Investment Committees, and Audit Committee, American Academy of Audiology.

NATIONAL DIRECTOR AT LARGE

The Nominating Committee submits four names for National Director at Large. Two will be elected for a three-year term.

Dwyer L. Dennis, Indialantic, Fla., has been an AFA Life Member since 2004. He



currently serves as President of the AFA Space Coast Chapter in Florida (previously named Cape Canaveral Chapter). In 2019, he received the AFA Heritage Award

from the Wright Chapter in Dayton, Ohio. Dwyer earned a bachelor's degree from the U.S. Air Force Academy in Colorado and a master's degree in systems management from the Air Force Institute of Technology at Wright-Patterson AFB, Ohio. An AF acquisition program manager, he retired from Active duty as a major general in 2018 serving as the AF Program Executive Officer for C3I & Networks and

previously serving as AFPEO for Fighters and Bombers. With over 35 years in USAF, he commanded at group and wing levels and served on majcom, Hq. AF, and OSD staffs. His decorations include the Distinguished Service Medal; Defense Superior Service Medal; Legion of Merit Medal; and the Defense Meritorious Service Medal. Dwyer currently works as Executive Vice President for a veteran-owned, small business aerospace consulting firm.

Stephen K. Gourley, Aurora, Colo., joined AFA in 2007 and has served as the Mile High 127 Chapter President and Colorado State President and Executive Vice President. He is currently serving as Colorado Mile High Chapter Vice President, Aerospace Education and State Vice President, Veterans Affairs. Gourley also serves as Aerospace



Education Council's Co-Vice Chairman, on the AFA Strategic Planning Committee, and is the Director of StellarXplorers. He received the Colorado Medal of Merit; Exceptional Service Award; and Presidential Award for Excellence; as well as National level Medal of Merit Awards and a Special Citation, and Chairman's Citation. Gourley earned a bachelor's degree in astronautical engineering and a master's degree from the Massachusetts Institute of Technology and a master's degree in national resource strategy from NDU. He retired from USAF after more than 26 years of service in the space field, working in science and technology; research, development, test, and evaluation; and operations. He currently works as the president of an engineering and management consultant company.

William J. Harding, Manhattan Beach, Calif., has been a member of AFA since 1982. He's served for a decade on the Los Angeles AFA Schriever Chapter Board and as their Scholarship Chairman. He also



received the Chapter's Young Engineer of the Year Award in 1989. He currently serves as the Schriever Chapter Executive Vice President. Harding earned a bachelor's degree in engineering sciences from the USAFA and an MBA from the University of Central Florida. He was a distinguished graduate of SOS and ACSC. Harding retired as a colonel from the USAF after serving 28 years working in engi-

neering and acquisition (space programs). After transitioning from the Air Force, he was Director, Los Angeles Ops for United Launch Alliance. He volunteers with the Mira Costa High School STEM program and with their football and track teams. Harding currently works as president of a space consulting company.

Leonard R. Vernamonti, Clinton, Miss., is an AFA Life Member, joining in 1967. He has served as an AFA Chapter, State, and Region President; National Direc-



tor at Large; Director Emeritus; and National Treasurer. He has also served on the AFA Executive Committee; as Chairman of the Finance, President's Evaluation and Compensation, and Audit Committees. Vernamonti served on the afa21 Field Structure Team, the Field Council, Constitution, R&D, and Development Committees. He received two AFA Medals of Merit; the Chairman's Award for Meritorious Service; the AFA Exceptional Service Award; and the Jack Gross Award. Vernamonti earned a bachelor's degree in economics from the USAFA and a master's degree in systems engineering from the University of Florida. Retiring as a colonel after serving over 26 years in RD&A Program Management, as a comptroller and planning & program officer. Awards earned include the Defense Superior Service Medal; two Legions of Merit Medals; and the Defense Meritorious Service Medal. He was also awarded the Master Missileman Badge and the Senior Space Badge. Vernamonti currently works as a consultant.

NATIONAL DIRECTOR, EAST AREA

The Nominating Committee submits two names for National Director, East Area. One will be elected for a three-year term.

F. Gavin MacAloon, Nashua, N.H., nominated for National Director, East Area, is a Life Member who joined AFA in 1984.



"Mac" was the longest serving Vice Chairman of the Board for Field Operation in AFA's history, from 2016 thru 2020. Prior positions include three years as the Central East Region President and three years on the Field Council as Chairman of the e-Business and the

Emerging Leader Program Subcommittees. He is a Founding Member of AFA's Wounded Airman Program and served in other National-level positions on the Nominating Committee, and as Supervisor of Elections, and in several other chapter and state positions, including President of the D.W. Steele Sr. Memorial Chapter in Northern Virginia and Vice President for Fund-raising, Virginia State AFA. He has received an AFA Chairman's Citation, an Exceptional Service Award, a Medal of Merit, an AFA Fellowship and numerous awards from the region, state, and Chapter, most notably the 2012 Virginia Member of the Year. Mac earned a bachelor's degree in psychology from Southeast Missouri State University and a master's degree in administration from Central Michigan University. He served in the Air Force for 22 years as a Master Air Battle Manager on AWACS and the Airborne Battlefield Command and Control Center (ABCCC) aircraft, accumulating 3,000 hours, including 500 combat support hours. Mac also served in the Pentagon on the Air Staff and on the initial cadre of Joint Task Force Four in Key West. Following USAF retirement, he completed a second career with a large aerospace company as a business development manager, working with AWACS, C-17, and UAS programs, Mac is currently a Senior Acquisition Program Manager for the PEO, C3I & Networks/HNX, at Hanscom AFB, Mass. He is a member of the Military Officers Association of America (MOAA), MOAA of New Hampshire, and The River Rats.

Jimmy W. Ruth, Yorktown, Va., nominated as National Director, East Area, is a Life Member of AFA, joining in 1975. He is on the Field Council as the Technology Subcommittee, Chair. Ruth currently serves



as the Virginia State AFA Vice President, Communications and has also served on the state level as President; Secretary; Vice President, Awards; and Vice President, Leadership Development. Ruth previously served as AFA Langley Chapter President, Executive Vice President, Secretary, and Vice President of Awards. He holds a bachelor's degree from Oklahoma State University, a master's degree from Webster University and from Naval War College. Retiring from USAF after serving over 29 years as an Air Battle Manager. Ruth's community involvement includes NDIA, Tidewater Association of Service Contractors, MOAA, and Friends of CAP.

AFA Hands Social Media Reins to the 'Experts'

By LaDonna Orleans

Members of the Arnold Air Society took control of AFA's Instagram account for five successive weekends in May, sharing their unique perspectives as cadets celebrated the end to a stunningly atypical academic year.

Social media takeovers are a form of marketing in which an organization lets an influencer take over its account for a set period of time. In this case, 15 AAS cadets shared videos, images, and stories during the weekly takeovers. "Our objective was to partner with AAS, who are all AFA members, to leverage their talents, skills, and passion ... to attract new followers, increase awareness of the AFA mission, and, at the same time, share with our current followers and membership base all the cool things AAS and [Silver Wings] are doing," said Tyler Johnson, AFA National Director.

"People love hearing personal stories and seeing familiar faces, and during a time when people are missing social interaction, it was the perfect opportunity," said newly commissioned 2nd Lt. April Patko, a recent graduate of Rutgers University and AAS National Commander. "We wanted to take the time to recognize some graduating seniors, while also focusing on reaching a younger audience to boost AFA membership in that younger age range."

During the takeover, Jessie McLaughlin, AAS National Director of Public Affairs, and I did "a lot of work behind the scenes ... engaging with the followers, reaching out to those who follow accounts with similar interests to AFA, and finding Active-duty friends to participate in videos," Patko said. "Those things really made a difference," prompting a 29 percent increase in Instagram followers.

AFA plans future takeovers using Patko and McLaughlin's expertise




Daniel Pesci

2nd Lt. April Patko introduces herself on the AFA Instagram account this spring. Patko was given the "keys" to AFA's Instagram account in a project coordinated with the Arnold Air Society.

to highlight a variety of AFA members.

"Jessie and April have been gracious enough to agree to continue assisting us with developing goals and strategies for our Instagram account by engaging different influencers throughout our membership," said Bridget Dongu, AFA Communications Director. "They'll help coordinate monthly takeovers with a wide-range of voices" including Active-duty, retired, enlisted, and officer members of the Air Force and Space Force.

AFA's social media accounts (Facebook, LinkedIn, Twitter, and Instagram) boast nearly 100,000 followers. AFA chose Instagram for takeovers because it appeals to a younger demographic and is the one with the most room for growth.

"This social media takeover was a quick win and the first of many events that will showcase what our young members are doing and encourage others to follow and support our mission." 

Mitchell Fellows Move on to Great Things

The Air University has cycled 14 Air Force Fellows through the Air Force Association and its Mitchell Institute for Aerospace Studies think tank in the past six years. More fellows are headed to Mitchell soon.

USAF selects some 100 officers and civilians each year to serve 10- to 18-month tours within the Department of Defense, other government agencies, legislative offices, and distinguished civilian institutions. The officers receive Senior or Intermediate Developmental Education credits and invaluable experience. The institutions gain the insights and services of some of the Air Force's best and brightest mid-career talent.

"What Mitchell Institute provides the fellows is an environment that blends a broadening, intergovernmental agency experience with an in-depth understanding of the relationships between the Department of Air Force, the other services, Congress, and the reality of the interdependencies among each of these critical nodes of national security," said retired Lt. Gen. David Deptula, dean of AFA's Mitchell Institute.

Fellows at the institute execute original research, edit white papers, write op-ed pieces, and help with social media strategy, while Mitchell staff provides mentorship and access to key networks within Air Force leadership, congressional staff, and top aerospace industry executives.


Lt. Col. Rob Smith, who just concluded his fellowship at the Mitchell Institute and is headed to the Pentagon to work on the A5 team,

said, "I truly believe that Mitchell fellows are provided with a more well-rounded experience on the inner workings of DOD through access to senior leaders."

The great thing Fellows bring is their "flight-line honesty," said Mitchell Institute Executive Director Doug Birkey. "They provide the field perspective of what's really going on: What's working and not working in current operations? Is what we're doing valuable? Is it useful? Are we hitting the target or not?"

Last year, Deptula added the Institute's first enlisted legislative fellow and two senior developmental educational fellows to his charge, in addition to the usual Strategic Policy Fellows. Going forward, Deptula said the think tank will sponsor two IDE and two SDE fellows each year.

Mitchell Institute Fellows excel in their careers and have gone on to prestigious positions, including an F-22 squadron commander; an F-35 squadron commander; an F-35 operations support squadron commander; an executive officer to the Undersecretary of the Air Force; a logistics readiness squadron commander; key planning positions on the Air Staff and at U.S. Space Command; and other prized assignments.

Air Force Fellows are assigned via the Developmental Education Designation Board based on military records, academic credentials, and potential for senior staff/command duty. To learn more or submit an application visit <https://www.airuniversity.af.edu>. 



1 Ervin David Shaw. **2** P-51 Mustang at Shaw Field, 1946. **3** Shaw maintainers work on an F-16.



Courtesy (1,2): Staff Sgt. Destinee Sweeney

SHAW

Hot Tamale

David Ervin Shaw, namesake of Shaw AFB, S.C., was an American flier who literally couldn't wait to fight in World War I.

The South Carolinian, halfway through U.S. pilot training, abandoned his Army career and joined the Royal Flying Corps. It was his shortcut to air combat—and a hero's death—in France.

Shaw was born into a prominent family in 1894 in Alcolu, a tiny lumber and mill town on South Carolina's coastal plain. He and his parents moved to Sumter when he reached grade-school age.

Exuberance was his hallmark. When excited about something, he would shout, "Hot tamales!" Hence his nickname: "Molly."

Molly was a daredevil teenager who liked fast cars. In fact, his grandfather, a timber magnate, built him his own racetrack so that he could constantly indulge his need for speed.

Not yet 17, he graduated with Sumter High School's Class of 1911 and went to college. In June 1913, he joined the Army, where he spent four years as an enlisted man.

The U.S. entered World War I in April 1917, and Shaw saw a new opportunity. In September 1917, he became an aviation cadet and set out to become a commissioned pilot and go fight Germans.

Molly, by early 1918, had soured on Army aviation; he was not getting to war quickly enough. He sought and received an honorable discharge and took a commission in the Royal Canadian Flying Corps, a training arm of Britain's Royal Flying Corps.

First Lt. Shaw left Canada for England, where in April 1918 the American was attached to the new Royal Air Force (RAF)—formed from the Royal Flying Corps and Royal Naval Air Service—for advanced flight training.

In May 1918, Molly finally achieved his goal. He was reassigned to France as part of RAF No. 48 Squadron, a combat unit that eventually boasted 32 aces. As a Bristol F2B Brisfit pilot, he was soon in action against hardened German airmen.

Shaw volunteered for the most dangerous reconnaissance missions. Twice, his airplanes were shot to pieces—though he landed in friendly territory both times. He also shot down two German airplanes in his short combat career.

A fellow pilot noted, "We all regarded Molly as the most daring and skillful pilot among us."

On July 9, 1918, Shaw and his British observer, RAF Sgt. Thomas W. Smith, took off alone for a recon mission over the Somme River and behind German lines. Their return to base was blocked by three German fighters, which jumped the lone RAF aircraft and began a furious air battle. Shaw shot down one of the Germans, but his Bristol was raked by gunfire and exploded in midair. Shaw and Smith both were killed. They are buried in France.

In 1941, the U.S. named a South Carolina base Shaw Army Air Field, in honor of the heroic native son. It is one of the nation's largest military bases and is under the jurisdiction of Air Combat Command. USAF's 20th Fighter Wing serves as the host unit.



ERVIN DAVID SHAW

Born: Sept. 13, 1894, Alcolu, S.C.
Died: July 9, 1918, Northern France
Colleges: Davidson College, N.C.; University of Georgia
Nationality: American
Occupation: U.S. enlisted member, British military officer
Services: U.S. Army—Infantry, Signal Corps; Royal Flying Corps; Royal Air Force
Main Era: World War I
Years Active: 1913-18
Combat: Western Front
Final Grade: First Lieutenant
Resting Place: Grandcourt, France

SHAW AIR FORCE BASE

State: South Carolina
Nearest City: Sumter
Area: 178 sq mi / 11,403 acres
Status: Open, operational
Opened as Sumter Army Air Field: Aug. 7, 1941
Renamed Shaw AAF: Aug. 30, 1941
Renamed Shaw Air Force Base: Jan. 13, 1948
Current owner: Air Combat Command
Former owners: Army Air Forces—Southeast Training Center; AAF Eastern Flying Training Command. USAF—First Air Force, Continental Air Forces, Air Defense Command, Continental Air Command, Tactical Air Command
Home of: 20th Fighter Wing



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