

# AIR & SPACE FORCES

airandspaceforces.com



Security Clearances Under Scrutiny 26

A New Fix for JROTC 36

# RESCUE & THE HIGH-END FIGHT

Rethinking Combat Search and Rescue in the Pacific 28



Published by the  
Air & Space Forces  
Association

May 2023

\$8



0 74470 29757 4 0 5 >

# **Your IRA**

## ***The Gift of a Lifetime***

---

**Did you know a gift to AFA can satisfy the mandatory withdrawals from your IRA and help you avoid taxes on your hard-earned savings?**

---

**If you have an IRA and are in your 70s, making a charitable gift to AFA directly from your IRA can give you the satisfaction of a well-placed gift and the benefit of lower taxes!**



## **Put Your IRA to Work for Airmen and Guardians!**

- Contact your IRA plan administrator
  - Ask to arrange for a funds transfer to AFA through a Qualified Charitable Distribution (QCD)
  - By transferring your gift directly, your gift remains tax free!
  - Beginning the year you turn 73, your gift can satisfy all or part of your required minimum distribution!
- 

**To learn more about planned giving at AFA, contact the AFA Development Team at [Development@afa.org](mailto:Development@afa.org)**

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



3rd Audio Visual Squadron

# AIR & SPACE FORCES

May 2023, Vol. 106, No. 5

airandspaceforces.com

## DEPARTMENTS

- 2 Editorial: Youth and Consequences**  
By Tobias Naegele
- 4 Letters**
- 4 Index to Advertisers**
- 7 Verbatim**
- 8 Strategy & Policy: New F-35 Engines: You Can't Always Get What You Want**
- 10 Airframes**
- 16 Faces of the Force**
- 17 World:** The end of U.S.-Russia nuclear data sharing; No F-16s for Ukraine; F-15Es join F35s at Kadena; Billions to keep F-22 viable; CCAs coming in late 2020s, and more.
- 44 AFA in Action:** Military Caregiver Month; AFA Seidel Chapter Vietnam Commemoration; AFA D.W. Steele Chapter STEM Showcase
- 48 Heroes and Leaders:** Capt. Eddie Rickenbacker

## FEATURES

- 28 Rescue and the High-End Fight**  
**By David Roza**  
Think combat search and rescue is no longer viable? These Air Force rescue pilots say, 'Think again.'
- 32 Accelerating 5th-Gen Airpower**  
**By Lt. Gen. Joseph Guastella, USAF (Ret.), Lt. Col. Eric Gunzinger, USAF (Ret.), and Doug Birkey**  
It's time now to ramp up F-35A production beyond 48 jets per year.
- 36 Recalibrating JROTC**  
**By Greg Hadley**  
DOD hits reset button on high school instructor qualifications, opening jobs to more candidates.
- 40 Clearing the Air on Lavelle**  
**By Nick Adde**  
Gen. John D. Lavelle lost his job in 1972 for allegedly overstepping his bounds. Evidence shows he was following the intent of his commander in chief.

**Retired Senior Master Sgt. William Hardy with his JROTC class at Klein Forest High School in Houston. A 22-year veteran, Hardy has been a JROTC instructor for more than 16 years.**

## STAFF

- Publisher**  
Bruce A. Wright
- Editor in Chief**  
Tobias Naegele
- Managing Editor**  
Juliette Kelsey Chagnon
- Editorial Director**  
John A. Tirpak
- Assistant Managing Editor**  
Chequita Wood
- Senior Designer**  
Dashton Parham
- News Editor**  
Greg Hadley
- Pentagon Editor**  
Chris Gordon
- Production Manager**  
Eric Chang Lee
- Senior Editor**  
David Roza
- Photo Editor**  
Mike Tsukamoto

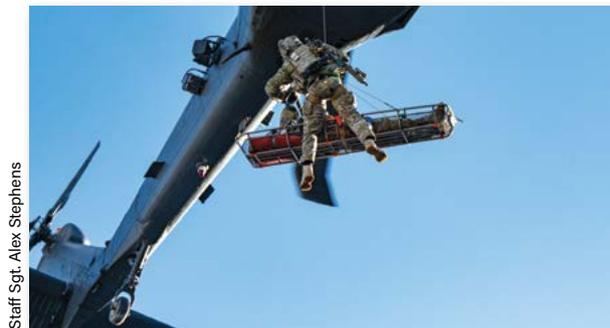
- Contributors**  
Nick Adde, Doug Birkey, Lt. Gen. Joseph Guastella, USAF (Ret.), Lt. Col. Eric Gunzinger, USAF (Ret.), Col. Phillip S. Meilinger, USAF (Ret.)



- ADVERTISING:**  
Kirk Brown  
**Senior Director, Marketing Solutions**  
703.247.5829  
kbrown@afa.org

- SUBSCRIBE & SAVE**  
Subscribe to *Air & Space Forces Magazine* and save big off the cover price, plus get a free membership to the Air & Space Forces Association.  
**1-800-727-3337**

## ON THE COVER



Staff Sgt. Alex Stephens

A Pararescueman assigned to the 55th Rescue Squadron, Davis-Monthan Air Force Base, Ariz., hoisted into an HH-60G Pave Hawk to recover a simulated patient during Red Flag-Nellis 23-1 in February. The Pave Hawk will be replaced with the HH-60W Jolly Green II.

**Air & Space Forces Magazine** (ISSN 0730-6784) May 2023 (Vol. 106, No. 5) is published monthly, except for two double issues in January/February and June/July, by the Air & Space Forces Association, 1501 Langston Blvd, Arlington, VA 22209-1198. Phone (703) 247-5800. Periodical postage paid at Arlington, Va., and additional mailing offices. **Membership Rate:** \$50 per year; \$35 e-Membership; \$125 for three-year membership. **Subscription Rate:** \$50 per year; \$29 per year additional for postage to foreign addresses (except Canada and Mexico, which are \$10 per year additional). Regular issues \$8 each. USAF Almanac issue \$18 each. **Change of address** requires four weeks' notice. Please include mailing label. **POSTMASTER:** Send changes of address to Air & Space Forces Association, 1501 Langston Blvd, Arlington, VA 22209-1198. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air & Space Forces Association. Copyright 2023 by Air & Space Forces Association.

# Youth and Consequences

Americans discovered in April that hundreds of pages of secret documents had been posted on Discord, a voice and chat platform favored by the gaming community, and later spread to the wider worldwide web.

Within days, authorities tracked down and arrested 21-year-old Air National Guard Airman 1st Class Jack Teixeira for allegedly abusing his TS/SCI security clearance by copying and distributing documents on the web.

How is it, the public wondered, that our military trusts people so young with secrets so large? Is it wise to entrust those under 25 with national secrets when Hertz and Alamo won't even rent them a car?

The case is reminiscent of that of Chelsea Manning, who as a 23-year-old Soldier, was arrested in 2010 for giving hundreds of thousands of secret documents to WikiLeaks. Initially sentenced to 35 years in prison, Manning's sentence was commuted in 2017 in what remains a profoundly baffling decision.

Both cases involve very junior service members whose access to secret files was compromised, despite oaths of office, nondisclosure agreements, and extensive training. Both made use of the internet to share a volume of data that would have been all but impossible prior to the digital era.

The fact is, the military could not function if it didn't trust volunteers in their teens and early 20s with security clearances. Indeed, the vast majority earn and deserve that trust.

Just under 3 million individuals held some kind of U.S. security clearance as of October 2019, according to a redacted report from the National Counterintelligence and Security Center. Another 1.3 million were cleared but were not actually accessing classified material at the time.

Even if 99.99 percent of those cleared individuals could be trusted, 430 risky parties would remain. Some might be foolish and sloppy, others criminally culpable. Either way, leaks are inevitable.

Conventional measures for mitigating that risk focus on foreign connections, debt troubles, addiction, and lifestyle choices that could make someone subject to blackmail. Eliminate those and most risks disappear. But it's harder to nail down psychological factors that may arise well into adulthood or the poor judgment that comes from a less-than-fully developed brain. Science tells us the frontal lobe isn't fully developed in men until they're 25 or so.

A 2021 RAND study, "Updating Personnel Vetting and Security Clearance Guidelines for Future Generations," notes that today's young people not only grew up in a different world than their parents and grandparents, but that their attitudes, choices, and lifestyles are vastly different as well. That suggests continued changes to the way we clear people—and monitor them over time—must likewise evolve.

Clearance investigations examine 13 factors: allegiance to the United States; foreign influence; foreign preferences; sexual behavior; personal conduct; financial matters; alcohol consumption; drug and substance use and abuse; psychological conditions; criminal conduct; past handling of protected information; outside activities; and use of information technology.

It's the last of these that demand more attention and study.

Though there is no public database that shows which of these factors is most likely to sink a clearance request, it is clear which factors are the cause of cases that get appealed. Most common are financial matters, personal conduct, and foreign influence, RAND reports. Use of information technology is among the least common. That suggests such cases are either rarely disputed (which seems unlikely) or that investigators make few denials for digital activity.

Ours is a trust-but-verify system. The thin line between reasonable security and invasion of privacy is easily breached. The digital profile of gamers sharing screenshots and gaming advice is not so different from that same gamer leaking classified documents. The only way to tell the difference is to see exactly what is being posted.

This is the biggest difference between our free society and the oppressive regimes in Russia, China, North Korea, and Iran. We draw a sharp line around personal freedoms; they summarily ignore them. Every member of the military swears to uphold and protect our Constitution, which not only spells out First Amendment freedoms—religious liberty, free speech, a free press, the right to assemble, and the right to petition our government for the redress of grievances—but also protects against unreasonable search and seizure and self-incrimination.

Military members effectively surrender some rights when they take their oaths, but not these.

Younger generations are more likely to have immigrant parents than their parents did or to have moved here themselves. They are more likely to have overseas contacts, more likely to

have experimented with drug use, and are more open to unconventional relationships. They are less judging of homosexual and non-monogamous relationships.

Yet the biggest difference between the 1980s and today is the ubiquity of digital technology. For digital natives born in the 1990s and later, computers, social media, and digital sharing have always been there. What's surprising in RAND's observation that 88 percent of 18 to 29-year-olds use some form of social media is that the figure isn't greater.

"We found ... younger adults are the most active on social media and how much information they share online appears to be on the rise," RAND reported. This generation is also relatively blasé about security, as evidenced by the vast popularity of apps like TikTok.

RAND recommended new guidelines to broadly address "the personal conduct that individuals may exhibit online," including "the timing, frequency, and context of problematic conduct by clearance applicants." That's a start.

Efforts to require what might amount to digital strip-searches of every service member in exchange for clearance would violate the definition of unreasonable search and the nature of our system of trust. It's on the government to verify and monitor that trust.

One of the prices of freedom is risk. By granting individuals some benefit of the doubt we uphold their human rights; to ensure compliance, violators must be held to account.

America must trust our young. The vast majority of those who raise their right hand honor their oath and deserve that trust. Those who don't must be held accountable as an example to all. 

**Even if 99.99 percent of those cleared individuals could be trusted, 430 risky parties would remain.**

# OPERATIONAL IMPERATIVES RESOURCE CENTER

Everything you need to know in one place  
—from a source you can trust.

[www.AirAndSpaceForces.com/operational-imperatives/](http://www.AirAndSpaceForces.com/operational-imperatives/)

The screenshot displays the 'Operational Imperatives' resource center website. At the top, it features the 'AIR & SPACE FORCES MAGAZINE' logo and navigation links for 'NEWS', 'DAILY REPORT', 'MAGAZINE', 'ABOUT US', 'OPERATIONAL IMPERATIVES', and 'AIRC 23'. A search bar and a 'Subscribe' button are also visible. The main heading is 'Operational Imperatives', followed by seven numbered icons representing key areas: 1. SPACE ORDER OF BATTLE, 2. OPERATIONALLY FOCUSED ARMS, 3. MOVING TARGET ENGAGEMENT, 4. TACTICAL AIR DOMINANCE, 5. RESILIENT BASING, 6. GLOBAL STRIKE, and 7. READINESS TO DEPLOY AND FIGHT. Below this is a 'Featured Video' section with a video player showing Air & Space Landover in Action with Air Force Secretary Frank Kendall. A quote from Frank Kendall is displayed: 'My highest personal goal has been to instill a sense of urgency about our efforts to modernize and to ensure that we improve our operational posture relative to our pacing challenges. China, China, China. The most important thing we owe our Airmen and Guardians are the resources they need, and the systems and equipment they need, to perform their missions. To achieve this goal, I've concentrated work on seven operational imperatives. These imperatives are just that: if we don't get them right, we will have unacceptable operational risk.' Below the video are several article thumbnails: 'Meet The Airmen Trained To Repair Massive Aircraft Battle Damage In The Next Big Fight' (March 14, 2023 | By David Rosa), 'In 2024 Budget, USAF Pushes Major New Aircraft Starts' (March 13, 2023 | By John A. Tisak), 'Space Force Budget Would Soar by 15 Percent in 2024' (March 13, 2023 | By David Rosa), 'Air Force, Space Force Push for Sweeping Modernization in 2024 Budget' (March 13, 2023 | By Chris Gordon), and 'B-21 Will Be 'Backbone' of Bomber Fleet, AFGSC Boss Says as New Images Are Released' (March 10, 2023 | By Chris Gordon). A QR code is located in the bottom left corner.





**Air & Space Forces Association**  
1501 Langston Blvd • Arlington, VA 22209-1198

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

**AFA's Mission**

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

**To accomplish this, we:**

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

**Contacts**

CyberPatriot ..... [info@uscypatriot.org](mailto:info@uscypatriot.org)  
Field Services. .... [field@afa.org](mailto:field@afa.org)  
Government Relations. .... [grl@afa.org](mailto:grl@afa.org)  
Insurance. .... [afa.service@mercerc.com](mailto:afa.service@mercerc.com)  
Membership. .... [membership@afa.org](mailto:membership@afa.org)  
News Media. ... [communications@afa.org](mailto:communications@afa.org)  
StellarXplorers ..... [STLX\\_info@afa.org](mailto:STLX_info@afa.org)

**Magazine**

Advertising. .... [kbrown@afa.org](mailto:kbrown@afa.org)  
Editorial Offices. .... [afmag@afa.org](mailto:afmag@afa.org)  
Letters to Editor Column. ... [letters@afa.org](mailto:letters@afa.org)

**Change of Address/Email**

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

**To update your contact information:**

- **Email:** [membership@afa.org](mailto:membership@afa.org)
- **Visit:** The Members Only area of our website, [afa.org](http://afa.org)
- **Call:** Our Membership Department at 1-800-727-3337

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

**Good Reads**

As a Vietnam War-Era vet, I read with great interest the article [April, p. 54] by Colonel Meilinger on the books every Airman should read to understand America's lost war in Southeast Asia. I don't have any of those he mentioned in my library, but I intend to check my local public library to see if they do.

That all said, however, I was disappointed that he did not include what I feel to be one of the best first-hand accounts of why America failed in Vietnam—"A Bright Shining Lie: John Paul Vann and America in Vietnam" by Neil Sheehan. At nearly 800 pages, and small print covering the entirety of most every page, it is a challenge to read, but it explains very well what apparently were the issues and problems in our 'loss' of so many military men and women, as well as thousands of civilians in this long and drawn-out conflict.

Covering hundreds of locations in-country and hundreds of interviews with people actually involved, it accounts for so much that may have not been known to the general American populace. It was a war we could have won but failed to, the blame going to military leadership—or lack thereof.

I highly recommend anyone interested in a 'bottom line' read this book for a deep understanding of our involvement in Vietnam.

Maj. Darrell Hayes,  
USAF (Ret.)  
Bellevue, Neb.

**To Honor**

As usual, I enjoyed reading through the March 2023 issue. I particularly

enjoyed Dwight S. Mears' article on Honorary Promotions. However I was surprised and disappointed that he did not include Gen. Benjamin O. Davis as a subject in his article. Graduating in 1936, he was the first Black cadet graduated from West Point since 1889. Lt. Gen. Davis, commander of the Tuskegee Airmen during WW II, retired on Feb. 1, 1970.

He was awarded a fourth honorary star which was pinned on by President Bill Clinton on Dec. 9, 1998. His biography should be read by everyone, an American hero's story of overcoming tremendous adversity his entire life and achieving success as an Air Force leader.

Capt. Phil Bachman,  
USAF (Ret.)  
Colorado Springs, Colo.

**Take Command**

Two things are equally dangerous and equally disturbing in military operations: not shooting when you should, and shooting when you don't know what you're shooting at. Both can equally cost the lives of U.S. forces, civilians, and allies. Both always undermine the trust and confidence the American people put in our military leadership.

This was on full display in January and February 2023 when our military leadership, NORAD, NORTHCOM and the White House took no action when a Chinese spy balloon traversed Alaska, Canada, and the central part of the United States as recounted in the article, "Concerns over China reach new heights," March 2023 [p. 22]. Not only were numerous national security sites (not to mention the American people)

**INDEX TO ADVERTISERS**

USAA ..... Cover IV

---

Aerospace Education ..... 5  
AFA Planned Giving ..... Cover II  
Operational Imperatives ..... 3  
Shop AFA ..... Cover III

**WRITE TO US**

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

exposed to risk, the failed decisions of our military leaders were on full display. While no one was killed, national security secrets were put at risk, and the trust and confidence of the American people was undermined because no one knew when to shoot.

What the article does not mention, is the decision to shoot down three other "objects" (the Pentagon stated they did not want to use the term "balloon") when the same leaders fully admitted that neither they, nor the pilots, were fully sure what they were shooting at. Even though they did not positively identify (PID) the targets, in their zeal to not repeat the Chinese balloon experience, they shot anyway. To date, the "objects" have not been recovered. To date, the Pentagon has not stated exactly what they shot down.

Unfortunately, we've seen this before from the same Pentagon and White House leadership. On Aug. 26, 2021, at the height of the Afghanistan withdrawal, U.S. forces providing overwatch security at the gate of the Kabul Airport, had eyes-on a suicide bomber. According to Sgt. Tyler Vargas-Andrews' testimony before Congress on March 8, 2023, the security team had intel that a suicide bombing was imminent.

The intel included a detailed description of bomber. Sgt Vargas-Andrews testified that from the intel, he "PID'd" the bomber.

He reached out to his team leader, who confirmed the PID. They requested permission to shoot, only to be told by their commander, that he did not have engagement authority, and "did not know who had engagement authority." Minutes later, the suicide bomber denoted. Because the leadership did not role-play "when to shoot," 13 Americans were killed, another 45 were wounded (including Sgt. Vargas-Andrews), and 170 Afghans were killed.

Three days later, on Aug. 29, 2021, in their zeal to not allow another suicide bomber access to the Kabul Airport, CENTCOM and the Pentagon authorized an "over the horizon" strike on a "target" they suspected was a bomber heading to the Kabul Airport. In the immediate aftermath, the Chairman of the Joint Chiefs of Staff, with the Secretary of Defense at his side, called the strike "righteous." But within hours, it became clear that they did not know what they shot at. The strike killed 10 civilians including an aid worker and seven children, and further undermined the trust and confidence of the American people

and our allies in our military leadership.

The disturbing part of "balloon-gate" is the pattern that continues to highlight poor decision-making of our Pentagon and White House military leaders. They do not know when to shoot, and when not to shoot. And to date, no one has been held accountable. Their decisions continue to undermine the trust and confidence of the American people. And they ask us to trust them with Ukraine?

Col. Seth Bretscher,  
USAF (Ret.)  
Lafayette, Ind.

When I read "Myth Busting" the title of Tobias Naegele's editorial [March 2023, p. 2], I said, "Yes." I've been myth busting this ... about balloons since the first news report. And then I was immediately deflated when I got to the third line in the piece and Naegele refers to the event as, "... a wake-up call to the nation." In my heart I thought, maybe, just maybe the experts were consulted and Naegele would, in fact, myth bust. Instead, he played right into the hands of our adversary.

Chinese spy balloons of this nature have absolutely zero tactical, strate-



# Investing in our Future

AFA's Aerospace Education programs prepare students for STEM careers and support the teachers who inspire them. Learn more about our scholarships, grants, and awards at [www.afa.org/education](http://www.afa.org/education).



Generously sponsored by



gic, or intelligence value. ... They only distract us. The Chinese can do far more useful things from space, or from aircraft, or from the ground. And they do, everyday, every hour, in fact. And they are over and in the United States as we speak.

What an opportunity, but now a colossal failure to speak truth to power. We shot it down. Why do that? Why not track it and then try to recover the payload, intact. Find out what they were doing with it. We don't have an unlimited supply of air-to-air missiles.

Balloons are zero threat to our country. We don't even protect our cities from aircraft or ballistic missiles ... or satellites. Why would we protect our country from bags of gas? This is silliness. This is not myth busting and it's certainly not leading our nation.

Jim Muccio  
Fairfax, Va.

## Groundhog Day

Just when you think the KC-46 couldn't take another hit the March 2023 Magazine, p. 32, "New KC-46 Tankers Coming-but New Deficiency Revealed" comes out. The article opened with the Air Force awarding a \$2.2 billion dollar contract for 15 additional KC-46 aircraft. My initial thought was we are going to buy another 15 non fully combat capable aircraft added to the fleet requiring extensive Time Compliance Technical Orders or Depot Field Teams to upgrade these aircraft once all deficiencies are corrected.

Either option will increase the workload on already stressed field units unless the decision is made that the aircraft be rotated back to the depot or contractor site and have the work done there. That would take the workload off the assigned unit and put the repair workload where it belongs. This would minimize the cost of deploying repair teams and all the required logistics for field repair.

The article also identified an additional Category 1 deficiency related to five cargo-related deficiencies, that were identified in the article. The Cat 1 deficiency was downgraded to a Cat 2 deficiency. This required coordination between the Air Force Life Cycle Management Center (AFLCMC) and the Air Force Operational Test and Evaluation Center but neither agency responded when asked if this was done.

This issue coming out this late in fielding the aircraft casts doubt about what other issues are lurking in the weeds. AFLCMC says this latest issue will be fixed by the third quarter of 2023.

The article also talks about the RVS and stiff boom problems, as well as the ongoing fuel leak and crack problems. Unfortunately, the article says the fix for all of these is months or years in the future. The article also mentions that the Air Force may expand the buy of KC-46 aircraft rather than proceeding with a KC-Y buy in the future.

Its unfortunate that we have gone this far into the program when we could have had Boeing come out with a KC-46 B model with the old-style boom pod and boom installed. This would have eliminated the cost, downtime, and manpower needed to support the platform, but more importantly we would have a fully combat capable platform that is ready to go to war now. These issues have dragged on long enough and the Air Force needs to tell Boeing to get off the dime and get the permanent fixes in place.

As a side note the article mentioned that some of these deficiencies were just formalities due to the fact the KC-46 deficiency board hasn't been able to meet often enough. I would think that with the technologies we have available these days, conference calls would make this a nonstarter. I feel bad for the Air Force folks wrapped up in this but those in the key positions need to take aggressive action to get all this fixed.

They owe it to the flight crews, maintenance folks, logisticians, and countless vendors who need to provide the components and hardware to make these repairs. It would be great to see future articles that say the repairs for these deficiencies are finalized and corrective actions have been initiated on the aircraft being built, and teams and locations identified for upgrades to the aircraft in the field. Kicking the can another few years down the road is not acceptable for the taxpayers of America.

CMSgt. John P. Fedarko  
USAF (Ret.)  
Xenia, Ohio

## A-10s to the Rescue

Referring to the March 2023 article, "Will Ukraine Get F-16s?" [p. 44 ] it

occurs to me to ask if the Air Force has considered recommending Ukraine be offered the A-10? My A-10 experience includes about 1,500 hours and A-10 squadron command in the mid-80s in Europe. From RAF Bentwaters/Woodbridge and the A-10 Forward Operating Locations in Germany, we trained to blunt potential Soviet armor offensives much like the Ukrainians are faced with today.

I was not involved in the Kuwaiti or Iraqi conflicts but the combat record of the A-10 there speaks for itself.

Certainly I believe the Ukrainian Air Force should have the capabilities of the F-16 but it would seem a mix of A-10s and F-16s would give them both the ability to secure their airspace and lethality against enemy armor and troops.

I do not underestimate the logistical challenges of basing and supporting modern fighter aircraft in Ukraine, but I would suggest the difficulties of training pilots and support crews, and operating from austere bases would be less problematic for the A-10 than the F-16.

I have been impressed by news reporting that Ukrainians appear to be highly motivated and resourceful when incorporating new technology. I believe the A-10 idea is worth considering.

Col. Melvin Greene Jr.,  
USAF (Ret.)  
Spotsylvania, Va.

## Follow the Leader

I had the great experience of spending a week with Gen. Curtis E. LeMay, along with Maj. Gen. Haywood S. Hansel and Gen. Ira C. Eaker. I not only joined my Air War College classmates every day for five days of discussion by three great leaders, I was also able to be one of a small group of officers who had lunch with LeMay every day.

I joined Strategic Air Command in 1961 and spent 23 of my 30 years in the command, learning a lot about LeMay's ideas on standardization, evaluation, checklists and "doing it right."

One of his acts as commander in chief of SAC was forming base hobby shops, giving SAC troops some options for off-duty time at SAC bases. He was a big user of the Auto Hobby Shop.

Col. Charlie Simpson,  
USAF (Ret.)  
Breckenridge, Colo.

# Air Mail



Tech Sgt. Sara McClanahan/ANG

"How do you inform Russia? Well, we won't write them a letter. I think they get the message when we deploy."

—**Chief of German Air Force Lt. Gen. Ingo Gerhartz** speaking about NATO's Air Defender exercise to reporters at Joint Base Andrews, Md., [April 5].



Senior Airman Brieana Bolifing

# Rare Air

"If we lose the battle for the skies, the consequences for Ukraine will be very serious. This is not the time to procrastinate. .... [F-16s] would solve many of our issues in protecting the airspace, and it is available in sufficient numbers to make a difference."

—**Col. Yuri Ihnat**, spokesman for Ukrainian Air Force commenting on the need for U.S.-made F-16 fighters for air-to-air defense against Russian air sorties. [Wall Street Journal, April 10].



Mike Tsukamoto/Air & Space Forces

# Satellite Blitz

"I'm not worried about any physical threats to the satellites themselves. I'm just not. The way we get around that is by proliferation. So we'll have hundreds and hundreds of these satellites up there. It will cost more to shoot down a single satellite than it costs to build and launch that satellite. We just completely changed that value equation."

—**Space Development Agency Director Derek M. Tournear**, discussing potential threats to the agency's satellites in orbit after their first launch in April [Mitchell Institute Spacepower Security Forum, April 5].

# Looks Are Deceiving

"If we accept that the A-10s are not a part of the high-end fight, and you accept that F-15Cs are ... not really a part of the China fight anyway, we actually have a net gain in procurement ... we actually increase by 12 the number of airplanes that will be part of the future fight. So I think there's a story here, that the effect is not as negative as is being portrayed."

—**Lt. Gen. Richard Moore**, Air Force deputy chief of staff for plans and programs, at a Mitchell Institute for Aerospace Studies "Aerospace Nation" event [April 6].

# Cloud Landing



Mike Tsukamoto/staff

"I fundamentally believe that we will get ahead much quicker if we don't try to dig ourselves out of tech debt, but we just leap over that and move to software-defined everything and modern systems that keep evolving over time."

—**Space Force Chief Information and Technology Officer Lisa Costa** on why the Space Force shouldn't waste time and money fixing outdated computer systems, but should instead start fresh in the cloud [Mitchell Institute's Spacepower Security Forum, April 5].

# Hug it Out



Senior Airman Natalie Fiorilli

"There's special things you do when-ever a plane leaves. With the MC-130H, I used to give it a big hug on the nose and tell it goodbye and to keep my friends safe. I did that every single time."

—**Staff Sgt. Kevin Rutkowski**, at an event commemorating the retirement of the Air Force's last MC-130H Combat Talon II aircraft [April 2].

# ON CALL



Airman 1st Class Moses Taylor

"You take your cell phone anywhere in the world, and we'd like you to take C2 anywhere in the world, anyway you want to get there."

—**Maj. Paden Allen**, head of the 422nd Test and Evaluation Squadron's Tactical command-and-control division, discussing ways to match C2 with distributed operations [Nellis Air Force Base, Nev., April 7].

By John A. Tirpak

# New F-35 Engines: You Can't Always Get What You Want



Airman 1st Class Paige Weidon

The Air Force had hoped to leverage the advantage of new jet technology to generate more power and cooling for the F-35, but without the support of its partners in the joint and international program, that proved unworkable.

**A**ir Force Secretary Frank Kendall clearly regrets that the service isn't pursuing an advanced technology engine for the F-35, a move announced with the fiscal 2024 budget. His hand was forced both by the multibillion-dollar development price tag and the recognition that, while USAF is the largest operator of the fighter, it's only one among many F-35 users worldwide. Partners at home and abroad weren't willing to help fund the project, and the new logistics train needed to support it.

The decision was seen as a blow to the defense industrial base at a time when Congress is becoming increasingly alarmed about its capacity to surge production in the event of war. The provision of huge numbers of munitions to Ukraine—with no quick way to replace them, due to long lead times—has highlighted the fact that Pentagon suppliers are one-deep for many critical items, with limited production capacity.

Now, by default, the F-35 will get the Engine Core Upgrade, or ECU, a less-ambitious and less-expensive improvement of the F135 engine offered by its maker, Raytheon's Pratt & Whitney. The decision effectively preserves Pratt's near monopoly on fighter engine production at scale for at least half a decade, until a new powerplant is needed for USAF's Next-Generation Air Dominance System, or NGAD. Pratt has at times been maxed out in its capacity to build F-35 engines and parts.

The Air Force had invested some \$4 billion in the Adaptive Engine Transition Program (AETP) powerplants developed by Pratt and GE Aerospace, the two main fighter engine competitors. GE developed and built the XA100, while Pratt's version is

the XA101. The engines use multiple streams of air around and through the system, employing the most efficient flow required at any given moment. The result is the most impressive boost in fighter engine performance in over 20 years: 30 percent more range or loiter time, and between 15-20 percent more thrust. The engines also offer abundant cooling for the Block 4 version of the F-35, needed to chill its hotter-running avionics.

In its fiscal 2024 budget justifications, the Air Force explained that "adaptive cycle engine technology enables next-generation combat aircraft capabilities by combining the efficiency of high bypass turbofans used by commercial airlines with the performance demanded of military fighter engines." The technology builds on previous USAF efforts dating back to the late 2000s, under the Adaptive Versatile Engine Technology (ADVENT) program and the Adaptive Engine Technology Demonstrator (AETD) programs.

The extra range without external fuel tanks, particularly in the Pacific theater, is "really attractive," Kendall said in a March 10 briefing for reporters on the fiscal 2024 budget. Longer range would also have reduced the need for tanker aircraft support.

But, "we had to make hard choices in the budget," he said. "This was one of them. I support the decision."

The ECU "does not provide quite as much capability as the AETP would have, but it does meet the needs of all three services, and it provides us with the growth potential that we need, that's been identified so far," he said.

Kendall tried to persuade Navy Secretary Carlos Del Toro to

get the Navy and Marine Corps to adopt the AETP: Spreading the funding responsibilities over two or three services might have made it a viable option for all. But it was a no-go, Kendall said, acknowledging that it would have taken “tremendous work” to get the AETP powerplants to fit the Marine Corps F-35B, which has an elaborate thrust redirection system to enable vertical flight, and the carrier-capable F-35C, the tailhook system of which would have had to be re-engineered to accommodate the AETP.

General Electric, which saw the AETP as a way to get back into the F-35 program after its alternative F136 engine was canceled in 2012, insists that the AETP could be made to fit in the F-35B and C models. The company also claims that the fuel and maintenance savings of an AETP engine would drive \$10 billion in cost-avoidance for the Air Force over the life of the program.

Pratt has countered that developing a new engine and maintaining two logistics trains—one for users of the new engine and one for the upgraded F135—would cost an extra \$40 billion over the life of the program.

Kendall estimated last year that AETP development alone would cost \$6 billion.

Pratt & Whitney is “pleased to see the President’s Budget includes funding” for the ECU, a company spokesperson said.

“All F-35s need fully enabled Block 4 capabilities as soon as possible, and with this funding, we can deliver upgraded engines starting in 2028,” the spokesperson said. The savings of going with the ECU “ensures a record quantity of F-35s can be procured” and frees up enough funding “to develop sixth-generation propulsion” for the NGAD.

GE Aerospace, though, asserted that “this budget fails to consider rising geopolitical tensions and the need for revolutionary capabilities that only the XA100 can provide by 2028.” A company spokesman noted that 50 “bipartisan members of Congress” have voiced support for AETP “because they recognize these needs, in addition to the role [industrial] competition can play in reducing past cost overruns.” The investments in new engine technologies “risks being wasted” so close to a competition, GE said. The company plans to continue testing and refining its XA-100.

GE also said Pratt’s ECU is merely “an incremental upgrade” that will still cost billions, without providing the leaps in capability offered by the AETP. It criticized Pratt’s savings claims as “cost-avoidance numbers disguising an increased baseline cost.”

Pratt has also had recent troubles with the F135. Deliveries of the engines were halted for two months between December and March due to the discovery of a “harmonic resonance” issue, which the company said only manifested after 600,000 hours of F135 fleet run time. It was discovered in the aftermath of a December 2022 crash of an F-35B in hover mode during an acceptance flight-test at Lockheed Martin’s Fort Worth, Texas, facilities. The crash and the halt on engine deliveries also caused a two-month delay in F-35 test flights and all-up ship deliveries. A fleetwide retrofit to address the harmonic resonance problem was ordered and is underway.

Congress had previously directed that the Pentagon pursue the AETP, with the objective of having it ready for installation in new-build F-35s circa 2028. Asked in a March 28 House Appropriations defense subcommittee hearing whether that could still work, Kendall said, “I do not have a recommendation for you on whether to continue AETP.”

He explained that it would be “a several-billion-dollar bill to take it through development and get it into production. And we can’t afford everything we might like to have in the budget, under any circumstances.”

Kendall added that the decision by the Joint Program Office (JPO) “to fund the core upgrade and give us a capability that all

three services can use” was “the best business case among the choices that we had.”

He voiced his continuing disappointment a week later, when he told attendees at the McAleese defense conference that the given solution is one that “I worry about a little bit” because the F-35 won’t get the performance boost USAF would like to see.

Given a magic opportunity to revisit the budget, “I think that would be something I’d like to have another shot at,” Kendall said. But “right now, it’s unaffordable.” The Air Force, he said, is “the only service that wants the new technology,” and “we can’t afford it by ourselves.”

Under the agreements governing the multinational F-35 program, any user that wants unique equipment on its jets has to “pay to be different,” the JPO has maintained, in order to preserve the manufacturing, parts, and systems commonality of the fighter and discourage costly customization.

Kendall said that the billions invested in the AETP will not be lost. The program “advanced the state of the art,” he said.

“We’re going to benefit from that indirectly,” Kendall explained, by applying what was learned on the AETP to the Next-Generation Adaptive Propulsion (NGAP) program. The NGAP is to develop a powerplant that will equip the crewed NGAD fighter, the core aircraft in a “family” of systems with stealth performance exceeding that of the F-22.

Krysten E. Jones, the Air Force’s comptroller, told reporters at a March 10 briefing that “we do plan to leverage a lot of the capabilities that were part of the AETP prototype(s) for efficiency, thrust [and] thermal management, so it was not necessarily” a waste to invest in the program. The AETP will be leveraged “as we look at the next engines” under the NGAP.

Fiscal 2024 budget documents describe AETP activities as “foundational risk-reduction activities” for NGAP, “providing capability enabling options for Next Generation Air Dominance (NGAD)” program. Although AETP is now viewed as a pathfinder for NGAP, Congress mandated in the FY23 National Defense Authorization Act that “the Air Force ... maintain separate budget lines” for AETP and NGAP.

The Air Force has \$254 million budgeted in the FY24 budget for the ECU. The NGAP is budgeted for \$595 million in FY24, up from \$224 million enacted for FY23. However, NGAP funding (under the line item “Advanced Engine Development”) dips to \$579.8 million in fiscal 2025; \$456.9 million in FY26 and \$291.1 million in FY27, with no funding slotted for FY28. The program is described as “continuing” after that.

In August of 2022, the Air Force awarded five contracts worth up to nearly \$1 billion apiece to companies exploring NGAP technologies. The \$975 million indefinite delivery/indefinite quantity contracts—meaning those amounts may never be exercised—went to GE Aerospace and Pratt & Whitney, but also to Boeing, Lockheed Martin and Northrop Grumman, indicating that the Air Force is looking to expand its supplier base for military engines and is potentially considering novel approaches to NGAD propulsion.

The contracts will involve prototyping, “weapon system integration,” and “digitally transforming the propulsion industrial base,” according to USAF’s contract announcement, that suggests it may be willing to bet that companies not historically builders of fighter engines can design and build them with new digital technologies.

The Air Force said the work is to be completed by July 11, 2032. That would seem to be late for the needs of NGAD, which Air Force leaders have said would be operational circa 2030, and may indicate that early versions of NGAD will not have the NGAP engine. 

Capt. Christopher Allen of the 6th Airlift Squadron copilots a C-17 Globemaster III into position for a March aerial refueling, providing a rare underbelly view of the KC-46 Pegasus tanker. The KC-46 boom operator doesn't have a window and must rely instead on the aircraft's Remote Vision System, which is visible just forward of the base of the boom in this photo.



Special Operations Airmen inspected the propellers on an their MC-130J Commando II during exercise Freedom Shield 23 at Daegu Air Base, South Korea, in March. The composite, six-blade propellers are the same as those used on the HC-130J, but the avionics on the Commando II optimizes its night-flight capabilities for low-level infiltration, exfiltration and resupply of special operations forces, and to perform nighttime airdrop and air-to-air refueling missions for helicopters and tilt-rotor aircraft.



Four thousand Airmen and 80 aircraft stand in formation in a one-of-a-kind elephant walk April 7, 2023, at Sheppard Air Force Base, Texas. Technical training students from the 82nd Training Wing joined 40 T-38 Talon and 40 T-6A Texan II trainer aircraft from the 80th Flying Training Wing on a runway to shine a spotlight on the importance of training as the foundation of airpower.



# FACES OF THE FORCE



Airman 1st Class Keira Rossman

On Feb. 22, **Airman 1st Class Natalie Bait**, 47th Force Support Squadron career development technician, became “command chief for a day” and gained insight into the decision-making process at the highest levels at Laughlin Air Force Base, Texas. “When I was visiting the different squadrons around the base, I was able to see how valuable each job is,” Bait said. Bait emphasized the importance of planning and preparation. “One of the biggest challenges I faced was when I was asked to make a speech as chief,” she said.



Airman 1st Class Shaun Combs/USSF

Space Base Delta 2 Commander’s Action Group Chief **1st Lt. Zachary Olson** received the 2022 Force Support Company Grade Officer of the Year Award at the Space Force level. From his first day in the Air Force as an Airman 1st Class, Olson knew he wanted to make his goal of commissioning into a reality. “I feel grateful, I’ve been able to work around some spectacular mentors,” Olson said. “All of my work would also not be possible without the great people that I’ve worked with from the 544th Intelligence Surveillance Reconnaissance Group and Space Base Delta 2.”



Maj. Gen. Steven W. Oliver Jr./USAF

When now-retired **Maj. Gen. Steven W. Oliver Jr.** took command of the 515th Air Mobility Operations Wing in April 2010, the unit was just two years old. Oliver, then a colonel, was the wing’s second commander. He returned to Joint Base Pearl Harbor-Hickam, Hawaii, on Feb. 25 as guest speaker for the wing’s annual awards banquet, noting that the identity of the 515th AMOW had solidified, and people throughout AMC and DOD increasingly recognize the wing’s unique role in the Indo-Pacific. “I think the importance of the AMOW hasn’t decreased at all, and it is certainly changing,” Oliver said.



Capt. Paul Day/USAF

**Capt. Paul Day** was recently recognized in the annual Air Force Security Forces Awards program as the 2022 Air Reserve Component Company Grade Officer of the Year. He is the chief of plans and operations in the anti-terrorism office for the 139th Security Forces Squadron, Missouri Air National Guard. Day won the prestigious award partly for his role in developing and executing Agile Combat Employment missions while deployed to Al Udeid Air Base, Qatar. Day took the lead on creating ACE plans from scratch, including developing equipment lists and working with U.S. Air Forces Central Command.



Gregory Southall/USAF

**Gregory Southall**, 11th Civil Engineer Squadron chief of infrastructure, is unafraid to break barriers, not only as a Black man but also as the grandson of the late Air Force **Maj. Clarence Gordon Southall**, a Tuskegee Airman. “The Tuskegee Airmen paved the way for us,” Southall said. “I’ve heard the stories about how they were treated and what they overcame. Today, nobody can tell me what I can and can’t do, ... and we have that freedom [in part] due to them.” With the 11th CES for 30 years, Southall said his grandfather inspired his entire family.



Matthew Clouse/USAF

What were you doing at 20 years old? **Jake Fletcher**, who is a carpenter in the 88th Civil Engineer Squadron, works at Wright-Patterson Air Force Base, Ohio, began as a 17-year-old apprentice while attending a construction carpentry program. “This job has me set for the rest of my life,” he said. “You don’t have to go to college to get a good job. You just need to be willing to work, show up, and be an adult.” After his junior year at Miami Valley Career Technology Center, Fletcher applied to work at Wright-Patterson, where good grades and an outstanding interview got him the position.



Capt. Orchydia Sackey/USAF

U.S. Air Force **Capt. Orchydia Sackey**, from St. Croix, U.S. Virgin Islands, had minimal exposure to aircraft and flying while growing up, but today, she flies the KC-135 Stratotanker for the 50th Air Refueling Squadron. Her dream of becoming a pilot started on her first commercial flight. “I was flying with my family from the Virgin Islands to Florida, and I was in second grade,” Sackey said. “My mom sat next to me. While she was super scared on the flight, I was having the time of my life.” Sackey conducted online research for paths to becoming a pilot. She decided during her junior year in high school to pursue aviation.



Senior Airman Allison Ganapamo/USAF

In a deployed environment, communication is key. It’s important to breach language and cultural barriers to successfully address regional issues and maintain stability. **Senior Airman Allison Ganapamo**, PERSCO technician with the 449th Air Expeditionary Squadron, was asked to help do just that in a meeting between U.S. and French civil engineers as a translator at Chabelley Airfield, Djibouti. The meeting resulted in an agreement for a runway project. “I was hoping I would have the opportunity to act as a translator,” said Ganapamo, who was born in France. “I was looking for opportunities to gain more experience.”



Staff Sgt. Harold Balcom/USAF

While deployed to Prince Sultan Air Base, Saudi Arabia, **Staff Sgt. Harold Balcom**, an air traffic controller supervisor currently assigned to the 75th Operations Support Squadron, was awakened the night of Aug. 17, 2021, and told to pack a 72-hour bag. Five hours later, Balcom was on a plane headed to Hamid Karzai International Airport in Kabul, Afghanistan, to support Operation Allies Refuge and to help evacuate Afghan civilians from the country. Deployed with a U.S. Marine unit called Special Purpose Marine Air-Ground Task Force, Balcom helped in the evacuation of more than 124,000 civilian and military personnel.



Staff Sgt. Shayla Ramsey/USAF

**Staff Sgt. Shayla Ramsey**, a client service technician for the West Virginia Air National Guard’s 167th Communications Flight, is responsible for ensuring that the wing’s information technologies function correctly. She troubleshoots and repairs problems, performs information technology support functions and reports, and takes corrective measures for security incidents. A student at West Virginia University, she recently graduated with a degree in public health and is enrolled in an accelerated nursing program.

**Tell us who you think we should highlight here. Write to [afmag@afa.org](mailto:afmag@afa.org).**



Senior Airman Zachary Wright

A B-52H Stratofortress is loaded with Air-Launched Cruise Missiles during Exercise Prairie Vigilance in November 2022, at Minot Air Force Base, N.D. Prairie Vigilance tests the 5th Bomb Wing's operational readiness.

# US, Russia Stop Sharing Nuclear Forces Data

By Chris Gordon

**T**he U.S. will not share data on its nuclear arsenal with Russia after Moscow refused to do the same, Biden administration officials said March 28, the first time the Biden administration has responded to Russian President Vladimir Putin's announcement that he was "suspending" Moscow's participation in the New START treaty.

"Under the treaty, we exchange data on kind of high-level numbers," said Assistant Secretary of Defense for Space Policy John Plumb in testimony before the House Armed Services Strategic Forces subcommittee. "Russia responded that they will not be providing that information. So as a diplomatic countermeasure, the United States will not be providing that information back."

The two countries faced a March 31 deadline for exchanging detailed data on their numbers of deployed nuclear forces as part of a regular six-month cycle.

New START limits the U.S. and Russia to 1,550 deployed warheads. U.S. officials say they assess that Russia is still under its treaty limits, and Pentagon leaders have stated they plan to adhere to the other provision's limits and are not keen to engage in an arms race.

**"We all understand that nuclear deterrence isn't just a numbers game. ... In fact, that sort of thinking can spur a dangerous arms race."**

—Secretary of Defense Lloyd Austin III

"We all understand that nuclear deterrence isn't just a numbers game," Secretary of Defense Lloyd J. Austin III said in December before Putin announced his suspension of the treaty. "In fact, that sort of thinking can spur a dangerous arms race."

The data the U.S. plans to withhold includes information on the number of bombers, missiles, and nuclear warheads that are deployed at specific U.S. bases. However, the U.S. is continuing to provide Russia with notifications of the movements of its strategic bombers, missiles and submarines, and their operational status as required under the treaty.

"We are going to continue to examine what diplomatic countermeasures are appropriate," Plumb said. "What we're trying to do is balance both responding to Russia's irresponsible behavior, but to continue to demonstrate what we believe a responsible nuclear power actually should be."

Daryl Kimball, the executive director of the Arms Control Association, was critical of the U.S. decision not to share data but said the administration was right to continue the notifications. "That will reduce the possibility that Russia misconstrues a particular movement of a strategic system as something that it is not."

Russia has refused onsite inspections, declined to attend meetings on compliance issues, refused to exchange data, and stopped notifying the U.S. of the movements of its strategic nuclear forces. Moscow, however, hasn't rejected all limitations on its nuclear forces. In suspending its participation in the accord, Russia's Foreign Ministry said Moscow would continue to observe limits on the number of nuclear warheads it can deploy under the treaty "in order to maintain a sufficient degree of predictability and stability in the sphere of nuclear missiles."

Moscow will continue to notify the U.S. when it plans to test-launch intercontinental and submarine-launched ballistic missiles under a 1988 agreement, the foreign ministry said.

The White House noted the tit-for-tat nature of the U.S. response but said it made the decision not to provide the data to Russia because Moscow was unwilling to hold up its end of the bargain.

"We would prefer to be able to do them, but it requires them being willing as well," National Security Council Strategic Communications Coordinator John Kirby said of the data exchanges.

Kirby said the Biden administration is still holding out hope to revive the treaty, which expires in 2026.

"We believe that the New START treaty is good for both our countries—heck, it's good for the world—when our two countries are in full compliance with our New START obligations," Kirby said.

The future of arms control is unclear. U.S. officials and military leaders have cautioned that with China's increasing nuclear expansion, the U.S. will face two large, and possibly unconstrained, nuclear-armed countries for the first time in history. But China has shown no interest so far in joining nuclear talks with the U.S., and the U.S. and Russia are not currently involved in talks about a possible agreement after New START and have previously had deep differences over what should be covered under a future accord.

"A competition is underway among major powers to try to shape what comes next," Air Force Gen. Anthony J. Cotton said when he took over U.S. Strategic Command in December. "New perils are ahead of us." 

# DOD Balks at F-16s, MQ-9s for Ukraine

By Chris Gordon

Top U.S. defense officials dismissed the notion that the U.S. would provide aircraft—manned or unmanned—anytime soon to Ukraine in congressional hearings March 28 and 29.

While Kyiv has repeatedly asked for F-16 fighters and MQ-9 drones, the Biden administration has refrained from providing them and argued the systems would be of limited use to Ukraine in the current phase of its fight against Russia's invasion.

Instead, U.S. officials argue Ukraine has more pressing needs such as air defense, armor, and artillery. They also contend that Russia's own capable air defense systems would limit the utility and employment of manned aircraft.

"That air domain is a very hostile airspace because of the capability that the Russians have for air defense," Secretary of Defense Lloyd J. Austin III told the Senate Armed Services Committee on March 28. "That won't help them in this current fight. ... And will they have a capability at some point down the road? We all believe that they will, and what that looks like, it could look like F-16s, it could look like some other fourth-generation aircraft."

Poland and Slovakia said they are providing 17 Soviet-era MiG fighters to Ukraine, a move U.S. Air Forces Europe Commander Gen. James B. Hecker said would offer a helpful capacity boost. Ukraine has lost about 60 planes to date. But Hecker said the new aircraft would not significantly change battlefield dynamics.

Some members of Congress have expressed willingness to send aircraft to Ukraine, but Biden administration officials have held fast in opposing such a move.

"If you're talking to F-16s, whenever you make that decision, in order to put together what needs to be put together to provide that capability is going to be 18 months or so in the making," Austin said. "We will continue to work with our allies and partners to make sure that Ukraine has what it needs."

Another system the U.S. has declined to provide is the un-



Chairman of the Joints Chiefs Gen. Mark Milley and Defense Secretary Lloyd Austin III say they can see giving F-16s to Ukraine eventually, but not in the near-term.

Staff Sgt. John Wright

manned MQ-9 Reaper drone. MQ-9s have been a hallmark of U.S. counterterrorism operations in the Middle East, most notably firing Hellfire missiles at targets. They have the ability to loiter for over 20 hours and gather intelligence.

They also are available. The Air Force wants to divest 48 older MQ-9s in fiscal 2024, and the manufacturer of the aircraft, General Atomics, has pledged to provide its company-owned drones to Ukraine. To date, the U.S. has given Ukraine only smaller tactical drones. Austin and Gen. Mark A. Milley, the Chairman of the Joint Chiefs of Staff, oppose providing MQ-9s.

"It is not a survivable platform if they try to use that in that environment," Austin said.

Indeed, a Russian fighter jet downed a U.S. MQ-9 in March on a surveillance mission over the Black Sea when the jet clipped the propeller while harassing the American drone.

"It's big and slow," Milley said of the MQ-9, which has a 20-meter wingspan and a cruising speed of about 230 mph. "It's going to get nailed by the Russian air defense systems. And in terms of its capabilities, I'm not sure what it'll get you



beyond the smaller, faster, more nimble UAV systems that we are providing.”

Others counter that Ukraine has much to gain from the aircraft. “The proposed use of the MQ-9 is as a long-range sensing and targeting aircraft at a stand-off range—not to fly into the teeth of a fully robust and operational IADS,” said retired Lt. Gen. David A. Deptula, dean of AFA’s Mitchell Institute for

Aerospace Studies. Even if the aircraft were shot down, he said, they would still be valuable to Ukraine, forcing Russia to expend air defenses and exposing Russian radars so Ukrainian forces could attack them.

Deptula said the U.S. appears to be “deterred by the concern of escalation” with Russia and is not “making choices that provide the best military advice for the Ukrainians.” ★

## AIR WARFARE

# USAF’s Fighter Mix Keeps Changing at Kadena

**U.S. Air Force F-15E Strike Eagles assigned to the 336th Fighter Squadron taxi after arriving at Kadena Air Base, Japan, April 8, 2023.**



Airman 1st Class Tybir Meyer

By Chris Gordon

**F**-15E Strike Eagles deployed to Kadena Air Base, Japan, in April, joining F-35s to bolster the Air Force’s fighter fleet on the strategically important island in the western Pacific. At the same time, the F-16CMs and F-22s previously deployed there returned home.

The Air Force is rotating fighters through Kadena as worn-out F-15C/Ds return back to the United States after more than 40 years of permanent Eagle operations there. The Air Force has had every active type of fighter aircraft cycle through Kadena in the past five months, with the exception of the A-10. Otherwise, F-15C/Ds, F-15Es, F-16s, F-22s, and F-35s have all operated there.

“Modernizing capabilities in the Indo-Pacific theater remains a top priority,” Kadena Air Base’s 18th Wing stated in a news release. “This reception of advanced fighter aircraft at Kadena ensures the 18th Wing remains postured to deliver lethal and credible airpower to ensure the defense of U.S. allies and a free and open Indo-Pacific.”

F-15Es from the 336th Fighter Squadron at Seymour Johnson Air Force Base, N.C., touched down in Okinawa in April, just as F-22s Raptors and Airmen from the 525th Fighter Squadron headed home to Joint Base Elmendorf-Richardson, Alaska. Two days later F-16CMs from the 480th Fighter Wing

returned to Spangdahlem Air Base, Germany.

Kadena’s two-squadrons of F-15C/Ds were 48 strong until the Air Force started sending those aircraft stateside. The best of those aircraft will be transferred to Air National Guard units, while the bulk are headed for the Boneyard at Davis-Monthan Air Force Base, Ariz.

The need to rotate forces through Kadena is an indication of the challenges faced by today’s smaller Air Force. The Alaskan F-22s were the first new rotational unit deployed to the key southern Japanese island, which is the closest U.S. air base to Taiwan—450 miles away. F-16CMs from Germany later joined the Raptors in January.

Now the mix is F-35s and F-15Es.

“The F-15E is a proven combat platform that brings some unique capabilities into our already formidable mix of aircraft here at Kadena,” said Col. Henry Schantz, 18th Operations Group commander, in a news release.

The F-22s had an eventful deployment to the western Pacific, becoming the first fifth-generation fighters to deploy to Tinian and the Philippines. JBER said the aircraft flew 1,100 sorties during their four-plus month deployment. The F-16s stayed around three months and their deployment generated fewer headlines. The deployment of F-15Es and F-35s—along with the remaining F-15C/Ds—ensures Kadena will have a mix of fourth- and fifth-generation aircraft for now. ★

# USAF Plans \$9 Billion in F-22 Updates



Senior Airman Jessi Roth

Ensuring the F-22 remains the world's top air superiority jet through its retirement in the 2030s will require continued investment to the tune of more than \$1 billion a year, Air Force budget documents say.

By John A. Tirpak

**E**nsuring the F-22 Raptor's ability to prevail in combat for another eight years will cost more than \$9 billion, even assuming the oldest 32 Raptors are retired next year.

But if Congress balks at the retirements, as it did a year ago, the Air Force may not be able to keep its Next-Generation Air Dominance program on schedule, senior officials said.

"Our budget assumes the success of that proposal," Air Force acquisition executive Andrew Hunter told the House Armed Services tactical aviation subcommittee March 29.

The Air Force's fiscal 2024-2028 spending plan includes \$4.2 billion in procurement for F-22 upgrades—plus another \$1.74 billion "to completion" circa 2030 and \$3.2 billion in research, development, test, and evaluation funds. That's a total of \$9.06 billion, and doesn't count operations and maintenance.

"Sensor enhancement" amounts to \$4.13 billion of those funds, with reliability and maintainability upgrades adding another \$2.43 billion. Other improvements are for Link 16 modifications; identification/friend or foe systems; trainer and simulator modifications; anti-jam/anti-spoofing and position, navigation, and timing work; and modifications to the F-22's Pratt & Whitney F119 engines.

The Air Force also wants to spend \$553 million on stealthy long-range fuel tanks and pylons, enough to give each aircraft at least two full sets of each. The F-22 can fly at speeds up to Mach 1.2 with the tanks and pylons, budget documents say.

The tanks and pylons, as well as stealthy-looking pods with an apparent dielectric front-end aperture, have been seen in flight-test photos of F-22s captured around Lockheed's Palmdale, Calif., facilities. They were also shown in an artist's concept released by Air Combat Command last year, without an explanation of what the underwing stores are.

Aviation experts speculate that the slender pods contain infrared search-and-track systems (IRST) and may have other sensors, as well. A former Lockheed program official

has previously told Air & Space Forces Magazine that there is insufficient "real estate" within the F-22's fuselage to host an IRST, an alternative method of detecting an adversary aircraft built with low radar cross section, like China's J-20 fighter.

USAF spending plans currently call for investing at least \$1 billion a year in fiscal 2026 and 2027 in the F-22, before dropping off sharply in 2028 to \$426.8 billion. RDT&E investment would end in 2028.

Counting previous spending going back to fiscal 2018, the Air Force is projecting the total cost of keeping the F-22 capable against current and future threats at \$16.2 billion, according to an Air Force spokesperson. That comes to more than \$100 million for each of the 148 or so F-22s the Air Force plans to retain.

The jets the Air Force wants to divest have been used for basic skills training and not been kept to the same configuration as the front-line fleet. Air Force Secretary Frank Kendall has said he estimates it would cost \$50 million apiece to upgrade them to the current operational fleet configuration, and considerably more to keep them consistent with the rest of the fleet on top of the cost of flying and maintaining them.

The Air Force asked Congress last year to retire the same 32 F-22s but was rebuffed. It's asking again this year not only because those aircraft are "no longer operationally representative," but the cost to bring them up to full capability would be "prohibitive," Lt. Gen. Richard G. Moore, deputy chief of staff for plans and programs, told the HASC tactical aviation panel. They are also no longer competitive with China's best stealth fighters, he said.

"Upgrading the Block 20s to a combat configuration is cost-prohibitive and very time intensive," Moore testified. "Based on the most advanced weapons that an F-22 Block 20 can carry now, it is not competitive with the [Shenyang] J-20, with the most advanced weapons the Chinese can put on it."

Neither the F-22 nor NGAD accounts include funding for the AIM-260 Joint Advanced Tactical Missile, which is to be their primary weapon. 

# Collaborative Drones Will Arrive Before NGAD

By John A. Tirpak

The first iterations of Collaborative Combat Aircraft (CCAs), the drones the Air Force hopes to pair with manned fighters, will join the Air Force's fighter fleet in "the later 2020s," several years before the Next-Generation Air Dominance fighter, said service acquisition chief Andrew Hunter.

Hunter told the House Armed Services tactical aviation subcommittee that CCAs will augment all types of tactical aircraft, not just NGAD.

Lt. Gen. Richard G. Moore Jr., deputy chief of staff for plans and programs, said the top three missions for CCAs will be as:

- Shooters
- Electronic warfare platforms
- Sensor aircraft.

Hunter said NGAD and CCAs are "on different timelines," but "obviously closely related to one another as part of a family of systems." NGAD is a "very high-end capability," he said, geared to the threat environment of the 2030s, and "we are working very hard to deliver [it] ... in the early 2030s." CCAs could join the force later this decade, he added, with a notional target of between 1,000 and 1,500 of the uncrewed aircraft.

Though uncrewed, the new aircraft will still be pricey. Air Force Secretary Frank Kendall testified CCAs could cost between a quarter and half as much as an F-35, putting them in

a range between \$20 million and \$41 million.

Hunter said the Air Force is "very much focused on speed-to-ramp," and that the service will prioritize contractors' ability to "perform as quickly as possible" in evaluating proposals.

Moore said CCAs will help to more affordably build up the Air Force's combat air forces, enabling the "amount of iron that needs to be in the air to confront an adversary like China."

"The way that we can do that affordably is by buying CCAs, and by creating mass with CCAs," he said.

Still unclear are the tactics, techniques, and procedures for such weapons and the organizational structures, such as whether CCAs will belong to conventional fighter squadrons or "a separate entity" or whether they will fly alongside crewed aircraft or "come together on the battlefield" from different places.

The 2024 budget includes a request to create an experimental operations squadron to explore such questions, Moore said. Asked what the CCAs will be counted on most to do, Moore laid out three basic mission sets.

Pressed by lawmakers as to whether the Air Force needs seven additional fighter squadrons, as the service stated in its 2018 "The Force We Need" white paper, Moore said the answer depends on the success of the CCA concept.

"Capacity is an issue and the mass that it takes to confront an adversary like China is intense," Moore said. ★

## It's Official: Re-Engined B-52 Will be the B-52J



Boeing

Once it gets new engines, the B-52H will become the B-52J, Air Force budget request documents say. The designation also reflects significant new radar, communications, and weapons capabilities.

By John A. Tirpak

New re-engined B-52 bombers will be designated the B-52J, according to the Air Force's fiscal 2024 budget documents, resolving a debate over the future nomenclature as the bomber gets some of the most significant improvements in the H model's 61-year service life.

"Any B-52H aircraft modified with the new commercial engines and associated subsystems are designated as B-52J," the Air Force said in justification documents for its 2024 budget request.

The Air Force is asking for nearly \$3 billion in B-52 procurement over the five-year future years defense plan (FYDP), starting with \$65.82 million in 2024 and ramping up to over \$1.1 billion annually in 2027 and 2028. The program seeks to replace the original Pratt & Whitney TF33 engines with Rolls-Royce F130s on 76 B-52s and is expected to pay for itself through 30 percent better fuel efficiency and the elimination of future engine overhauls over the life of the program.

A Radar Modernization Program will likewise upgrade all the radars, including 74 radar kits, three training systems kits, and two engineering and manufacturing development kits, at a total cost of \$845.9 million over the FYDP. Additional research, development, test, and evaluation funding for the Radar Modernization Program adds another \$371 million from 2024-2026.

The new radar is a variant of the Raytheon AN/APG-79, an active, electronically scanned array (AESA) radar used on the Navy's F/A-18 Super Hornet fighter. It replaces the APG-166, which the Air Force says suffers from severe "vanishing vendor" issues and parts problems that will make the radar "unsupportable" before 2030.

Besides a dramatic improvement in maintainability, the AESA will add significant new capabilities in search, ground mapping, and electronic warfare. The new radar's physical footprint is also much smaller than the system it replaces, creating growth capacity in the front of the aircraft. The B-52's nose-mounted electro-optical blisters will be removed and a new radome installed with the new radar. ★

# T-7 Trainer Production Delayed to 2025

By John A. Tirpak

The Boeing T-7 Red Hawk advanced trainer won't be ready for a low-rate initial production decision until February 2025—six and a half years after Boeing won the initial contract in 2018.

The new date for the “Milestone C” initial production decision is as much as 14 months later than was anticipated as recently as late 2022, caused in part by concerns over the safety of ejection seats. Those and other issues are now or will soon be resolved, the Air Force said.

The first production aircraft will not be delivered until December 2025 at the earliest, USAF said. It is not clear how much the delays will push back initial operational capability (IOC), which was originally scheduled for 2024 and had more recently been promised for 2026.

Regardless, the ripple effect of T-7 delays could force the Air Force to invest in further life extensions for its 60-year-old T-38 trainers, which the T-7 is supposed to replace. The Air Force continues to fund Pacer Classic III structural modifications for the aircraft, along with avionics upgrades, to the tune of \$125.3 million in FY24.

The Air Force plans to buy at least 351 T-7A Red Hawks and 46 high-fidelity simulators. USAF's new “Reforge” fighter pilot training plan could increase that total. Boeing's contract provides for up to 475 aircraft.

The Air Force and Boeing “are confident improvements and recent testing are yielding a safe and effective escape system” for the T-7, a service spokesperson said.

Last year's planning documents showed the service spending \$321 million on T-7 production in fiscal 2024, but USAF zeroed-out T-7 production funding for fiscal 2024 in its recent budget request.

“Milestone C has moved to February 2025,” so procurement funding “for Low-Rate Initial Production is not needed in FY24,” the spokesperson said. At Milestone C, the undersecretary of defense for acquisition and sustainment decides if a program has met its exit criteria from engineering and manufacturing development (EMD) and is ready for production.

A principal cause of delay were concerns noted across more than a dozen ejection seat tests. Air Force officials have said that tests showed Boeing's escape system exhibiting unsafe deceleration at parachute opening, potentially causing pilots' to suffer concussions as their visors tore off. Industry sources suggest, however, that USAF's crash dummies were improperly instrumented, suggesting inaccurate results. The sources said USAF is revisiting some of those data.

Under the initial 2018 contract, Boeing was to have delivered the first five production aircraft in 2023. Most of those are now complete, but developmental flight-testing has been held up by the seat issue and is now anticipated to start in September, the Air Force spokesperson said. Boeing said last week that it expected developmental testing to start “this summer.”

Boeing ran into problems with the seats last year when they didn't function as expected with pilots at the smallest and lightest end of the range. The T-7 is the first USAF aircraft to be designed from the outset to accommodate pilots in a wide variety of physical sizes. Ejection systems on previous trainers and fighter aircraft could accommodate only a narrow range



Boeing

**Concern about the safety of ejection seats in the T-7 trainer appear to be resolved, paving the way for initial production in 2025.**

of physiques and excluded too many potential student pilots, particularly small women.

Air Force acquisition executive Andrew Hunter said in March budget testimony that recent sled tests with the seats have given confidence that the ejection problems are on the mend.

“Minor changes to seat logic” have “already reduced system risk and increased pilot safety,” the spokesperson explained. Additionally, “the USAF and Boeing are studying the ejection seat performance throughout 2023 to identify additional enhancements, and Boeing will use the results of testing to inform changes needed to qualify the seat as safe for production.”

Supply chain issues have also contributed to T-7 delays, the Air Force said.

“Prior to the FY23 President's Budget,” the Air Force and Boeing “recognized schedule impact to the T-7A ‘Red Hawk’ program partially attributable to developmental discovery and the COVID-19 global pandemic,” the USAF spokesperson said.

In June 2022, USAF and Boeing “began a schedule re-base-line effort to assess the collective impacts of all schedule delays to date, to include ... ground [testing], preflight testing and hardware qualification challenges; contractor inability to rapidly correct deficiencies; subcontractor initial design delays; three aerodynamic instability discoveries; escape system qualification delays; and supplier critical parts shortages,” the spokesperson explained.

After an “exhaustive” schedule risk assessment, “the T-7 program office recommended a new [Milestone C] date of February 2025 and is awaiting final coordination of this change,” the spokesperson said.

The Air Force does not plan to accelerate testing to gain back lost time. The Air Force and Boeing “do not believe the delays can be overcome by more aggressive flight tests,” the spokesperson said. The planned flight-test schedule “is already success-based and aggressive.”

Boeing has been flying its first two T-7s—“T1” and “T2,” which the Air Force refers to as “production relevant”—at the company's St. Louis facilities, but Air Force pilots are not permitted to fly the pre-EMD jets for testing purposes until the seat and other issues have been resolved.

The first three EMD examples of the T-7 are complete and two further aircraft are in the final stages of construction, USAF said. These five jets “will be enough for flight-testing.” ★



# A-10s, E-3s Head to the Boneyard

By Chris Gordon and Greg Hadley

After years of pushing to retire A-10s and E-3s, the Air Force began divestments in earnest in April, retiring the first of 21 A-10s and the first of 13 E-3 AWACS planes.

An A-10 Thunderbolt II from the 74th Fighter Squadron at Moody Air Force Base, Ga., arrived at the Boneyard at Davis-Monthan Air Force Base, Ariz., on April 5, the service said. Some 20 more Warthogs will leave service by the end of September.

“Air Combat Command is prioritizing the A-10s with the least combat effectiveness for retirement first to ensure the most combat-capable airframes remain in service,” the Air Force said in a news release. Those aircraft will come from multiple bases.

The Air Force has sought to retire some of the close air support aircraft for years but was blocked by Congress until the 2023 National Defense Authorization Act OK’d this divestiture. The service plans to retire another 42 A-10s if Congress approves the move with the 2024 budget. Air Force Chief of Staff Gen. Charles Q. Brown Jr. has said the service wants to rid itself of the A-10 entirely by the end of the decade.

E-3 Tail Number 0560 departed Tinker Air Force Base, Okla., for its trip to the Boneyard at Davis-Monthan April 6, a week after the 552nd Air Control Wing hosted a retirement celebration where retired and Active-duty Airmen signed their names to the airframe, an Air Force tradition.

“It means a new way is coming, but it’s still sad because we have a lot of great memories,” one former Airman told local television station KOLO. “We had a great mission back 20, 25 years ago.”

With the retirement, the Air Force’s AWACS fleet shrunk to 30 aircraft, on its way to under 18. Based on the commercially defunct 707 airframe, E-3s are expensive to maintain, their mission-capable rates plunging below 65 percent in recent years. Air Combat Command boss Gen. Mark D. Kelly called the E-3s “unsustainable without a Herculean effort” last year,

praising “miracle worker” maintainers for getting the aircraft to fly at all. Averaging over 40 years old, the AWACS fleet is among the oldest in the Air Force.

USAF will replace the AWACS with the E-7 Wedgetail.

Aircraft at the Boneyard are preserved in the dry desert of Arizona and often cannibalized for parts. The A-10 that landed Davis-Monthan on April 5, tail number 80-149, is now in the hands of 309th Aerospace Maintenance and Regeneration Squadron, which will “get to work preserving as much of it as possible while removing parts that can be used for replacements in other A-10s,” the Air Force said.

The Air Force’s planned divestiture of 21 A-10s in the fiscal year 2023 will leave the service with around 260 aircraft by September. Brown said the service is ditching its 4+1 fighter model—with the A-10 as the outlier—and plans to sunset all A-10s by 2029.

“We’re retiring A-10s faster than we originally thought,” Brown said at the annual McAleese defense conference March 15. “I think that’s probably the right answer.”

But in the near-term, concerns over capacity have led to high-profile A-10 deployments. While the Air Force argues that the four-decade-old A-10s—which have been upgraded over the years—are not survivable against an advanced adversary, U.S. Central Command is using them to fill out its fighter squadron requirements in the Middle East.

A planned deployment of A-10s to CENTCOM was accelerated in the wake of attacks from Iranian-backed militias on U.S. bases in Syria. The command produced a slick video noting their arrival at the end of March and has continued to publicize recent A-10 operations in the region.

“The A-10s remain the most effective close air support platform in the world today even after 45 years,” Capt. Kevin Domingue, the pilot from the 74th Fighter Squadron who flew the now-retired A-10 to the Boneyard, said in the news release. “As long as the Air Force allows the aircraft to fly and be properly maintained, this community is ready to provide that expertise anywhere in the world against any adversary.”



Airman 1st Class Whitney Gillespie

U.S. Air Force Capt. Kevin Domingue, 74th Fighter Squadron pilot, begins his takeoff from Moody Air Force Base, Ga., to Davis-Monthan Air Force Base, Ariz., on April 5. Domingue will be the last pilot to fly this particular A-10 as it heads off to retirement.

# Speed, Cost, Performance: SDA Launches First Satellites

By Chris Gordon

**T**he Space Development Agency (SDA) successfully launched its Tranche 0 satellites April 2, just two and half years after it first awarded contracts.

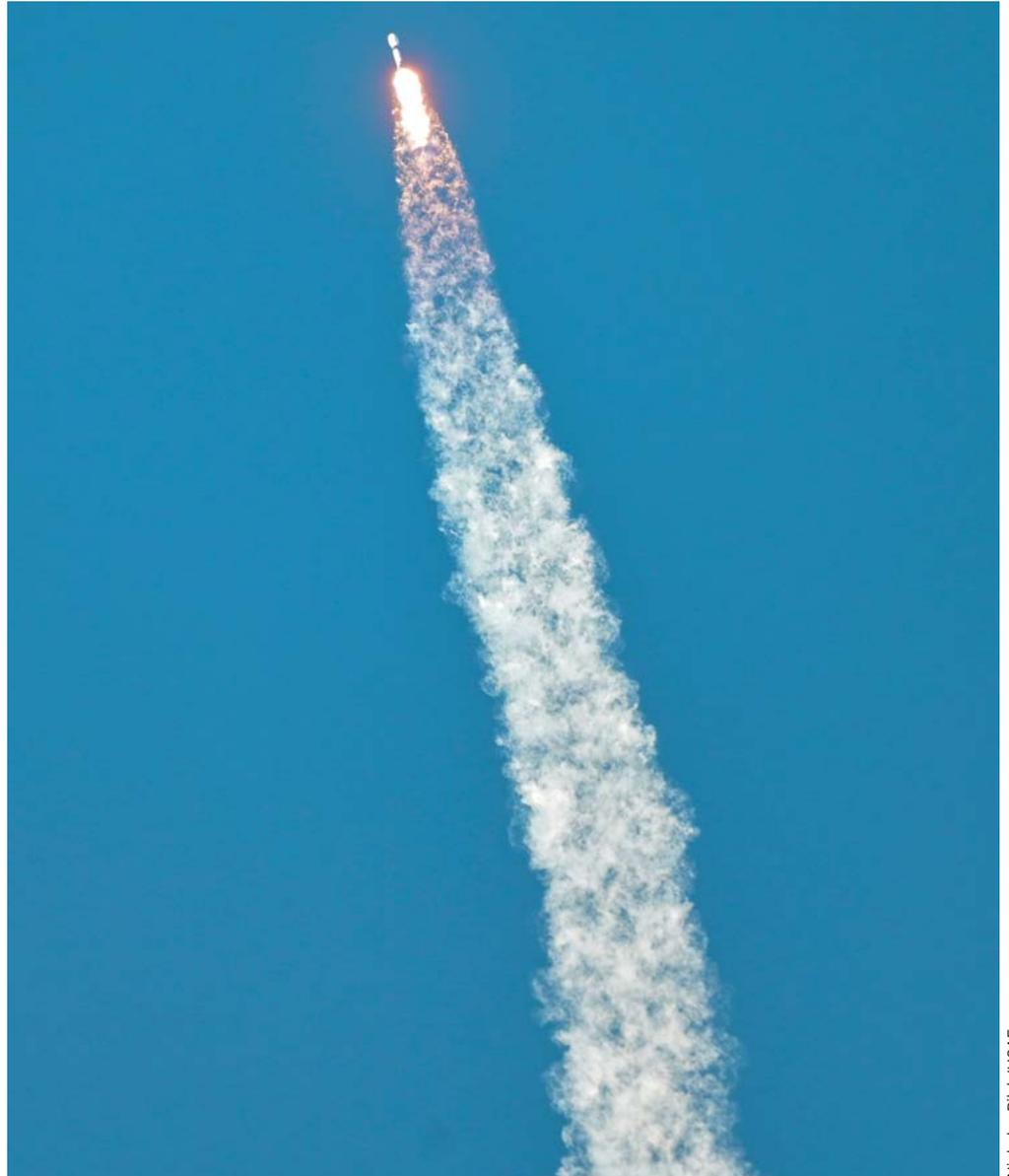
The April 2 launch from Vandenberg Space Force Base, Calif., carried 10 satellites—eight for SDA's data transport layer and two for its missile tracking system—and put SDA's vision for the future Proliferated Warfighter Space Architecture (PWSA) into orbit for the first time.

"We were established to be the disrupter, to come up with a completely new way to do space architecture," said SDA Director Derek M. Tournear. "By hook or by crook, we will get new capabilities fielded in space every two years."

SDA eventually wants to put hundreds of small satellites in orbit as part of proliferated constellations. The Space Force as a whole hopes to make launching satellites an essential but commonplace part of the Department of Defense—just like the service itself. But SDA will have to make compromises the U.S. government has previously been reluctant to make.

"That means that we cannot go with what is the most exquisite capability," Tournear said. "We're going to go with what we can deliver in two years based on what is commoditized technology, what industry can deliver, and that's what we're going to push forward. We will put schedule above costs, and we'll put cost above performance to make sure we hit those timelines."

The first tranche is what the SDA calls the Warfighter Immersion Layer, to give DOD a way to test out the new systems. The majority of the Tranche 0 satellites—20 of 28—are for data transport using the Link 16 waveform, the military's standard tactical data link. SDA hopes to have all Tranche 0



Nicholas Plich/USAF

**The first 10 satellites in the Space Development Agency's Tranche 0 deployment of low-Earth-orbit satellites lifted off from Vandenberg Space Force Base, Calif., aboard a SpaceX Falcon 9 rocket.**

satellites in orbit by June.

These first satellites will "demonstrate low latency connectivity for laser communication," as well as the first-ever use of the Link 16 tactical data network directly from space, Tournear said. Bringing Link 16 into space will be transformational in terms of distance.

"Historically, they use their tactical radios to conduct operations and they've been limited to a range of a few hundred nautical miles," Tournear said. "Well, that's fine if

you're conducting limited operations. But if you're going to start to prosecute hundreds and hundreds of targets rapidly, you're going to have to pull in targeteers from all over the globe. Being able to tie into the space transport layer allows you to do that."

The other element of PWSA is missile tracking. While Tranche 0 will first track test objects, Tournear said SDA wants to eventually tackle complex threats.

"We're going to field a constellation that does advanced

missile tracking," such as for hypersonic glide vehicles and other hypersonic weapons. "We'll actually be able to track them so that we can send firing solutions," Tournear promised.

"Tranche 1, which begins launching in just 18 months, will actually be the first initial warfighting capability," Tournear said. "At that point—we're talking in 2025—we'll be able to have the ability to take the fight to a regional theater and bring these technologies to bear." ★



Members of the newly activated U.S. Space Forces Korea stand in formation during the unit's activation ceremony at Osan Air Base, Republic of Korea, Dec. 14, 2022.

Airman 1st Class Aaron Edwards

# Space Force Looks to Build Ties with More Combatant Commands

By David Roza

The Space Force is integrating its operations into the joint force, building relationships, and standing up components inside U.S. combatant commands. So far USSF has established component commands in U.S. Central Command, U.S. Indo-Pacific Command, U.S. Forces Korea, and soon U.S. European Command, U.S. Cyber Command, and U.S. Special Operations Command.

Lt. Gen. DeAnna M. Burt, deputy chief of space operations for operations, cyber, and nuclear, said it's all part of the Space Force's "normalizing" itself as a service.

"Every service presents service components to combatant commanders in order to present forces, to be part of the planning, and to deal with that service's very specific mission and business and to talk to those threats," Burt said.

Chief of Space Operations Gen. B. Chance Saltzman said, "Strong relationships with combatant commands are critical to our success: We will use the service component model to strengthen space integration in all the combatant commands."

Having a presence inside combatant commands, Burt explained, ensures Guardians can "do security assistance and security operation, and talk space with our coalition and allied

partners by being at the table in all of those meetings with the combatant commands in each of the theaters."

The Space Force enjoys a "very tight relationship" with both SOCOM and CYBERCOM, Burt said. Those ties are only natural, given how much space, cyber, and special operations depend on each other, suggested Maj. Gen. David N. Miller, director of operations training and force development at U.S. Space Command.

"It would be a disservice for the Space Force to only talk with the Space Force," Miller said. "I spend more time with the CYBERCOM and SOCOM J3s [operations] than almost any other J3 ... and it's because of the partnerships that are being developed."

Burt said a Space Force presence at EUCCOM is "on the horizon" and that both CYBERCOM and SOCOM are interested in having similar organizations. "So we're working through the mission analysis of what those look like."

Still, the Space Force is small, and must be strategic about its growth.

"I can't grow to the point that I can't execute," she said. "And so I want to make sure that we have the right resources, we're getting them the right personnel, we have all the right players in the right places to do the mission." ★

# After Intel Leak, Pentagon Launches Security Review

By David Roza

**F**our days after a member of the Massachusetts Air National Guard was arrested and arraigned in connection with a massive leak of secret and sensitive information allegedly released online, Defense Secretary Lloyd J. Austin III directed a “comprehensive” review of the military’s security programs, policies, and procedures.

Initial findings are due around June 1, along with any recommendations to improve Pentagon policies and procedures related to the protection of classified information. The effort is being led by Undersecretary of Defense for Intelligence and Security Ronald S. Moultrie, in coordination with Chief Information Officer John Sherman and Director of Administration and Management Michael Donley.

Airman 1st Class Jack Teixeira, a cyber transport systems journeyman with the 102nd Intelligence Wing, is accused of illegally copying and distributing a trove of secret documents.

The breach raised questions about whether security clearance processes are strong enough and whether existing insider threat programs set up in the wake of the Chelsea Manning and Edward Snowden leak cases more than a decade ago are stringent enough.

“I think we are pretty confident in how the FBI does conduct its background checks when it comes to somebody being able to obtain a security clearance,” said Deputy Pentagon Press Secretary Sabrina Singh. “That is why we are doing this process. If there is something that we feel that needs to be added to the background check process, I think that’s what this review will certainly lend itself to.”

The documents Teixeira allegedly released include classified details on Russia’s invasion of Ukraine and sensitive briefing materials and analysis on the Indo-Pacific and Middle East theaters. He is accused of sharing them on Discord, an online social media platform popular with video gamers.

“There’s an inherent risk that comes along with doing business,” Daniel Costa, technical manager of enterprise threat and vulnerability management at The National Insider Threat Center at Carnegie Mellon’s Software Engineering Institute, told Air & Spaces Forces Magazine. “What we’re talking about is human nature, and thinking about insider threats as an inherent risk to organizations requires real careful planning and organization-wide participation to reduce that risk to acceptable levels.”



**Pentagon Press Secretary Air Force Brig. Gen. Pat Ryder states that the USAF routinely trusts young people with major responsibilities, but this intel leak qualifies as a criminal act.**

Part of what makes insider threat prevention programs so difficult is that they require a “whole-of-enterprise” approach to be effective, Costa said. That can include involving management and human resources to monitor for warning signs such as policy violations, disruptive behavior, personal financial difficulty, or changes in working patterns.

“This is not a technology problem, it’s a people problem,” Costa said. “We use technology to help us manage those risks, but at the end of the day—especially in terms of making the organization less mistake-prone—that largely comes down to management-related and HR-related activities.”

Threats from trusted, cleared professionals pose the greatest risks and deepest challenges, because insiders like Teixeira already have security clearances and are therefore inherently trusted. The National Insider Threat Center at Carnegie Mellon’s Software Engineering Institute, where Costa works, was created to study and combat such threats.

“If there were a perfect solution for this, I’d be out of a job,” he said.

Pentagon Press Secretary Air Force Brig. Gen. Pat Ryder described the release as “a deliberate criminal act” by a service member.

“Each of us signs a nondisclosure agreement—anybody that has a security clearance,” Ryder said April 13. “And so all indications are, again, this was a criminal act, a willful violation of

Staff Sgt. John Wright



those, and again, another reason why we're continuing to investigate and support [the Department of Justice's] investigation."

In the wake of the Snowden and Manning leaks, President Barack Obama's Executive Order 13587, signed in 2011, required government agencies with access to classified computer networks to implement formal insider threat detection and prevention programs. But no program is 100 percent airtight.

"There's an inherent risk that comes along with doing business," said Costa. "What we're talking about is human nature, and thinking about insider threats as an inherent risk to organizations requires real careful planning and organization-wide participation to reduce that risk to acceptable levels."

The Insider Threat Detection Center at SEI maintains a database of more than 3,000 incidents where individuals with authorized access to an organization's documents or other assets used trusted access to either maliciously or unintentionally affect the organization in a serious, negative way. Reducing risk within an organization starts with identifying the most critical assets, which is a challenge in institutions as large as the Department of Defense, Costa said. Once those assets are identified, the organization must strategize to protect and limit access to those crown jewels.

"One of the unique things about insider threat programs is that the threat actors that we're talking about are our colleagues, our co-workers, our contractors, and other trusted business partners," Costa explained. "The challenges lie within the fact that this is not a risk that you can buy down to zero, by the nature of that trust relationship you entered into by bringing an individual into your organization."

For security professionals, the key to protecting those trusted relationships and at the same time reduce risk is monitoring that can help identify warning signs and enable leaders to intervene before individuals actually violate access rules, he said. Malicious insiders may use access for personal gain, such as financial fraud, intellectual property theft, cyber sabotage, espionage, or even notoriety. Unintentional insider incidents are also possible, where individuals can become victims of cyber phishing or other social engineering attacks, or where simple mistakes lead to substantial losses of data, funds, equipment, or information.

Monitoring for warning signs is the central function of an insider threat program, with indicators ranging from repeated policy violations, to disruptive behavior, personal financial difficulty, changes in working patterns, such as when and where individuals access files, or job performance problems, according to SEI research. Unintentional incidents are best prevented through training. Securing against insiders takes a "whole-of-enterprise" approach to be effective, Costa said.

Ryder said the military and the Intelligence Community routinely trusts young people with significant responsibilities, and they are often capable of handling it.

"Think about a young combat platoon sergeant and the responsibility and trust that we put into those individuals to lead troops into combat," he said. "That's just one example across the board. So you receive training and you will receive an understanding of the rules and requirements that come along with those responsibilities, and you're expected to abide by those rules, regulations, and responsibility."

But security clearances require background checks and include some level of continuous monitoring, processes that are limited and cannot unearth every possible motive or notion buried in individuals' subconsciouses.

The more data that requires classification, the more people there will be who require security clearances. Leaks like these

inevitably fuel debates over whether more or less information should be shared and whether more or fewer people should have access to different kinds of documents. Since 9/11, the government has sought to err on the side of sharing more, but that shifted after Snowden.

Some will inevitably talk about "right-sizing" who has access to sensitive assets, Costa said, which is a challenging task in organizations as large as the Department of Defense.

Security clearances are assessments, and no assessments can guarantee future activity, just as past performance of an investment cannot guarantee future success.

"Federal government security officers responsible for personnel vetting and insider threat detection may need to pay even closer attention to the answers to the questions of 'associations' now to assess the trustworthiness of current cleared employees and contractors who are continuously vetted as well as prospective clearance holders," RAND researchers David Stebbins and Sina Beaghley wrote in a commentary piece after the Jan. 6, 2021, U.S. Capitol riots, where several rioters were also members of the military and police.

At the press briefing, Singh said the purpose of the new review is to identify better security practices. "Is there something else that we need to do to add on to a process when it comes to a background check and obtaining a security clearance?"

Malicious insiders may join organizations with malintent; such individuals tend to act early in their tenure, Costa said. Older employees may feel more comfortable with those policies and procedures, but personal, professional, or financial stressors might motivate them to carry out an attack.

SEI recommends organizations "right-size" who has access to valuable or sensitive assets and when, a means to reduce the opportunity and temptations, Costa said. Those with greater access may fall under greater scrutiny. But simply establishing rules is not enough; they must be enforced to be effective.

"Some of the challenges we see with really large organizations, is just maintaining complete situational awareness of their current risk posture," Costa said. "It's easy to say that these are the rules that govern what authorized access looks like. But to ensure a complete coverage across, you know, really complex organizations with lots of different moving parts and independent security operations can be a real challenge."

Besides the ongoing criminal investigation of Airman 1st Class Jack Teixeira, the Air National Guardsman accused of leaking the documents, Kendall said the Department of the Air Force has initiated three efforts to get a better handle on its policies for protecting classified information:

First, the Air Force Inspector General is reviewing the Massachusetts Air National Guard's 102nd Intelligence Wing, Teixeira's unit, to see if anything went wrong in terms of following Air Force security policies. In the meantime, the 102nd Intelligence Wing "is not currently performing its assigned intelligence mission," Air Force spokeswoman Ann Stefanek said. The 102nd's mission has been temporarily reassigned to other Air Force organizations, she added.

Second, the department is conducting a "complete review of our policies themselves within the staff to make sure our policies are adequate," Kendall said.

Third, units across the entire Air Force and Space Force will conduct a stand-down for Airmen and Guardians to review their security practices and conduct training as necessary. The stand-down is to be conducted in the next 30 days.

"Obviously we have got to tighten up our policies and our practices to make sure this doesn't happen again," the Secretary added.





David Roza

An Air Force pararescueman looks out over the Nevada Test and Training Range during a simulated pilot rescue while flying aboard an HH-60G Pave Hawk at Red Flag 23-1 at Nellis Air Force Base, Nev., in February.

# RESCUE & THE HIGH-END FIGHT

## Think Combat Search and Rescue Is No Longer Viable? These Air Force Rescue Pilots Say, 'Think Again.'

By David Roza

It seemed like any Air Force rescue mission over the past 20 years: Two HH-60G Pave Hawk helicopters flying low over the desert to rescue someone on the ground, while a pair of A-10 Warthogs circled overhead for close air support and an HC-130J handled command and control.

Operating at the Nevada Test and Training Range in February, these rescuers were in training, part of a simulated air war that included friendly “blue” forces taking on hostile “red” aircraft and simulated surface-to-air threats as part of Red Flag 23-1. Their part was all about “how we fight underneath the big air war as it is going on, and how we still execute personnel recovery in a highly defended and threatened environment,” said Capt. Timothy Turner, a pilot with the 55th Rescue Squadron.

The Air Force has flown its Pave Hawks hard over the past 20 years in counterinsurgency conflicts in Iraq, Afghanistan, and elsewhere. But in those fights,

**“The Air Force has entered into a circular argument ... they have decided the helicopter is not survivable, so have under-invested ... their viewpoint of it not being survivable appears true.”**

—HH-60G Weapons Officer Lt. Col. Brian Losacker

the enemy didn’t have its own airpower, which won’t be the case if the U.S. finds itself in conflict with China or Russia, both of which have advanced fighters and surface-to-air missile systems.

“When we were doing counterinsurgencies, and we were losing pilots in those kinds of situations, the needs were different,” noted Air Force Secretary Frank Kendall in 2022 after deciding to cut back on the number of search and rescue helicopters the Air Force would buy to replace the Pave Hawk fleet. Kendall signed off on cutting the planned purchase of HH-60W Jolly Green II helicopters at 75, rather than 113 as originally planned, before Congress later pushed the total up to 85.

“There are some places where you’re just not going to take a helicopter,” Kendall said in a Defense News interview. “It’s just not going to work with that reality.”

Flying low and slow, without radar-absorbing stealth, helicopters are easy targets for integrated air defense systems, and they lack the range to bridge the vast stretches of ocean in the Indo-Pacific theater.

“If you’re Day One in the Taiwan Straits, that’s going to be a pretty hairy place to be operating,” said Lt. Col. Michael Kin-gry, an HH-60 weapons officer and National Defense Fellow at AFA’s Mitchell Institute for Aerospace Studies on Mitchell’s Aerospace Advantage podcast. “But likewise, there’s not some magical line out there in the western Pacific that, if you cross over and you’re not fifth-generation, you automatically burst into flames.”

Indeed, rescue Airmen argue that with the right equipment, HH-60Ws can be effective as scouts, communications relays, transports, weapons platforms, and ambulances in Pacific operations. But they need more support and less bureaucracy to bring that potential to the fight. The platform can still be upgraded, they say.

“Why don’t I put rockets and missiles and nonkinetics on my helicopter?” asked Lt. Col. Brough McDonald, HH-60G weapons officer and commander of the 305th Rescue Squadron, in an interview with Air & Space Forces Magazine. “The helicopters and the rescue fleet writ large have an opportunity to maximize the lethality and the survivability of the Combat Air Force as a whole. So it’s not just fighters protecting me, it’s—‘What can I do for fighters?’”

### NO OCEAN WIDE ENOUGH

Distance is a familiar problem for rescue Airmen, who have plucked people off of ships hundreds of miles from shore and covered areas the size of the U.S. Atlantic Coast on East African deployments.

Even fighter jets need aerial refueling to cross the vast empty spaces of the Pacific, said HH-60G Weapons Officer Lt. Col. Brandon Losacker. Though the HH-60W has a much shorter unrefueled combat radius than fighters, helicopters do not need a runway to land, which means operators can set up shop almost anywhere among the thousands of islands in the western Pacific.

“This gives us an agility over distance that complements the larger air campaign,” Losacker said. “Anywhere you have

a rock outcropping above the surface of the ocean that’s big enough to land an HH-60, you have a viable alert location.”

Rescue Airmen have a history of rescuing service members in the face of anti-aircraft threats. During the Vietnam War, radar-guided anti-aircraft artillery, surface-to-air missiles, and small arms fire at close range were all real threats, yet Airmen still managed to rescue 3,883 people leveraging their highly honed skills, “technological advances, innovation and imagination,” wrote historian Earl Tilford Jr. in his 1992 “Search and Rescue in Southeast Asia” history book.

Even today, helicopter crews typically rescue survivors far from target areas, McDonald said.

“I need to go to where the pilots jumped out of their airplane,” he explained. “That’s a different problem than the beaches of China on night one.”

### NOT SO ALONE, NOT SO AFRAID

Because no aircraft can do everything all on its own, rescue operations in contested areas require force packages of other aircraft to cover all the blind spots. At Red Flag, fighters provided close air support and others handled command and control, while the down-and-dirty rescue operation fell to the HH-60s.

“People see how rescue has done it for 20 years, which is a totally different conflict than what we were simulating at Red Flag,” Turner said. “We probably can’t do it alone and unafraid. We need to fit under that umbrella of the full United States Air Force, this big team game.”

Still, helicopter crews have tricks to deal with advanced threats. “I’m not low-observable, but I fly really low, which is different,” said McDonald. “Your advanced modern long-range SAMs, their factor threat is a fighter going above the speed of sound up at high altitude. It’s not optimized for my helicopter going the speed of a nice motorcycle at or below treetop level.”

In fact, Air Force rescue helicopter crews intentionally train against America’s most advanced radars to maximize their survivability, McDonald said. The Jolly Green II’s improved



A U.S. Air Force HH-60G Pave Hawk rescue helicopter from the 33rd Rescue Squadron provides dedicated combat search and rescue capabilities to help ensure the defense of Japan, as well as maintain a free and open Indo-Pacific region. The 33rd RQS shown here launching from a remote landing zone in northern Okinawa, Japan, during a training mission in April.

Lt. Col. Raymond Geoffroy

**A U.S. Air Force HH-60G Pave Hawk receives fuel from a HC-130J Combat King II assigned to the 1st Expeditionary Rescue Group during a Helicopter Air-to-Air Refueling (HAAR) mission within the U.S. Central Command area of responsibility in November 2022. The primary mission of the Pave Hawk is to conduct day and night personnel recovery operations in hostile environments enabling the recovery of isolated personnel during conflict. HAAR operations act as a force extender, keeping rescue assets in the air longer.**



Tech. Sgt. Daniel Asselta

radar warning receiver suite delivers more information faster to the crew, accelerating their decisions and giving them an edge over an adversary.

Yet the new HH-60Ws could be enhanced further. Laser jammers could defeat infrared-guided threats, and podded electronic countermeasures could disrupt adversary communications and help hide the helicopter in radio clutter. The Air Force built the HH-60W without external hardpoints for that equipment, which Losacker called “a critical design oversight.” But hardpoints could be added to support such equipment.

“We are not pursuing innovative ways to use the technology we have, with relatively cheap improvements, to increase the survivability of the platform we’re fielding,” Losacker said. “There’s a lot we’re leaving on the table.”

### **‘APPROACH THIS LIKE AIRMEN’**

Air Force officials believe 85 Jolly Green IIs provide sufficient rescue capability.

“The Air Force is committed to supporting personnel recovery to the joint force by providing the Department of Defense’s only dedicated combat search and rescue force,” said Air Force spokesperson Ann Stefanek. “As the Department pivots to peer adversaries, the Air Force was forced to make a difficult prioritization decision, but the Air Force believes the planned fleet of 85 aircraft will provide the necessary capabilities for the future. We built our future force based on what we would need in a conflict with near-peer competitors.”

To prepare for a different kind of war, the Air Force is exploring how to train pilots to survive on their own for extended periods as they make their way to less-contested pick-up locations. The service is also on the hunt for autonomous electric vertical takeoff and landing (eVTOL) aircraft, that could potentially rescue downed aviators without putting other Airmen at risk.

But uncrewed rescue vehicles might not be able to pick up injured pilots, and it may be years before an eVTOL platform

is considered reliable enough for such a mission.

“The only thing today is this Whiskey,” said McDonald. “That’s all you’ve got. So abandoning this platform, and saying, ‘Well, it’s not survivable.’ ... Does that mean you are just not going to have anything for 20 years or more?”

Podded electronic countermeasures, lightweight guided rockets and laser jammers could be just the beginning of capabilities that would help HH-60Ws mitigate advanced threats.

“What if you unlock the innovation engine that is the Air Force and approached this like Airmen: make this airplane survivable against the J-20, the SA-20,” McDonald said. “Hey weapons officers, come up with tactics. Hey engineers, innovate and get creative. I think you would be like, ‘Whoa, we’ve got something here.’”

### **RHYMING WITH THE PAST**

For Losacker, the issue isn’t that the aircraft can’t do the mission, it’s that the Air Force hasn’t equipped it to be as effective as it possibly can be. “The Air Force has entered into a circular argument in the sense they have decided the helicopter is not survivable, so have underinvested in its survivability, which thereby ensures their viewpoint of it not being survivable appears true,” he said.

The rescue community has seen this pattern before. After the Korean War, the Air Force cut the rescue service from 12,000 Airmen to 1,465, believing that nuclear wars would not require conventional rescue, Losacker noted in a published Air University paper in 2019. Airmen then scrambled to rebuild the rescue service over the course of the Vietnam War, only to again let it atrophy as they contemplated war with the Soviet Union, Losacker wrote.

“I said, ‘Wait a minute. You’re killing the rescue service,’” one officer recalled about the Air Force Council decision not to buy the HH-60 for the rescue program in the mid-1980s, as featured in the book *Combat Search and Rescue in Desert Storm*. “And the guy said, ‘If we put all that money into the H-60, there won’t be any money to buy fighters so there won’t

be any fighter pilots to rescue.' ... So there was no [HH-60]."

The Air Force purchased MH-60Gs for special operations starting in 1982, then later fielded HH-60Gs for search and rescue. Now as the Pave Hawk fleet is nearing end of life, its replacement is getting a similar pinch.

"There is a strong body of thought within the Air Force that any future war with a peer adversary will be so deadly CSAR will not be executable," Losacker wrote in 2019. But, he argues, "we are obligated to posture rescue to come to the aid of our Airmen."

The math is always hard to justify, McDonald agrees. "If it's an insurance value proposition, it doesn't make sense," said McDonald. "If there's \$1 on the table, do you make a jet that can't be shot down or do you not make that jet and buy rescue forces to go get them?"

Rather than insurance, McDonald suggested thinking of CSAR as a versatile, airpower-enabling element of the Air Force's force-packaging system. Helicopters can serve as "antenna farms" relaying information to fixed-wing assets from within the red threat rings of enemy missiles; they can provide fire support in defense of austere bases; and they can assist in mass casualty response, as they did in Iraq during the 2020 Iran missile attack. Air Force rescue helicopters have proven their multi-role capabilities in for decades in the U.S. Central Command area of operations, including recently while the command serves as a test lab for Agile Combat Employment, McDonald pointed out.

#### 'WE NEED A DECISION'

The rescue motto—"These things we do, that others may live"—is something rescue Airmen take to heart.

"We're not going to leave somebody out there," said Turner. "If it didn't happen today, we will try again tomorrow and the day after. We are always going to continue to try, and we take pride in that."

Like Army combat medics or Navy hospital corpsmen, who operate alongside Marines, rescue Airmen typically aren't operating alongside those they rescue. The Army doesn't send infantry into combat without medics, and the Marines don't deploy without corpsmen, Losacker said. So it should be, he added, for the Air Force: Fighter pilots should not be expected to fight China without rescue Airmen who have their backs.

"If our leadership's assessment is that rescue as a community is not viable, then what?" Losacker asked. "If not us, then who?"

He believes the Air Force envisions a rescue and attack combat unit that would have the funding and authority to explore experimental technologies, including eVTOL aircraft, that can be tried and tested in major exercises to accelerate development and bypass years of testing.

"If we want to increase speed-to-need, then there has to be a deliberate decision to accept greater risk," said Losacker, who believes risk can be mitigated by selecting very mature, experienced aviators for such a unit.

"My community, they don't know how to lose, and they don't accept it," said McDonald. "If we give them baling wire and bubble gum, they're going to figure it out, because that's just who we are. I think I anguish over it because I look at the taskings and the requirements and what we think the peer fight is going to look like and result in, and in spite of that, you want to shorten the buy?"

The Air Force budget strategy is built around inflicting casualties on adversaries, but Losacker insists rescue is still a crucial capability to minimize American casualties and protect downed aircrew.

"A key indicator a nation is very serious about preparing for a war is when they move field hospitals and blood supplies to support the front," he said. "The analogy holds for air war. Everything is empty saber-rattling with little true deterrence until you show you're ready and willing to get bloody." ★



The Pave Hawk has flown hard over the last 20 years, but Air Force leaders worry that it won't survive in a possible fight with China or Russia. Here, a 301st Rescue Squadron HH-60G Pave Hawk helicopter takes off from Bradshaw Army Airfield, Hawaii, during Exercise Distant Horizon in August 2022.

Staff Sgt. Darius Sostre-Miroir



# Accelerating Fifth-Gen Airpower

It's time now to ramp up F-35A production beyond 48 jets per year.

Courtesy photo

The Air Force's 461st Flight Test Squadron flew the first flight of an F-35A with Technology Refresh 3 in January. TR-3 contains the computational horsepower to support the Block 4 capabilities Air Force leaders have said will be essential to unlocking the full potential of the Lightning II.

By Lt. Gen. Joseph Guastella, USAF (Ret.), Lt. Col. Eric Gunzinger, USAF (Ret.), and Doug Birkey

**T**he F-35 Lightning II, America's most advanced production fighter jet, is on the cusp of a major leap in performance. Improved sensors, computers, and enhanced electronic attack systems will expand its weapons portfolio and ability to connect with other U.S. and allied systems across the battlespace.

The core upgrades are Technology Refresh 3 (TR-3), which advances the core computer processor, and Block 4, encompassing a range of capabilities that will be introduced over the next several years. Taken together, these capabilities mean the Air Force can now work to aggressively build the fifth-generation fighter force required by the National Defense Strategy. Beginning with the fiscal 2024 budget, every dollar for F-35 will fund TR-3-equipped Block 4 jets.

The need for those jets could hardly be greater. Long-delayed modernization plans mean today's Air Force lacks the capacity to meet concurrent security threats posed by China, Russia, Iran and North Korea, even as threats continue to arise from non-state aggressors in the Middle East, Africa, and elsewhere. As the 2022 National Security Strategy states, "We stand now at the inflection point, where the choices we make and



**"Accelerating 5th-Gen Airpower: Bringing Capability and Capacity to the Merge," is a Mitchell Institute for Aerospace Studies Policy Paper. Download the entire report at <http://MitchellAerospacePower.org>.**

the priorities we pursue today will set us on a course that determines our competitive position long into the future."

Airpower underpins much of that strategy. In peacetime, airpower deters adversaries and reassures allies; in war, airpower enables joint operations and holds both land and maritime targets at risk. Air Force fighters secure air superiority; deny an adversary's use of the electromagnetic spectrum; and provide unparalleled intelligence, surveillance, and reconnaissance.

While the Navy and Marine Corps also have fighter aircraft, they lack the volume of aircraft with the full range of capabilities afforded by U.S. Air Force jets. Navy and Marine Corps combat aircraft also don't provide a singular focus to joint objectives, as they are purpose-built to meet their service's unique objectives.

The Air Force's fighter inventory today is geriatric and inadequate after years of neglect and delayed investment. Indeed, the Department of the Air Force has been the least funded compared to the Navy and Army for more than 30 consecutive years. With the bulk of its fighter fleet now consisting of A-10Cs, F-15C/Ds, and F-16C/Ds—all designed in the 1960s and '70s—these jets now average 41, 38, and 32 years of age, respectively.

Even relatively new F-15Es average 30 years old. With each passing year, these aircraft are less available, as required downtime for repair eats into mission readiness. In 1990, the Air Force had 4,556 fighters; today,

it has less than half as many, just 2,221.

Operational demand, however, never abated. As the number of fighters decreased, the workload actually increased through decades of no-fly zone enforcement and close air support operations in Iraq and Afghanistan. Older fighters are now physically worn out and must be retired, but the Air Force has not been funded to procure a sufficient volume of replacements.

At a House Armed Services Committee hearing a year ago, Reps. Rob Wittman (R-Va.) and Donald Norcross (D-N.J.) highlighted the fact that the Air Force planned to retire over 600 fighters over the next five years, while acquiring just 246. As Wittman remarked, “400 is one heck of a big vulnerability, capacity, and capability gap.”

Of course, this shortfall was never the plan. The Air Force planned to field a high-low mix of F-22s and F-35s in the early 2000s, but the original F-22 requirement for 750 aircraft was ultimately reduced to 381, of which only 187 were built before production was cut short in 2009.

F-35 production, meanwhile, has yet to reach original estimates. By now, according to original plans, the Air Force should have had more than 800 F-35s, rather than today’s 272. The Air Force is now left trying to make the most of a fighter force out of balance with modern threats, especially those from China.

### THE WAY FORWARD

The Air Force now needs to buy new fighters at an aggressive rate and to procure the right mix of capabilities to ensure the force will remain relevant over the long term. The Air Force’s 4+1 modernization plan is built around the F-35, F-15EX, F-16, and F-22, which is to be replaced by the Next Generation Air Dominance (NGAD) fighter in the 2030s.

The F-15EX can meet homeland defense requirements and carry large-volume payloads in forward-deployed regions. Without stealth, it cannot fly too far forward in highly contested environments.

The F-16 remains an efficient capacity filler for the homeland defense mission, and can take on forward roles where the threat is not too high, given that it also lacks stealth and other key survivability attributes.

The F-22 is a vital fifth-generation air superiority aircraft designed to fly and fight in extremely contested airspace. It should remain in the inventory until NGAD arrives in the next decade. NGAD promises to be extremely capable but also costly, perhaps “multiple hundreds of million dollars” per aircraft according to the Secretary of the Air Force Frank Kendall. That suggests an inventory of around 200 NGAD aircraft, which is low given high demand across a range of global commitments and growing threats.

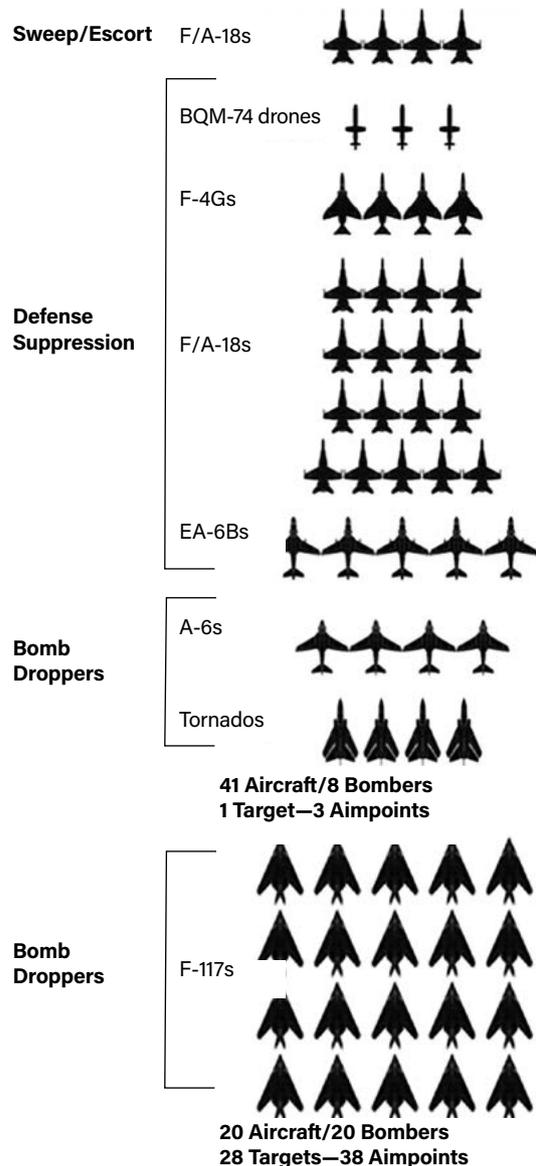
The F-35, therefore, is the key to the Air Force’s fighter modernization strategy, offering a mix of advanced capabilities, including survivability against advanced threats and the ability to empower the information battlespace with improved sensors, processing power, and connectivity. It is competitively priced at around \$80 million per unit, which allows the mass procurement needed to meet the Air Force’s capacity requirements.

As Air Force Chief of Staff Gen. Charles Q. Brown Jr. has explained, the F-35 will be “the cornerstone of the fleet.” While the imperative for fifth-generation fighter aircraft technology was often debated over the past three decades, that is no longer the case. In many ways, it comes down to demonstrated results. As Gen. Mark D. Kelly, commander of Air Combat Command, explained:

“The voices of the fifth-generation pilots, or those who have flown with fifth gen and had it help clear a path to the target, or

## The Stealth Multiplier Effect

A conventional attack package assembled in Operation Desert Storm included 41 aircraft, including eight bombers, to destroy a single target with three aimpoints. By contrast, 20 stealthy F-117s could destroy 28 targets hitting 38 aimpoints. The effect: Stealth increases effectiveness by a factor of 19.



Mitchell Institute

those who have flown against it and gotten shot in the face and were not sure where it was coming from—those voices started to spread out, and the believers of 5th gen are growing rapidly.

“These aircraft can penetrate defended airspace at lower risk, understand the battlespace thanks to the combination of sensors and processing power, team with other actors, secure mission tasks both kinetically and nonkinetically, and get home safe.”

However, Air Force officials contend that the service’s capacity solution is not as simple as procuring F-35s at a faster rate. The Air Force does not want to ramp up production aggressively until TR-3 and Block 4 capability is available. As is typical when pushing the edge of technology modernization, these upgrades have been slower to field than planned.

As with nearly every other successful combat aircraft, the F-35 was designed to be upgraded over time. TR-3 comprises a new integrated core processor (ICP) 25 times more powerful than its predecessor, along with an associated memory boost. These up-

grades are required for the software enhancements and additional hardware improvements that come in Block 4.

TR-3 and Block 4 are actually a rolling set of 75 specific upgrades that will occur over several years. Their combined implementation will give combatant commanders, pilots, and maintainers greater lethality and survivability in highly contested environments.

The first TR-3-configured F-35 flew on Jan. 6, 2023, with several Block 4 technologies awaiting installation. This suggests funds authorized, appropriated, and obligated in the fiscal 2024 federal budget and beyond will pay for TR-3-equipped F-35s and at least the initial elements of the Block 4 enhancements, establishing the foundation for future upgrades.

The Air Force has never exceeded acquiring more than 60 F-35s per year—the service’s official request for fiscal ’23 was 33 aircraft, and the fiscal ’24 request was 48. Congress actually approved funding for 45 in fiscal ’23. While this growth is positive, it is too little to meet demand. Mitchell Institute analysis shows that to reduce the average age of the fighter inventory to 20 would require acquiring closer to twice that number of aircraft per year. The 2024 Air Force request seeks 72 fighters, 48 F-35s and 24 F-15EXs.

## RECOMMENDATIONS

The Air Force must increase the rate at which it acquires fighter aircraft. Only the F-35 is in production and has the combination of stealth and information superiority needed. The F-16, F-15EX, and A-10 still have roles to play, but they lack the fifth-generation capabilities necessary to penetrate the threat space and create desired effects.

The Air Force therefore should:

**Buy More Fighters.** While the fiscal 2024 request to boost buys to 48 F-35s per year is a positive vector, the Air Force should accelerate procurement still more to build back the proper mix of modern capability and capacity. Given their fifth-generation attributes and affordability, F-35s should form the bulk of that annual buy.

**Develop and Implement a Force-Sizing Construct.** The mismatch between resources and demand is such that the Air Force needs to develop and implement a force-sizing construct that can clearly explain the scale of forces required to meet mission requirements stipulated by the National Defense Strategy. Resourcing that demand is a separate issue. Honestly acknowledging real requirements at strategic and operational levels

makes it possible for decision makers to understand the risks entailed by allowing capacity gaps to exist. As the Ukraine conflict illustrates, once a war starts, it is very hard to surge production of sophisticated defense systems.

**Harness Cost-Per-Effect Analysis.** Cost is a predominant factor governing the scale and scope of the Air Force’s future fighter inventory. Yet the attributes that comprise modern combat aircraft are difficult to assess with unit-cost approach. Sensors, computing power, and connectivity are the attributes that will determine whether a combat aircraft succeeds or fails in combat, and likewise will shape the type of force packages employed. It may take dozens of lower-cost aircraft operating at higher risk to achieve the same effects as just a few F-35s, for example. Thus, the more expensive airplane—the F-35—may actually be the less costly solution, when viewed from a mission perspective. The best way to account for these realities is using cost-per-effect analysis to evaluate the true operational costs incurred to execute various missions. A cost-per-effect approach will properly shape the ratio of aircraft in the USAF fighter mix.

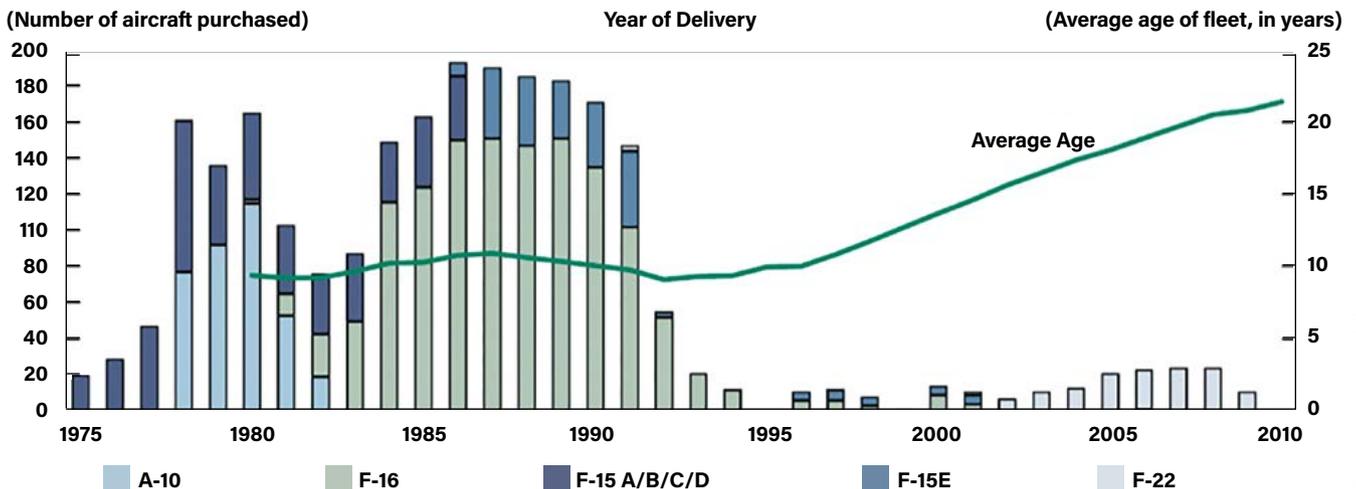
**Ensure Program Stability.** Predictable and consistent funding, stable requirements, and clear schedules are the foundational elements on which any healthy defense acquisition program is built. Considering that the F-35’s role in the Air Force’s fighter plan is vital for future combatant commander demands, it is imperative that DOD and Congress ensure these modernization efforts are executed in a stable, predictable fashion.

**Ensure Testing and Evaluation Does Not Impede Necessary Results.** The Air Force is moving a significant number of new aircraft as well as updated models through test and evaluation at a time when combatant commanders need these types on their flight lines fast. The current inadequacy of the Air Force fighter force is so dire that the Air Force may need to consider ways to streamline testing to ensure capacity gaps do not proliferate because of test and evaluation bottlenecks. Test and evaluation needs a major refresh to handle information-age systems more efficiently than the current enterprise allows. The Air Force should also consider how to add test and evaluation capacity, either by boosting the number of assigned aircraft or technicians or by better harnessing live, virtual, and constructive simulations.

**Monitor and Steward Aerospace Industrial Base Health.** Prime aerospace contractors are reliant on subcontractors with limited capacity. In the wake of the COVID-19 pandemic, many of these firms were severely affected, exposing a lack of elasticity

## The Cost of Delayed Procurement

As new aircraft purchases were reduced after the first Gulf War, the average age of the fighter force grew.



in the supplier base. If these strains are occurring in peacetime, wartime demand surges could prove impossible to answer unless the defense industrial sector can establish greater elasticity. Recent challenges to the weapons supply lines exposed by the Ukraine conflict are instructive here. Years of efficiency efforts shaved away the production elasticity in the armament industry, just as we are seeing now among aircraft makers. This problem must be solved proactively.

**Divest to Invest is Not the Answer; Increased Investment is Necessary.** Lacking cash, the Air Force is retiring systems to make budget space to pay for new systems, cannibalizing itself to acquire new capabilities. While this may have made sense after the Cold War when aircraft inventories were far larger, today's smaller inventory cannot be cut further without undermining the viability of many mission areas. In fiscal 2022, the Air Force sought to divest 137 legacy fighters but only buy 60 new ones; Congress opposed most of the cuts. In fiscal 2023, the Air Force sought to retire 1,468 aircraft and only buy 467 across the FYDP—a net reduction of over 1,000 aircraft. Again, Congress declined to approve most of the retirements. The fiscal 2024 budget submission asks to retire 131 fighters, but only procure 72. This pattern can only result in a capacity death spiral. Increased Air Force funding is required to meet demand today, modernize for the future, and make up for decades of anemic aircraft buys.

**Stewarding Human Capital is Part of the Fighter Equation.** It takes highly trained pilots, maintainers, and other personnel to operate the fighter enterprise. The F-35 will only deliver optimal results if properly manned. The Air Force currently faces a shortfall of around 1,900 fighter pilots. Worse shortfalls exist within aircraft maintenance, especially as older aircraft stay in the inventory past planned service life, keeping existing personnel from transitioning to new aircraft. As with building new planes, shortfalls experienced during peacetime will only get more challenging in times of war. The Air Force, DOD, and Congress should assess talent retention, training capacity, force sizing, and manpower requirements to ensure crews are available and able to maintain proficiency.

**Respect and Empower the Total Force.** The retirement of F-15C/Ds from Kadena Air Base, Japan, beginning in the fall of 2022 is a warning signal, as are coming capacity shortfalls in the Air National Guard, which generally operates older aircraft. The Air Force is sized without an operational reserve today, because the Air Guard and Air Force Reserve is now factored into the force-sizing equation to meet even peacetime needs. In war, when capacity runs thin, the nation lacks the traditional operational reserve, a strategic risk to important missions like homeland defense. It is imperative that Air Force modernization is resourced to meet the demands of the Total Force, not just the active component.

**Factor-in Allies.** The U.S. Air Force does not stand alone in facing a fighter aircraft modernization crisis. Many allies are dealing with similar challenges. The rapid rise in international F-35 buys speaks to the scale of this challenge. DOD must ensure that F-35 production can meet the growing demand from international partners and allies in addition to U.S. requirements. If allies cannot procure aircraft from the United States, they will go elsewhere. That would reduce the warfighting interoperability, cooperation, partnership, and economy that come from sharing a common airframe. To help meet global demand, DOD and



U.S. Air Force F-35 Lightning IIs from the 356th Fighter Squadron fly side by side with Republic of Korea Air Force F-35s in July 2022. Allies sharing common airframes and capabilities enhances allied ability to operate as a combined force.

Senior Airman Trevor Gordnier

Congress should invest in expanding production capacity to boost F-35 manufacturing throughput above the current rate of 156 aircraft per year.

## CONCLUSION

DOD, the Air Force, and Congress face a fighter aviation crisis that, left unchecked, could undermine every facet of joint force operations. Even cyber and spacepower will struggle to function if forward operating locations are under threat from the skies. The key to recovering the Air Force fighter force is in rapidly acquiring as many F-35As in as short a time as possible.

With TR-3 and Block 4 now close at hand, the Air Force can procure the most capable versions of the aircraft and boost capacity at the same time. Congress should ensure the funding is available and the Joint Program Office must hold contractors to schedule, performance, and budget targets. While this would require additive resources to achieve, the cost of the alternative is far higher: Failing to secure the skies, execute strike missions, and command the electromagnetic spectrum would prove disastrous for the United States and its allies.

The recent experience in Ukraine, in which neither side has achieved air superiority, is instructive. When Ukrainian President Volodymyr Zelensky spoke to the international community in the wake of Russia's 2022 invasion his plea was plain: "I have a need, a need to protect our sky. I need your help." In a conflict with China, the U.S. will have nowhere to turn if it cannot control the skies itself. To do so, it must rebuild its Air Force fighter force.

As then-Secretary of the Air Force Heather Wilson warned in 2018, "The Air Force is too small for what the nation expects of us." Since that time it has only grown smaller. ACC's Kelly drives the resource argument home even more succinctly: "The only thing more expensive than a first-rate Air Force is a second-rate Air Force."

*Lt. Gen. Joseph Guastella, USAF (Ret.) is Senior Fellow for Airpower Studies at AFA's Mitchell Institute for Aerospace Studies. He was Deputy Chief of Staff for Operations (A3) in his last Active assignment. Lt. Col. Eric Gunzinger, USAF (Ret.), is a former Instructor Weapons Systems Operator with over 1,800 hours in the F-111, T-37, T-38, F-16, and F-18. He was Air Combat Command's Program Manager for Testing and Certification of the F-35 pilot training simulator from 2009–2020. Douglas Birkey is Executive Director at Mitchell.*



Air Force JROTC

JROTC Instructor Chief Master Sgt. David Dillon teaches high school cadets in Logan, Ohio, in 2022. The Air Force has had difficulty attracting retirees like Dillon to these jobs, and will soon qualify Guardsmen, Reservists, and some veterans for JROTC instructor billets.

# Recalibrating JROTC

**DOD hits the reset button on high school instructor qualifications, opening jobs to more candidates.**

By Greg Hadley

**A**t Crest High School in Shelby, N.C., retired Master Sgt. John Davis teaches aerospace science and leadership three days a week as the school's Junior ROTC instructor.

The other two school days, he works on planning, logistics, finances, and paperwork while a substitute—a former full-time instructor—handles the classes.

After school, there's marksmanship practice on Mondays and Wednesdays until 5 p.m., drill competition practice on Tuesdays, and a flight team meeting on Thursday afternoons after school lets out. On Fridays, team sports or PT assessments provides for physical training, plus a "Raider Challenge" practice—a sort of team obstacle course. Even then, the week's not over.

Saturdays are often workdays, too. There might be marksmanship, drill, or Raider team competitions at local, regional, and even national levels, or there are monthly orienteering competitions, and

**"We are at an all-time low right now. We have over 160 units of our 870 units total that are unmanned!"**

—Air Force JROTC Director Col. Johnny McGonigal

sometimes orientation and practice flights with the Civil Air Patrol.

If none of that is planned, there are also community service events, such as offering a color guard for a parade or the grand opening for a Walmart in town.

"I don't sleep much," Davis says with a laugh.

His wife, Shauna Davis, doesn't think it's all that funny. "It's to his detriment, to his health, to his sleep," she chimes in. "He's burning his candle at both ends. But I know he's doing what he loves, and he wouldn't have it any other way."

Maybe he would—if he could. Air Force Junior ROTC programs are to have at least two instructors each, but Crest High has been unable to fill its second slot for two school years. There have been interviews, Davis said, but no hires.

Among the Air Force's 870 JROTC programs, nearly one in five is short an instructor, said Col. Johnny R. McGonigal, the service's JROTC director. Some programs have two vacancies.

"We are at all-time lows right now," McGonigal told Air & Space Forces Magazine in late March. "We have

over 160 units of our 870 units total that are undermanned.”

Typically, undermanned units have six months to solve their staffing shortage before they’re placed on probation, then 12 months before the Air Force begins the deactivation process.

With so many programs in trouble, many schools are operating on borrowed time, the Air Force having held off on shutting down programs while waiting for a change in law to go into effect, a change leaders in Washington hope will be transformational to JROTC.

## EXPANDED ELIGIBILITY

Traditionally, JROTC instructors have had to be retired military members who had completed 20 years or more of Active service. But Section 512 of the 2023 National Defense Authorization Act, signed into law by President Joe Biden on Dec. 23, Paved the way for National Guardsmen, Reservists, and veterans with at least eight years of service to also be eligible for these jobs.

The change drastically expands the pool of eligible candidates for instructor jobs. “With this new language and opportunity, we really feel it’s going to get after ... improving our instructor manning, which is at all-time lows for the Air Force,” McGonigal said. “It opens up the pool of eligible candidates to a point where we’re really optimistic that we can not only improve but maybe get totally 100 percent manning at some point in the near future.”

Positive feedback is fueling McGonigal’s optimism.

“My chief of instructor management, he’s fielding a lot of phone calls,” McGonigal said. “He’s been getting quite a few calls from Guard and Reserve who are asking about the program. We field calls in my office as well quite frequently from folks that are asking, ‘Hey, when is this going to be implemented, what’s it look like? When is it going to be show time for the new system?’”

In one case, an Air National Guard tech sergeant drove from Georgia to AFJROTC headquarters at Maxwell Air Force Base, Ala., just to ask about the new eligibility standards. Already a high school teacher in his full-time job, and with both JROTC instructor slots open in his school, he was eager to find out more.

We’re getting enough interest in it that we think that there’s going to be a lot of opportunities ... here like this tech sergeant. We think that there are already a lot of schools that have re-

cently separated service members and currently serving Guard and Reservists who are already teaching at the school, so it’d be a relatively easy transition for them to transition over to the units if there’s one in place that already had a vacancy,” McGonigal explained.

A 2016 survey by the Department of Education identified 25,000 veterans who are high school teachers, and the Department of Defense has sought to encourage more veterans to pursue a career in education through the Troops to Teachers program.

McGonigal noted that units that had been on probation due to understaffing were granted a reprieve as the Department of Defense works out details on the new system. But one of the biggest issues the Pentagon must figure out is also a familiar hurdle for many potential JROTC instructors: pay.

In the current system, JROTC instructors are paid what they would earn if still on Active duty, including housing and subsistence allowances. The instructor’s retired pay covers much of that, DOD pays part, and the school pays the balance.

But veterans and Reservists require more up-front funding from DOD. The NDAA offered only some guidance about how this should be done, directing DOD to pay for half of every instructor’s salary, but that left the details to be worked out by the Pentagon.

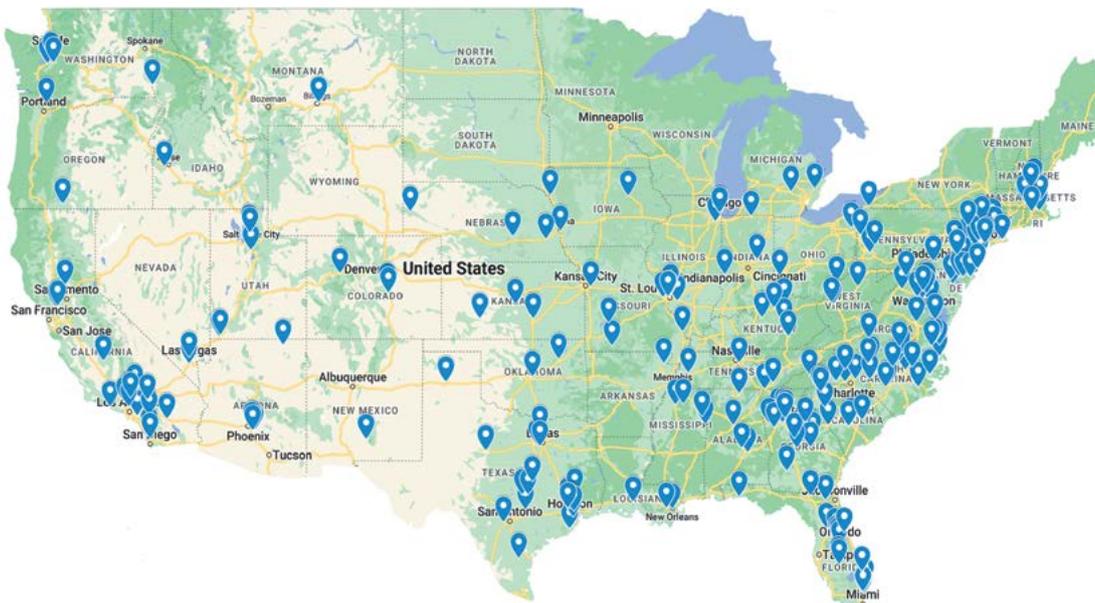
McGonigal said he hoped the new pay scales will be ready this summer.

“We’re working rapidly with the Department of Defense and other services to finalize updates on the new instructor pay scale, making sure it’s fair in comparison to our current retired instructor pay construct,” McGonigal said. “As expected, this initiative will also go through a finance and legal process to make sure what we’re doing is within the law—and practical. Once complete we’ll be able to reimburse schools so they can hire and pay instructors. We’re hopeful to get this done in time to onboard people before the next school year.”

The Office of the Secretary of Defense declined to offer an early look at how the new pay scales might be structured.

For the Air Force, other changes may also be in the works. When the Budget Control Act went into effect in 2012, the Air Force decided to limit JROTC contracts to 10 months instead of a full year. If schools wanted instructors to work year-round, they had to bear the full cost during the summer.

“Some school systems actually, they’re ponying up the other



**Air Force JROTC vacancies are vast and all over the country, as indicated by this map. The Air Force hopes altering its pay and eligibility rules will help solve the shortfall.**

Air Force JROTC



Airman 1st Class Greydon Fursteneau

**Air Force JROTC Cadet Shannen Justiniani is using her time in the Salisbury, Md., JROTC program to earn her private pilot's license. Her goal: to commission into the Air Force and become a pilot.**

two months, the few months they're not getting reimbursed for," Davis said. "A lot of schools won't do that. They just haven't put it in their budget."

Davis said he wasn't sure if the 10-month contracts were a deterrent or not, but they certainly weren't an incentive to take those jobs.

But McGonigal noted instructor manning started to decline after that switch.

"We feel that that had an impact, almost immediate, and it's been kind of declining since that point," he said. "Our senior leaders are looking at this 12-month contract authorization right now, but as far as I know, that's still being worked."

Pay is certainly a factor in retention, said retired Chief Master Sergeant of the Air Force Gerald R. Murray.

"It is a fairly high turnover rate," Murray said. "In my view and discussion, [that suggests] it does have to do with pay," Murray continued. "Most people getting out of service—especially senior NCOs and lieutenant colonels ... they've accomplished and risen to senior ranks in the military. ... They're in their 40s and 50s, and that's the highest earning time frames of most people's lives. And they're looking out for their own families and everything, and many of them have still got children."

Traditional JROTC pay only "keeps them where they were," Murray said. "As one retired colonel told me, he says, 'I really liked it.' But then he almost doubled his salary with industry within a year after he went into the program."

## VALUES

If JROTC has one advantage in the fight for instructors, it's the program's societal impact, leaders say. JROTC is not a recruiting program so much as a youth citizenship and discipline program.

"I find most instructors that I deal with, they come to have a great deal of satisfaction that they are working to develop the future, that they really are committed to teaching and to working with youth and know that what they're doing is great value," Murray said. "They look at the value of the profession, if you will, instead of just a job."

Davis views the extra work that goes into his job as a responsibility. "I want the kids to have every advantage available to them, that they're able to compete and participate. And I guess I'm just the one that facilitates all that. And I guess that's really my main motivation. I just want the kids to succeed, I want them to have the opportunity to do what they need to do."

McGonigal says the program is worth fighting for.

"When I go see a Junior ROTC detachment, talk to cadets and see them perform and they give me a briefing and I interact with them, my pessimism gets reversed to optimism, because I think we're in good hands," McGonigal said. "These cadets are our future. They have shown a propensity to serve, they want to belong to something bigger than themselves, and what they learn from the Junior ROTC program, they learn about selflessness and discipline and attention to detail and

**Retired Senior Master Sgt. William Hardy with his JROTC class at Klein Forest High School in Houston. A 22-year veteran, Hardy has been a JROTC instructor for more than 16 years.**



3rd Audio Visual Squadron



Courtesy photo

**The drill teams from Waller High School (Texas), led by retired Master Sgt. Joel Barnett and Lt. Col. Byrl Engel, pose with trophies won at the Air Force Nationals Drill Competition in March 2022. Competitions and other extra-curricular activities add to the workload for JROTC instructors, which often stretches to a six- or seven-day-per-week job.**

community service and a wide variety of intangible and tangible benefits that they're not going to get in any other program."

While many cadets are drawn to the program because of interest in the military, they won't all go on to futures in the military.

"We ask the kids every year, 'Why did they get into JROTC?'" Davis said. "And we have various answers, like, 'My mom made me,' or 'My dad made me,' or 'I just wanted to see what it was like,' or 'I want to go in the military.' It's about half-and-half—some kids who just wanted to see what it was like, the other half, they're thinking about going to the military and they think that that's the way to do it."

## CHANGES

Like any government or schools program, JROTC has had its share of controversy. The New York Times reported last year on sexual assaults in JROTC programs, and also on instances of schools automatically enrolling some students in the program.

In a November 2022 congressional hearing, Air Force Assistant Secretary for Manpower and Reserve Affairs Alex Wagner told lawmakers that the department was reviewing its oversight measures and working to hire more female instructors.

McGonigal said women instructors make up "around 10 percent right now," but Wagner's goal is to drive that up to "closer to 40 percent, which is more representative of our student cadet corps."

To raise awareness and assurance about abuse concerns, DOD now has a Childcare National Agency Check and Inquiry

screening for all instructors. And McGonigal said any school district found to be forcing students into JROTC against their wishes will lose accreditation.

The bigger issue is keeping programs going.

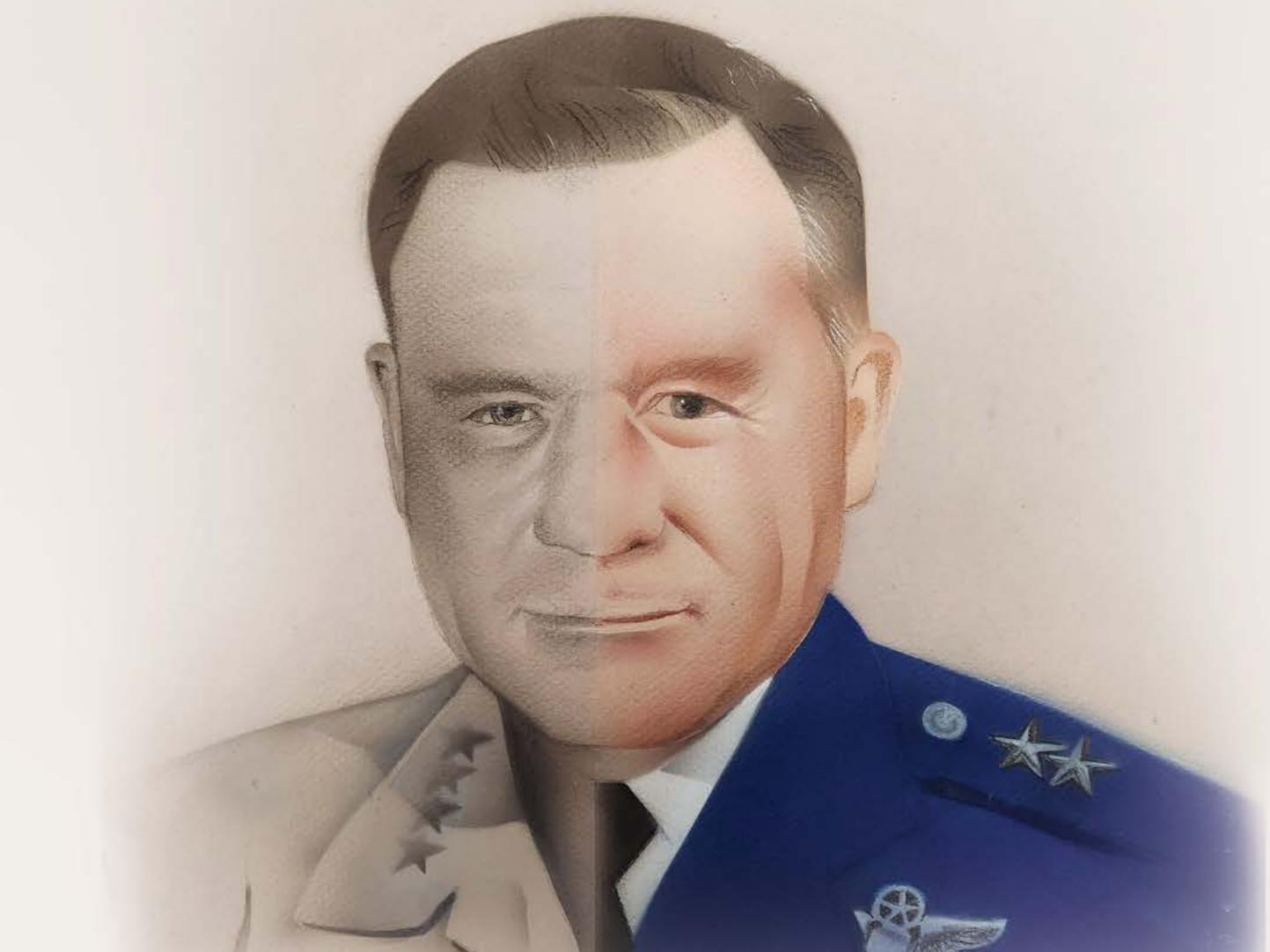
"Most schools, they've got really good support," Davis said. "Most schools want to keep their ROTC program. They are an advantage. I think they help the school."

McGonigal said shifting to younger teachers will also keep the programs fresher and more closely related to the modern military. "A lot of our retirees have been in this [ROTC] job for nearly 30 years," he said. "They haven't been in the military for a while. So if you have an actively serving Guard or Reserve [member] ... they have recency and relevancy in the current operational military. ... They could speak to current events, current technologies, current opportunities."

In some cases, the Air Force will seek to shift the presence of JROTC programs to better reflect the nation. "We have a mandate to fairly distribute our units across the United States," McGonigal said. "So this is an opportunity to close units in overrepresented states." McGonigal emphasized that experience, whether recent or less so, is key to JROTC's goal of promoting good citizenship.

At Crest in North Carolina, Air Force JROTC has been in place since 1994. That's almost 30 years.

"We're coming up on the anniversary year in another year," Davis said. "We'll definitely hit the anniversary. I just hope that I won't be the last ROTC instructor at Crest High School." 



# Clearing the Air

Following the President's intent cost Gen. John Lavelle his job—and two stars. The fight to fix his record isn't over yet.

By Nick Adde

**S**even months after taking command of 7th Air Force in Saigon, Vietnam, Gen. John D. Lavelle was suddenly recalled to Washington on March 23, 1972. Two weeks later the Pentagon announced Lavelle had retired “for personal and health reasons.”

Lavelle retired at his permanent grade of major general, without the usual confirmation at his highest grade on Active duty. Within a month, his medical malady was exposed as fiction, when Rep. Otis Pike, a New York Democrat, called for a congressional inquiry. Under pressure, then-Air Force Chief of Staff Gen. John D. Ryan released a statement, saying Lavelle was “relieved of command of the 7th Air Force by me because of irregularities in the conduct of his command responsibilities.”

In hearings and news articles, the story came out: The Air Force found 28 documented instances where,

**Lavelle was “relieved of command of the 7th Air Forces by me because of irregularities in the conduct of his command responsibilities.”**

—Air Force Chief of Staff John Ryan

it said, Lavelle directed the unauthorized bombing of North Vietnam under the guise of “protective reaction” strikes, exceeding his authority and violating U.S. rules of engagement. Operational reports had been falsified to conceal the nature of the strikes. The false reporting came to light after a sergeant wrote to his senator, triggering an investigation that led to Lavelle’s dismissal. The Air Force itself was accused of a cover-up for putting out the false tale of a medical retirement.

Lavelle defended his actions, saying he had been encouraged by the Secretary of Defense and others to interpret the rules of engagement liberally. Falsified reports were submitted by subordinates who misconstrued his instructions, he maintained.

When the Air Force sought to promote Lavelle to lieutenant general, the Senate refused, but it allowed him the retired pay based on his previous four-star rank because his official relief came after his retirement took place.

Newsweek magazine called the scandal a “widespread conspiracy” in which “scores of pilots, squadron and wing commanders, intelligence and operations officers, and ordinary Airmen were caught up in the plot.” The Washington Post’s George Wilson, a leading defense reporter, wrote: “What Lavelle did—taking a war into his own hands—has obviously grave implications for the nation in this nuclear age.” Nina Totenberg asked in the National Observer, “Was Lavelle the only bad apple?”

Lavelle died in 1979 before he was able to restore his reputation, maintaining steadfastly that he had done nothing wrong. In 2007, some 25 years after his firing, previously undisclosed White House tapes demonstrated that both President Richard M. Nixon and Defense Secretary Melvin Laird had full knowledge of the actions Lavelle had directed, and that they supported those actions. Laird is captured on tape arguing that Lavelle’s “protective reaction should be viewed liberally.”

Yet even with that knowledge today, clearing Lavelle’s name has remained unfinished business for two former Air Force judge advocates who have dedicated much of the past 15 years to achieving justice in the general’s memory.

In 1972, 28-year-old Air Force Capt. Ed Rodriguez returned from R&R to the 7th Air Force legal office to find his normally bustling shop empty, the staff essentially floored by the sacking of their commander.

Now nearly 80, Rodriguez and another retired Air Force JAG colonel, Col. Gordon Wilder, have compiled a comprehensive case in Lavelle’s favor. The two launched their drive to clear Lavelle’s name in 2008, roughly a year after the White House recordings were released. In the years since, their case has endured a byzantine back-and-forth among the Air Force, the Office of the Secretary of Defense, the Senate, and the White House. If Lavelle is ever to be cleared, they need the support of every one of these institutions.

Rodriguez and Gordon have amassed a litany of documentation outlining their complicated case. They argue Lavelle took necessary and legal steps to protect his pilots and air-crews, and lament the failure of past administrations to right a wrong inflicted more than 50 years ago.

ive issues as to whether [he] ordered strikes against North Vietnamese targets outside the rules of engagement, and secondly, whether he ordered the falsification of the records of those strikes,” Rodriguez said. “That case has been substantively won. The record is such now that we can definitively say General Lavelle was within the rules of engagement.”

The Air Force Board for the Correction of Military Records (AFBCMR) ruled twice, in 2009 and 2016, that Lavelle acted within his authority and did not violate orders in ordering the strikes.

But while those rulings have been forwarded in the past to the Pentagon and Senate, the matter has repeatedly been refused or kicked back for further study.

Rodriguez said Lavelle directed those bombing runs under orders conveyed to him through his chain of command.

The Nixon White House transcripts were initially released in 2002 and 2003 and make clear the President badly wanted the radar sites knocked out. Nixon was more acutely concerned about his impending trip to China, however, which would pave the way to formalized relations between the two countries for the first time in 25 years. He wanted all bombing of North Vietnam to cease from Feb. 17 through March 1, 1972, while he was in Beijing, and wanted to avoid any adverse publicity that might cloud his planned Moscow summit in May 1972—the first visit to that capital by a U.S. President since Franklin D. Roosevelt.

In a 2015 white paper published by the National Defense University, author Mark Clodfelter described how Sgt. Lonnie Franks, a U.S. intelligence specialist for the 432nd Tactical Reconnaissance Wing at Udorn Royal Thai Air Base, alleged that pilots falsified reports to claim they were fired upon before taking action against enemy targets. Franks sent his allegation to Sen. Harold E. Hughes, an Iowa Democrat.

Hughes forwarded the information to then-Air Force Chief of Staff Gen. John D. Ryan, who asked the Air Force inspector general to investigate. According to Clodfelter’s account, the IG concluded Lavelle ordered 28 unauthorized missions over a four-month period. Ryan then fired Lavelle and offered him the chance to retire. Lavelle retired, accepted his demotion in title, but kept his four-star retired pay, which was endorsed by a 14-2 vote of the Senate Armed Services Committee.



**Sitting side by side, then-Air Force Chief of Staff Gen. John Ryan (left) and recently fired Maj. Gen. John Lavelle (in civilian clothes) testified before a House Armed Services subcommittee in 1972, as Congress investigated whether Lavelle acted within his authority or not in directing bombings in North Vietnam.**

AFA Archive



Nixon White House Photographs

**Tape recordings of conversations between President Richard Nixon (center) and National Security Adviser Henry Kissinger (left) make clear that the President believed air attacks on North Vietnam ordered by Gen. John Lavelle followed guidance he had given to Defense Secretary Melvin Laird.**

To support their case, Rodriguez and Wilder say White House transcripts contain numerous conversations that demonstrate Nixon's commitment, and that of his National Security Adviser, Henry Kissinger, to eliminating the anti-aircraft threats.

"Protective reaction should include preventative reaction," Nixon told Kissinger and Ambassador to South Vietnam Ellsworth Bunker during one conversation on Feb. 3, 1972, two months before Lavelle was fired. "When the radar's locked on ... that's late to start attacking," Bunker said.

"I think the way to handle it ... is to give them [pilots] a blanket authority," Kissinger said. "Right now, they [bombers] can hit only when the radar is locked on. And that's very restrictive because that means the plane which is in trouble also has to fire."

Nixon added, "I am simply saying that we expand the definition of protective reaction to mean ... protective reaction where a SAM [surface-to-air missile] site is concerned. Anything that goes down there, just call it ordinary protective reaction."

Nixon wanted to avoid public knowledge of such strikes. "I want you to tell [the commander of U.S. forces in Vietnam, Army Gen. Creighton] Abrams ... that he is to tell the military not to put out extensive briefings with regard to our military activities from now on until we get back from China," Nixon said.

Later, in another conversation, Nixon said: "Remember I said ... if they hit there, go back and hit it again. Go back and do it right. You don't have to wait till they fire before you fire back.... "Remember I told [Defense Secretary Melvin] Laird that. ... Now, Lavelle apparently knew that and received that at some time."

On April 6, 1972—the day before Lavelle was officially sacked—Nixon and Kissinger emphasized to Air Force Lt. Gen. John W. Vogt, who would soon succeed Lavelle as 7th Air Force commander, that they wanted more aggressive attacks on enemy strongholds.

"I want you to clearly understand that the performance of the [Air Force] out there has not been, in my view, adequate," Nixon told Vogt. "It's been routine and by the numbers, with no imagination."

Nixon went on: "The thing I want you to do is kick everybody's ass out there. ... We've got to go in there and win this operation."

Rodriguez and Wilder say this direction explicitly change the rules of engagement to make clear that Nixon wanted what

Lavelle had been doing in the first place.

In 2009, the AFBCMR cited the tapes in recommending Lavelle's rank be restored, but the Senate Armed Services Committee balked. Chairman Carl Levin (D-Mich.) and ranking member John McCain (R-Ariz.) wrote to then-Defense Secretary Robert M. Gates in December 2010, saying in their view the board had relied on incomplete data to draw its conclusion.

They argued the Nixon tapes offered insufficient proof and skirted the fact that Lavelle had authorized seven airstrikes between Feb. 17 and March 1, 1972, at the very time when Nixon was in China, counter to the President's expressed wishes.

"Additional work needs to be done to assemble a complete, historically accurate record regarding Maj. Gen. Lavelle's authority under the rules of engagement in effect in 1972 to conduct preplanned air strikes, his culpability for falsified official reports, the justification for his relief from command and ultimate retirement in the grade of major general, and to reconcile apparent factual conflicts," Levin and McCain stated.

Official Air Force historical records of the war, they asserted, contradicted the board's conclusion that Lavelle "had received 'out of channels' authority to conduct airstrikes in violation of the ROE [rules of engagement], and to conceal that he had done so."

They also mentioned that Abrams had earlier been ordered not to conduct a strike against the Moc Chau ground control intercept radar on Jan. 5—a mission similar to the one Lavelle authorized days later.

Levin and McCain also noted a contradiction in two of Laird's statements. While Laird had admitted to authorizing the planned strikes in a 2007 letter to Air Force Magazine, he had written in a 2008 biography that he disagreed with Abrams' request for authority to make such strikes. These facts needed to be run to ground, they said.

"Finally, the committee believes that the Department [of the Air Force] did not consider sufficiently the importance of the falsified official reports submitted by Maj. Gen. Lavelle's command," Levin and McCain wrote.

In June 2011, then-Air Force Secretary Michael B. Donley called for an investigation and independent review of the Lavelle matter. Former FBI Director William H. Webster took charge of that review, leading a staff of military and civilian historians and lawyers.

Donley directed Webster and his team to conduct interviews, take sworn statements, and examine records, focusing particular attention on the concerns expressed by the Senate Armed Services Committee.

"The report will thoroughly address the historical record and analyze Maj. Gen. Lavelle's authority to conduct preplanned air strikes under the rules of engagement in effect between November 1971 and March 1972, his culpability for falsified official reports, and the justification for his relief from command and ultimate retirement in the grade of major general," Donley wrote.

Webster filed his report on May 28, 2015, concluding that Lavelle's reputation had been wrongfully tarnished. But Webster stopped short of fully exonerating Lavelle, instead recommending that his permanent rank be elevated to lieutenant general, one star short of his four-star status in Vietnam.

Webster concluded the airstrikes in question were in fact "authorized by factors outside of the well-settled interpretation of the published ROE, specifically the implicit and oral approval of General Lavelle's superiors and President Nixon. But he also determined that while Lavelle was not legally culpable

for either the air strikes or falsified reports, “he nonetheless bears some responsibility for the falsified reports” because he had ordered subordinates not to report “no reaction” and failed to make clear his intent. As a result, Lavelle’s superiors in the Air Force felt he exceeded his authority when he ordered the airstrikes, and “was responsible for the false reporting.”

Rodriguez and Wilder disagree with that conclusion. “Judge Webster, in his report, concluded that Lavelle had the authority from his chain of command to conduct the questioned strikes,” Wilder said. Webster, Rodriguez added, “tried to play Solomon and cut the baby in half. In our opinion, that was a result of Judge Webster’s unfamiliarity with the Air Force records-correction system.”

Rodriguez and Wilder followed up Webster’s report with a second appeal to the AFBCMR. The board took up the case, and responded favorably; in 2016, the AFBCMR recommended Lavelle’s rank be restored to general.

Marine Corps Gen. Joseph F. Dunford, then the Chairman of the Joint Chiefs of Staff, approved the board’s recommendation in 2018 and forwarded the matter to the Senate, where it languished.

Since then, the case was returned to the Pentagon, where it has been shuffled back and forth between the Office of the Secretary of Defense and the Office of the Secretary of the Air Force. The inhabitants of both offices have changed multiple times over that period. Today, the matter is in the files of Air Force Secretary Frank Kendall, Rodriguez said.

Department of the Air Force spokesperson Laurel Falls said, “The Air Force has put significant time and effort into processing this request over the years with both the Department of Defense and Congress. At this time, there’s not been a resolution on the request.”

Rodriguez and Wilder hope still “to persuade the Department of the Air Force to recommend to the Secretary of Defense that Lavelle be nominated posthumously for advancement back to his wartime grade as general.” Rodriguez said, “If Secretary Kendall were to do that, his would be the fourth such secretarial recommendation.”

“DOD has kind of played pingpong,” Wilder said. “Every

time there’s a change in administration, [the department] sends it back to a new Secretary.”

For Wilder and Rodriguez, the case has taken on personal meaning.

“I knew John Lavelle,” Wilder said. “I was an Air Force brat. He was commander of the 17th Air Force in Germany when I was a kid. He used to come out and watch us play football in front of his house.”

Lavelle doesn’t deserve to be remembered as “the one general in U.S. history that refused to obey the orders of the President.”

That history is taught today unfairly, Wilder said, noting also that Lavelle’s case has been used by the military academies as a textbook example of exceeding authority.

“That is so wrong,” Wilder said. “I get emotional and angry just thinking about it.”

For Rodriguez, it is about setting the record straight all these years after his commanding officer was dismissed.

“I was there when it happened,” Rodriguez said. “Of course it was way above my paygrade, and I didn’t understand what was happening when he was removed from command.” But fixing the record is “the right thing to do.”

“Loyalty goes down from the commander to his men, and back up to the commander,” Rodriguez said. “I am showing my loyalty to my commander by continuing to work all these years to exonerate him, and to get his four-star grade back for him.”

Said Wilder: “Everything General Lavelle did was for his people. He didn’t fly these missions—or order these missions—to do anything but protect his Airmen after the conditions in Vietnam had changed such that his pilots were getting killed with no notice, because of the way the radars were added in North Vietnam.”

“The Lavelle family has borne the stigma of having their father cast as a bad guy for 45 years,” Rodriguez said. Lavelle’s children are now in their 70s and 80s. “It’s just gone on too long,” he said. The Vietnam War ended 50 years ago, it’s painful history eased by the passage of time and the forgiveness of many. The time has come, Rodriguez argues, for Lavelle’s war to be ended as well. ★



**Robert Gates (left) was deputy director of the CIA under Director William Webster (2nd from left) during President Ronald Reagan’s administration, when Frank Carlucci (2nd from right) was Secretary of Defense. When Gates got Carlucci’s job nearly two decades later, he turned to his old boss, Webster, to provide a thorough independent review of the Lavelle case.**

White House via National Archives

# Hidden Heroes: Celebrating Those Who Care for Our Wounded



Samantha Mitchell/staff

AFA Day was host for 35 caregivers at the November 2022 Air Force Wounded Warrior CARE Event at National Harbor, Md. The caregivers participated in activities to help themselves as well as their loved ones improve on recovery techniques when they get home.

In 2016, a ruptured brain aneurysm left retired Chief Master Sgt. Garret Kuwada with permanently impaired balance, hearing, speech, and vision. On his road to recovery, his wife Joey has been by his side as his round-the-clock caregiver.

"Being a caregiver means always being there for my warrior, my husband, and helping him through the stuff he can no longer do and being there for the times to help him when he can't help himself," she said. "My motivation is to keep him going and to get him back at the level he was, to help get him back to the person he was before

his injury, and to let him know that he still is that person. I believe it is my job to pull that out of him and make him believe it himself."

Recovering from an injury is a long and arduous process, but caregivers ensure their warriors don't have to make the journey alone. Becoming a caregiver means accepting a permanent term of service, but their dedication is a natural response to help a loved one in need.

May is the Month of the Military Caregiver, the backbone of the wounded warrior community. Show your support for caregivers, their warriors, and their sacrifices by visiting [www.AFA.org/caregiver](http://www.AFA.org/caregiver) and making a gift today.

"Caregiving is a 24/7 operation," said Rodney Stark. His wife, retired Master Sgt. Lyndie Stark, has struggled through several injuries and illnesses, including a traumatic brain injury, PTSD, severe migraines, and knee reconstruction. Although these circumstances are challenging for warriors and caregivers alike, Stark is determined



Roger Wollenberg/DOD

A recovering Airman competes in the cycling time trials event at the Air Force's Warrior Games Trials at Nellis.

to help his wife rediscover her warrior spirit within.

"What motivates me to keep going as a caregiver is to see my warrior shine and remind her of what's already there and what's been there before," he said. "It's easy for [wounded] warriors to feel that loss of value and what their identity was that got taken away, so as a caregiver my main motivating factor is to help her see that again."

Fortunately, caregivers like Kuwada and Stark don't have to shoulder their commitment alone. Kuwada and Stark are two of 1,268 caregivers and spouses who are enrolled in the Air Force Wounded Warrior (AFW2)'s Caregiver and Family Support Program.

The program provides resiliency training, one-on-one conversations with DAF senior leaders, and opportunities for community-building with fellow caregivers.

AFW2 facilitates these rehabilitative activities and support systems for caregivers and their warriors through regional gatherings called CARE events. But since AFW2 is a federally funded program, it faces certain barriers to supporting all its caregivers in the ways they need. That's where AFA has stepped in.

AFA created the Wounded Airmen & Guardians Program in 2011 and has been working closely with AFW2 to fund activities, broaden its reach, and fill in logistic gaps at CARE events ever since. At every on-site CARE event, AFA hosts a "Caregiver Day" to treat the caregivers to respite care, mindfulness coaching, and team-building activities to improve their quality of life.

The latest AFA Caregiver Day was during the 2023 Southwest Regional CARE Event and Air Force Trials Competition at Nellis AFB. AFA and the local AFA Thunderbird Chapter welcomed 45 caregivers for a day of wellness training, lunch at a Las Vegas resort, and destruction therapy at a wreck room.

"Since caregivers are hidden heroes, their contributions to a warrior's recovery often go unnoticed," said Tonya McGough, manager of AFW2's Caregiver & Family Program. "AFA has always recognized and understood the true meaning of self-care and self-healing."

Funded entirely by donations from AFA's individual and corporate members, the Wounded Airmen & Guardians Program has provided more than \$1 million in support to wounded warriors, caregivers, and their families since 2011. 



## WOUNDED AIRMEN & GUARDIAN SUPPORT

**\$1,000,000+**  
Provided to Wounded Warriors, Caregivers & Family Members since 2011

AFA's program for wounded Airmen, Guardian, Caregiver & Families provides critical support to our wounded, ill, and injured heroes and their families. We work in partnership with the Air Force Wounded Warrior Program (AFW2) to ensure that our wounded warriors are never left behind.

**\$64,000**  
Provided to Wounded Warriors & Family Members in 2022

- Financial & Travel Assistance
- Caregiver Support
- Mental Health & Motivational Training
- Art Therapy for Resiliency
- Meals for Physical Health & Wellness
- Encouragement & Positive Affirmations

**2,000+**  
Wounded Airmen, Guardians & Family Members Supported in 2022

-  **90** Caregivers participated in AFA Caregiver Resiliency Days
-  **10** Emergency Financial Assistance Grants Awarded & Onsite Warrior Care Event Support Given

**#AFACARES**  
Follow us on our social media platforms  
@AirAndSpaceForcesAssociation  
For more information visit [AFA.ORG/WAP](http://AFA.ORG/WAP)

Scan here!  SHOW YOU CARE!  
Give now!




Recovering U.S. Air Force service members and veterans participate in a Seated Volleyball event against a team from the U.K. at the Air Force's Warrior Games Trials at Nellis Air Force Base, Nev., on Feb. 25, 2023.

Roger Wollenberg/DOD

# AFA's Seidel Chapter Holds Vietnam Veterans Commemoration Ceremony



Photos by Senior Master Sgt. Patrick Nugent (Ret.)

Former Vietnam War POW retired Col. Ken Cordier, left, his wife Barbie, and former POW retired Col. Elmo "Mo" Baker at the Frontiers of Flight Museum for the Vietnam 50th Anniversary Commemoration event on March 21 in Dallas.

Some 50 years after the signing of the Paris Peace Accords and the end of U.S. participation in the Vietnam War, the Air & Space Forces Association's Seidel Chapter commemorated the anniversary March 21 with other Dallas-area veterans groups at the Frontiers of Flight Museum.

About 450 Vietnam-era veterans and family members joined in, and veterans were individually presented with commemorative Vietnam Veteran Lapel Pins. Several spouses of deceased veterans received the Surviving Spouse pin.

Rep. Keith Self (R-Texas) offered remarks. Recently elected to the seat held for 29 years by the late Rep. Sam Johnson, a retired colonel and former prisoner of war, Self declared: "It is our obligation to remember the courage of those at Hue and Khe Sanh, at Tan Son Nhut and Saigon, from Hamburger Hill to the B-52 missions in Operation Linebacker and the Wild Weasel anti-SAM missions. Future generations deserve to know that those we honor today won every major battle they fought."

Prisoner of War Pins and certificates were presented to retired Cols. Ken Cordier and Elmo Baker, who both spent six years as POWs and earned Silver Stars for bravery.

Other speakers included retired Capt. Allen Clark, who lost both legs in Vietnam and earned the Silver Star, and Natan Ton-that, who emigrated to the U.S. at the age of 11 and later served in the Peace Corps and the U.S. Army. Captain Clark recalled the combat medics who saved his life after he was wounded.

"You veterans here in this museum today, who served your country, are the nobility of the United States," Ton-that said. "There



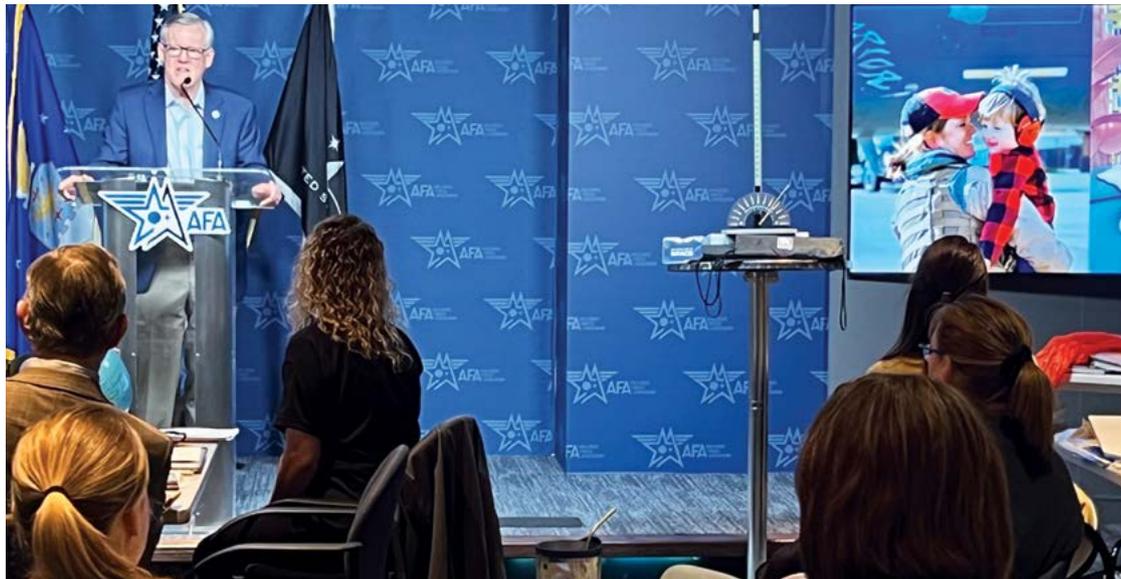
Seidel Chapter member and U.S. Air Force Academy graduate Jen Colby pins a Vietnam Veteran lapel pin on at the Frontiers of Flight Museum.

are hundreds of thousands of Vietnamese Americans who are here in America because of you. You fought for us and came back to a country that did not appreciate your service. Today you should be proud that you served a noble cause."

Featured during the ceremony were 18 portraits of Vietnam veterans from Texas. Painted by artist, author, and Seidel Chapter member Colin Kimball, the portraits will remain on display at the Frontiers of Flight Museum as a reminder of the contributions of the brave men and women who served in the Vietnam War. 

# AFA Headquarters Hosts D.W. Steele Chapter's STEM Showcase for Local Educators

AFA President and CEO Lt. Gen. Bruce Wright, USAF (Ret.) gives opening remarks at the D.W. Steele Chapter's Teacher of the Year STEM Showcase in March thanking the local teachers in attendance for their continued inspiration of our nation's youth in the STEM arena.



Staff photo

**W**ith "Straw Rockets" flying overhead and "solar sails" racing down a fishing line track, local teachers participated in the D.W. Steele Chapter's AFA Teacher of the Year STEM Showcase at AFA National Headquarters in March.

Conceived by Melissa Pore, the 2022 D.W. Steele Chapter and Virginia State AFA Teacher of the Year, and Beth Favors (2023 D.W. Steele Chapter Teacher of the Year), the program brought together K-12 teachers from the Washington, D.C., Maryland, and Virginia areas to learn about resources available to help excite students about science with lessons on aviation, space, and cyber. Pore and AFA 2021 National Teacher of the Year Megan Tucker showcased ideas and demonstrated the range of learning opportunities possible.

The Steele Chapter partnered with the U.S. Department of Education's "YOU Belong in STEM" initiative to bring about the workshop program. It included immersive hands-on activities, with teachers learning from each other, discussing outcomes, and providing new perspectives and pathways in STEM.

Sessions were tailored for K-5 and middle to high school (6-12). AFA President and CEO Lt. Gen. Bruce Wright, USAF (Ret.) opened the event with a keynote on the importance of passionate teachers inspiring our nation's youth. Presenters highlighted AFA resources such as CyberPatriot and StellarXplorers, as well as other institutions including Civil Air Patrol (CAP), NASA, Space Communications and Navigation (SCaN), the



**Megan Tucker, AFA's Rolls-Royce National Teacher of the Year for 2021, shared her passion for teaching science with fellow teachers at the STEM Showcase event.**

International Space Station National Laboratory (ISSNL), Space Station Explorers Program and Ambassador Opportunity, the U.S. Naval Academy STEM Program, Limitless Space Institute (LSI), and the American Institute of Aeronautics and Astronautics (AIAA). Educators learned how to locate digital resources, access free materials, and arrange for a free TOP Flight right over their school.

Pore praised the workshop. "After 27 years of teaching, I know what I need to fuel my students and ignite their curiosity, they must see experience and passion in me as I highlight STEM pathways. Through innovative training opportunities and unique events, we can learn new skills and bring the most emerging technologies

directly to the classroom. As a new Teacher of the Year, I found a new purpose and urgency for supporting my colleagues as they navigate a new and difficult education landscape to include STEM in every classroom and for every student by first empowering each other."

Tucker agreed. "The STEM Showcase was a great example of breaking down silos and building collaboration between districts, schools, subjects, grade levels and fellow colleagues," she said. "Promoting passionate perseverance is key for educators and students alike, and using resources like AFA and Civil Air Patrol really help to create that aviation fascination."

Steele Chapter Vice President for Aerospace Education Mike Maxwell said the workshop model was effective, "scalable and tailorable," and that the program could be replicated easily by other chapters. To find out more, contact a Steele Chapter leader.

By Col. Phillip S. Meilinger, USAF (Ret.)

# Capt. Eddie Rickenbacker

**America's first great Ace was 27 when he earned his wings.**

**E**dward Vernon Rickenbacker, or "Captain Eddie" to many, was America's "Ace of Aces" in World War I. In a scant six months, he shot down 26 German aircraft and balloons. He earned a Medal of Honor for those heroic exploits, and photos from the period invariably show him in uniform standing next to his Spad. But Rickenbacker led a full life with many other important accomplishments to his credit.

Born to German immigrant parents, Eddie's father died when he was just 14, making a hard life even harder. Forsaking school, Rickenbacker worked a variety of jobs, mostly hard, grinding manual labor in a glass factory, foundry, brewery, shoe factory, rail yard, and an automobile garage. Yet despite his lack of a formal education, he had a curious mind and a knack for understanding and using technology. He became an excellent auto mechanic, but he enjoyed driving the cars he worked on even more. By 1914, he was an auto racer with a national reputation.

When the United States entered World War I in April 1917, Rickenbacker suggested that the Air Service invite race car drivers to form a pursuit, or fighter squadron. Auto racing had natural similarities to flying, demanding quick reflexes, mechanical acumen—and guts. The Army, however, dismissed the suggestion, then drafted him anyway. Because of his racing background, Rickenbacker became Gen. John Pershing's driver, and then Billy Mitchell's, whom he badgered until Mitchell finally agreed to send him to flying training. At age 27, Rickenbacker had been considered too old for such duty, but now he had his chance, and upon becoming a pilot he was posted to the 94th Aero Squadron—whose famous logo was Uncle Sam's hat inside a ring. Thus began his career as America's greatest fighter pilot of the war.

Rickenbacker was a fearless and aggressive hunter. He would never admit defeat and rejected any attempts at sentimentality. His job was to kill Germans. One reason for his success was the interest he took in the workings of his machine, personally checking his aircraft, engine, guns, and even the bullets—before and after each flight.

Rickenbacker returned from the war a hero. America was at his feet, but after a few wild years, he realized it was time to get back to business. He started his own car company and then bought the Indianapolis 500 Racetrack and rebuilt it—making it the premier racetrack in the world. With backing from General Motors, he moved into the airline business and bought Eastern Airlines, making it a great success.

When World War II broke out, Rickenbacker was eager to serve his country once again. He was rabidly anti-Roosevelt, however, so attempts by Gen. Henry H. "Hap" Arnold to put him to work in the Army Air Forces were thwarted, at least at first. Eventually, he was allowed to tour the country and give pep talks to fighter pilots going overseas, a role in which he proved inspirational. FDR then decided to give him a more serious task: He was to visit Gen. Douglas



**American Ace Eddie Rickenbacker in his French-built Spad was a fearless fighter pilot who scored his first kill on April 29, 1918, and his sixth on May 30.**

MacArthur—then in New Guinea—and deliver a secret message from the President.

En route to New Guinea, the B-17 on which Rickenbacker was a passenger got lost, ran out of fuel, and ditched at sea. For 24 days, Rickenbacker and seven others bobbed in rubber life rafts. One died, and as the others slowly wasted away, Rickenbacker prodded them to stay alive—it was all too easy to merely quit. When they were finally rescued, the others admitted they survived only because of Rickenbacker. After convalescing for two weeks, Rickenbacker flew on to Port Moresby and delivered his message to MacArthur. Neither ever revealed the content of the secret message.

After the war Rickenbacker continued to run Eastern Airlines, but poor business decisions eventually put the company into a slow decline. When Rickenbacker retired in 1963 at age 73, Eastern was still afloat, but clouds were on the horizon.

For the next decade Captain Eddie worked on his memoirs and spoke out about the dangers of communism and the importance of never giving up. On vacation to Europe in 1973, Rickenbacker died.

Rickenbacker moved from one challenge to the next throughout his life and succeeded at every stage, thanks to his indomitable will, aggressiveness, fearlessness, and determination. Never formally educated nor gifted with exceptional intelligence, he knew his limitations and drove himself relentlessly to overcome them. 

*Rickenbacker wrote two memoirs: **Fighting the Flying Circus** (Stokes, 1919) and **Rickenbacker** (Prentice-Hall, 1967). A fictional biography, **Fast Eddie**, by Robert O'Connell (William Morrow, 1999), is a terrific read.*

# SHOP AFA



Show your AFA pride! Shop AFA  
branded merchandise.

[ShopAFA.org](http://ShopAFA.org)



**Look Good. Do Good. ShopAFA.**



# NOT HOW YOU WOULD'VE DONE IT

## YOU BUNDLE THINGS RIGHT

Like when you bundle your home and auto insurance with USAA and save up to 10%.<sup>1</sup>

Visit [usaa.com/bundleright](https://usaa.com/bundleright) to learn more.



<sup>1</sup>Savings are off total premium. Not available in all states or in all situations. To qualify, auto policy must be active prior to property issue. Subject to change. Restrictions apply.

Membership eligibility and product restrictions apply and are subject to change.

Property and casualty insurance provided by United Services Automobile Association (USAA), USAA Casualty Insurance Company, USAA General Indemnity Company, Garrison Property and Casualty Insurance Company, based in San Antonio, Texas; USAA Limited (UK) and USAA S.A. (Europe) and is available only to persons eligible for property and casualty group membership. Each company has sole financial responsibility for its own products.

© 2022 USAA. 287873-0822

