AIR FORCE MAGAZINE

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p. 30

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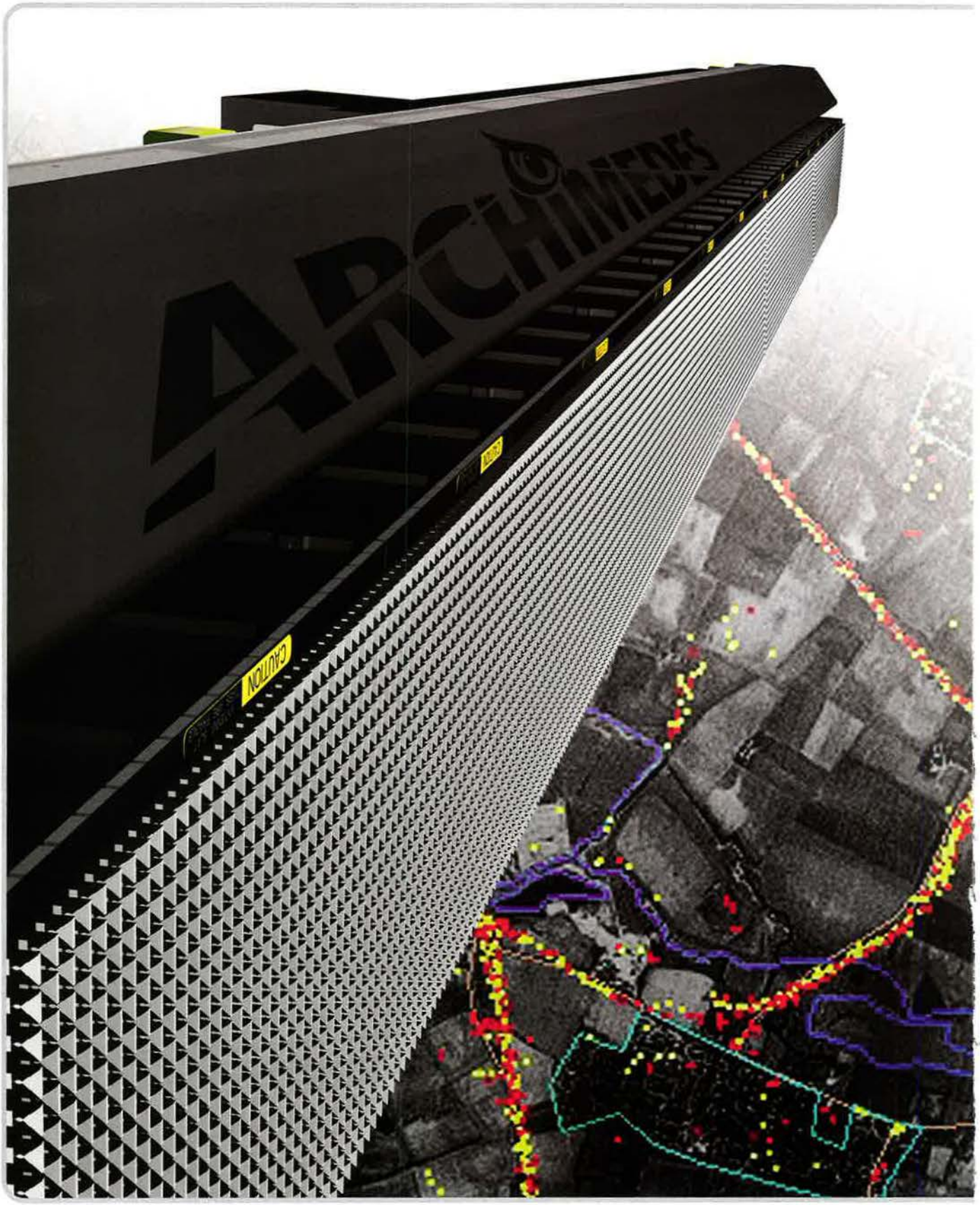

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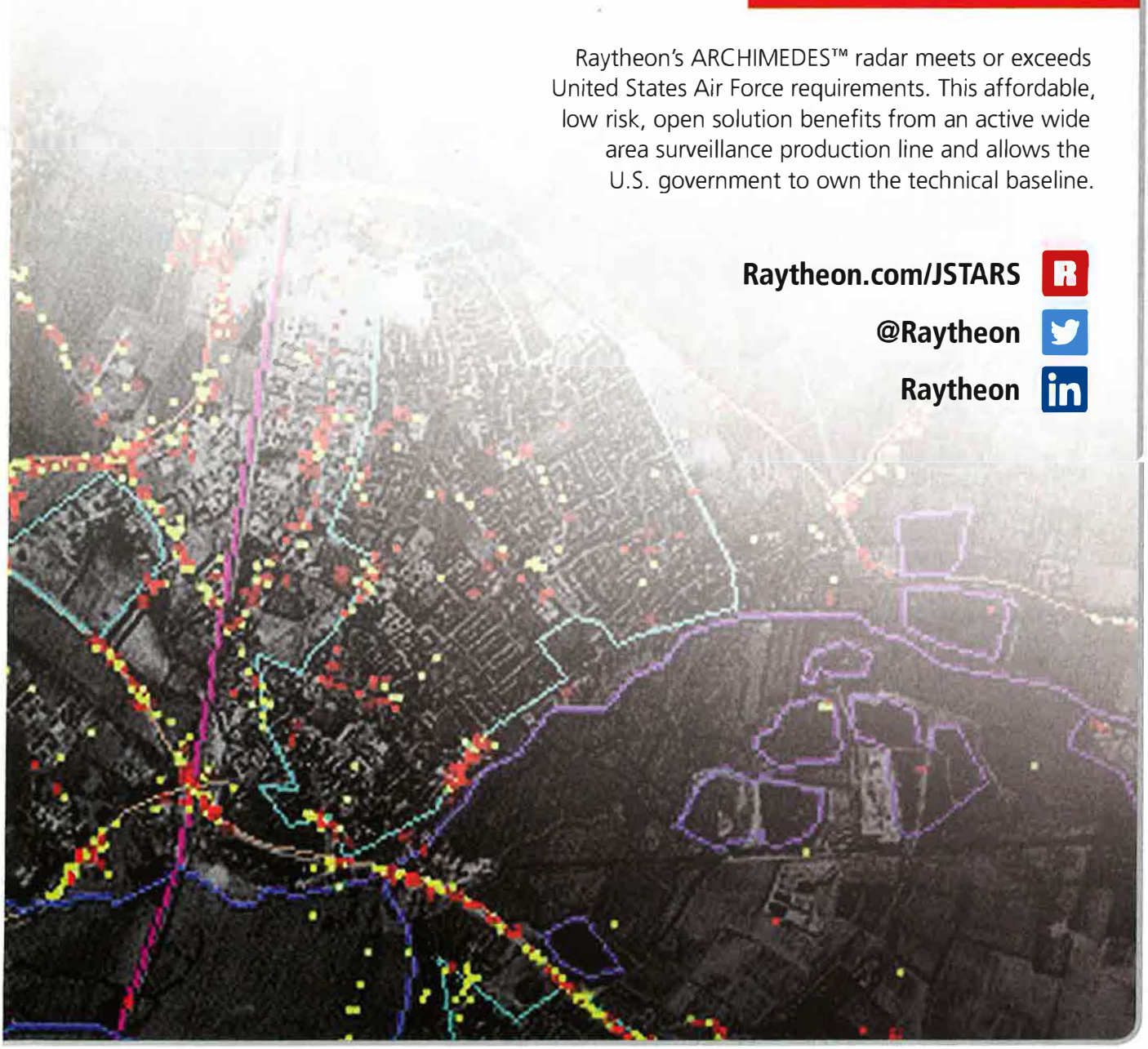

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FEATURES

About the Cover Photo:

A KC-135 pilot and maintainers on the flight line at Al Udeid AB, Qatar. See "Fuel From the Desert," **p. 30.**
Photo by SSgt. Michael Battles.


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By Adam J. Hebert, Editor in Chief

The Air Force, Airpower, and Europe

SUPREME HEADQUARTERS ALLIED POWERS EUROPE, MONS, BELGIUM

Ten years ago, NATO's strategic energy was increasingly directed south and east, toward the Black Sea, Middle East, and so-called out of area operations in Afghanistan. The alliance was consciously shifting its focus from high-end warfare toward counterinsurgency operations.

Then Vladimir Putin's Russia repeatedly demonstrated it was really interested in being a global bully and thug. Russia is widely believed to have orchestrated cyber attacks against Estonia in 2007. It fought a short but intense war against Georgia in 2008. It illegally seized Crimea from Ukraine in 2014. It has fought a shadowy war in Ukraine since then, has effectively assumed control of Georgia's Abkhazia and South Ossetia regions, and has deployed forces to Syria—not to battle ISIS but to prop up the murderous Assad regime.

Russia violated the Intermediate-range Nuclear Forces (INF) treaty, fired cruise missiles into Syria, and has flown military aircraft over the Baltic Sea without transponders on. These actions are intended to reassert Russian dominance on the international stage.

"We now realize we need to be training more, and be more capable, to deter aggression," noted USAF Maj. Gen. Joseph T. Guastella Jr. in an interview at SHAPE. It is NATO's responsibility to protect the alliance's 29 members, and airpower is central to the response.

Many of America's European allies have air defenses that would be simply overwhelmed by a concerted Russian attack. Some have no fighters at all.

The Russian military spent much of this summer in the news as it kept finding innovative ways to show off its military capabilities.

In June, as annual US and NATO exercises were ramping up in the Baltic region, Russian Su-27 Flankers twice intercepted USAF B-52s in international airspace. The second intercept took place while civilian and military reporters were on a photo flight aboard a nearby KC-135 during Exercise Baltic Operations (BALTOPS), ensuring plentiful news coverage.

A USAF RC-135U in international airspace over the Baltic Sea is intercepted by an Su-27 on June 19. Until this point, Russian air intercepts during BALTOPS had been done safely.

Photo: MSgt. Charles Larkin Sr.

US Air Forces in Europe Commander Gen. Tod D. Wolters said at the time that "100 percent of the intercepts ... conducted by the Russians during BALTOPS were deemed safe." Perhaps this displeased Putin.

As if on cue, Russia that same day departed the pattern. On June 19, a Flanker aggressively intercepted an Air Force RC-135U over the Baltic Sea. "Due to the high rate of closure speed and poor control of the aircraft during the intercept, this interaction was determined to be unsafe," said US European Command. At one point, the Flanker was 10 feet from the RC-135's wing.

Russia planned a major military exercise for September in Belarus, near NATO allies Latvia, Lithuania, and Poland. It will involve heavy armor and up to 100,000 participants. "Their actions speak loudly, and their actions are destabilizing," said Guastella, then SHAPE's deputy chief of staff for operations and intelligence. "The behavior is aggressive. Being a defensive alliance, we're tracking it; we're aware of it."

USAF is the first line of defense against Russian aggression.

What to do about this? Combat-ready British and Italian Typhoon fighters recently deployed to Romania and Bulgaria. These jets worked in conjunction with Romanian and Bulgarian MiGs to shore up the air defenses of those nations, adding depth to the defense. Rotational forces, especially airpower, provide diverse defensive capabilities. American participation in these sorts of European security activities is rapidly increasing.

Rotational deployments are the mechanism of choice, as they allow multiple units to improve their readiness. Airpower's flexibility embodies this. Air Force units can (and do) deploy from the United States to fly missions out of multiple air bases in different countries. This forward presence shows Russia that NATO is ready to match it in a high-end fight.

"If an aggressor were to engage the Baltic nations, well, they're not just engaging the Baltic nation's defenses," Guastella said. "Most of NATO is there as well."

"Airpower is as relevant as it ever was in defense of this alliance," he continued. "Airpower provides what it has provided US troops since 1953": protection from enemy air. It also "holds targets at risk in any country, so [adversaries] know there is going to be a lot at stake, and a lot vulnerable, when US and alliance airpower can be brought to the table."

F-35 strike fighters and all three USAF bomber types deployed to Europe for exercises this summer. USAF is significantly improving its readiness in Europe, and as it fields new equipment, this also needs to come to the continent.

The Air Force is the world's leader in providing airpower. USAF's tight bond with NATO may be exactly what keeps Europe safe from a Russia that has been all too willing to attack its neighbors.

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Letters

Chicken or Egg?

As usual, the August issue of *Air Force Magazine* was a great read.

Since I did a tour in Vietnam in the F-100, I found the article "Vietnamization" very interesting [p. 60]. As usual for your august (pun intended) publication, the article was well-researched and very well-written. However, there was a tiny error that is commonly made. Part of a sentence from p. 62 states, "A-37 attack aircraft and F-5 fighters, both modifications of US Air Force trainers." I do believe that the A-37 was a modification of the T-37; however, this is not true of the F-5.

The F-5 was developed by Northrop as a lightweight, easily maintained, relatively inexpensive supersonic jet fighter. It was aimed at the foreign market. I believe it was called the N-156 by Northrop. Since the US was not really interested in the aircraft, the US government passed on acquiring any. This was a big turnoff to the many foreign nations interested in the jet. As I remember, no foreign governments would order an aircraft that the US government had no interest in. At that point, Northrop took that same basic design and created the T-38 and offered it to the US as a trainer. Well, we all know how well that turned out. This lit a fire under the F-5 concept, and something like 25 countries (not sure of that number) and USAF purchased some variant of the F-5.

Anyway, the point of this letter is that the F-5 did not evolve from the T-38, but the T-38 evolved from the F-5.

Charlie Friend
Alamogordo, N.M.

The aircraft began as a fighter project at Northrop in the 1950s. That design, the N-156, was adapted as a candidate to replace the Air Force's Lockheed T-33 jet trainer. As the T-38 trainer, the aircraft first flew in 1959 and entered service with Air Training Command in 1961. The F-5 first flew in July 1963 with first deliveries to foreign military sales in 1964.—John T. Correll

After serving as a forward air controller in Vietnam flying the O-1 Bird Dog (and receiving the Silver Star for a mission assisting a squad of Army Rangers) my father (then-Lt. Col. Jim Gardner) later served in the Office of Vietnamization at the Pentagon under Col. (later General) William Moore.

Dad retired in 1983 as a major general and the Military Airlift Command chief of staff. It took a long time to engage Dad about his time in Vietnam. He would have enjoyed this article, but he retired from this life, passing away 23 July 2016.

Col. Scott Gardner,
USAF (Ret.)
Hanahan, S.C.

Not a Pretty Picture

The article about Homestead Air Force Base's encounter with Hurricane Andrew hit my memory bank's home on several fronts ["When Andrew Hammered Homestead," August, p. 52].

Two days before the hurricane struck, I was an action officer on an advance team to work out the details of deploying a few B-52G bombers to Homestead from Wurtsmith AFB, Mich., for fighter intercept training and dissimilar airfield experience. Shortly before my team was to depart, we were notified by the Homestead command post their base was being evacuated and recommended we cancel our visit.

I was disappointed but understood the seriousness of the situation. I used to live in Homestead base housing as a dependent, attended high school and junior college, and met my wife, who was also a dependent, there. My part-time job at the base commissary as a bag boy funded the majority of my college education. These were my old stomping grounds. I looked forward to the opportunity to revisit the base and community and show my team around while we worked on the planning for the future deployment.

My visit didn't happen until 1997 when my wife and I attended our 25th year high school reunion. A few of our friends shared harrowing and almost unbelievable stories of the hurricane and its aftermath. I was anxious to see the base, which my wife and I did on our last day there. The media coverage of the devastation caused by Andrew had shocked me. I was in for another shock when I saw what was left of the commissary, officers club, barracks, and other structures. Years had passed and the place still looked like a war zone. Wrecked buildings and piles of debris still littered the landscape.

Eventually, we drove out to the base housing area where an almost surreal scene met us. The neighborhood roads, a few big trees, and driveways were still there, but the houses and foundations had been completely removed. It was a ghost town without any buildings. My wife and I walked about in total disbelief where we had lived for years. Past memories and the reality of the present does not always paint a nice picture.

Maj. Robert Kadechka,
USAF (Ret.)
Tampa, Fla.

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

—The Editors

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Take the Past Out of the Future

I'm replying to the editorial about Guard modernization presented in the August 2017 issue ["Editorial: The Bumpy Road to Guard Modernization," p. 4]. The editor again bemoans the fact that Michigan Air Guard units have an uncertain future and lists their past as evidence of "long-term instability." I couldn't agree more and say, "Welcome to the club." [In a previous letter to the editor, I] directly cited the turmoil caused by the lack of a coherent airpower strategy and the impact it has had on A-10 squadrons in Michigan and Indiana over the last 35 years. The continuing waste of taxpayer money at both the federal and state level is infuriating. The Guard is part of the solution and part of the problem and will continue to be as long as politicians continue to put local dollars ahead of national defense. One of our past CSAF continually tried to close excess basing and met with little success. Selfridge's 100-year past should not be part of the equation when the choices are as extreme as closing a squadron or giving it F-35s. The expense of maintaining a modern Air Force demands a financial strategy that provides for a strong national defense and not a "jobs program" manipulated by local, state, and national officials.

Dan Hamill
Dowagiac, Mich.

My Georgia ANG wing endured moving 110 miles from Dobbins ARB to Robins AFB and converting from F-15A/B fighters to B-1B bombers in 1996, only to lose the bombers and be threatened with dissolution in 2002 before converting to the E-8C JSTARS. This latter conversion cost those of us in the weapons loading career field our jobs, and I eventually transferred to neighboring South Carolina and retired from the highly stable 169th FW and its F-16CJs six years ago.

I wonder if those making these decisions realize that Guardsmen aren't interchangeable pegs to slot into moving holes. We have ties to communities, cross-train into new career fields only with difficulty, and hold a wealth of institutional experience that can easily be destroyed. I witnessed firsthand just how good an ANG wing can be if allowed to have some stability—and how fragile that excellence can be.

MSgt. Bill Brockman,
USAF (Ret.)
Atlanta

ISR Review

Your article "ISR Explosion" (July 2017, p. 48) was an astonishing review of the enormous technological advances and extant capabilities now available to USAF planners, operators, and intelligence specialists. As one who remembers (not fondly) the bad ol' days of "green doors," arbitrary compartments, information restrictions, and even name-calling, I found your piece both mesmerizing and even a bit inspirational.

I know there are probably too many heroes (plus a few visionaries) to list for their well-deserved credit in pushing—or sometimes forcing—this revolution in USAF capabilities, but I wish a few had been named. They persevered even after being booed in some of the 1970s and 1980s nonattribution lectures I attended. The list would certainly include key leaders in OSD (you did mention Mr. Gates), CIA, and even a few of our friends in Congress.

Col. Evan H. Parrott,
USAF (Ret.)
Ashburn, Va.

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By John A. Tirpak, Editorial Director

An expeditionary airman prepares weapons for deployed bombers. Readiness and modernization are priorities for USAF leaders.

SHIFTING PRIORITIES

It's become a tradition that new Secretaries of the Air Force and their Chiefs of Staff set out priorities for their tenure. Those priorities usually boil down to the same common elements, which depending on the times vary in order: people, readiness, and modernization.

Chief of Staff Gen. David L. Goldfein announced at an Air Force Association Capitol Hill event in August that Secretary of the Air Force Heather A. Wilson and he will follow suit, but this new list will have some subtle adds.

During the "Wilson-Goldfein era," he said, the priorities are five, and they are: "restore our readiness," pursue "cost-effective modernization," innovate for the future, "strengthen how we develop airmen and future leaders," and "strengthen alliances" with partner air forces.

Recent USAF leadership teams have placed "taking care of people" or modernization as No. 1, but Defense Secretary James N. Mattis has given the services no-kidding instructions to improve the training and availability of troops, raise the readiness of units and individual platforms, and bulk up dwindling bins of spare parts and munitions as the top imperatives.

Only because of that has modernization dropped to No. 2 in the pecking order, because USAF still faces a fleet that averages 27 years old—25 years for fighters—and it can feel the breath on its neck of adversaries fielding brand-new, state-of-the-art fleets.

Modernization is going to have to adapt from "the industrial-age model of acquisition" to "the information-age model," Goldfein asserted. He explained that this means making networks and connectivity the top push, the better to get full value of the platforms USAF already has, and the better to emphasize "the family of systems" over the attributes of any one platform. This in turn is likely to give USAF more trade space of missions and capabilities among different platforms across combat portfolios and more flexibility in buying new gear. The key question to ask of new systems will not be what it can do but "how does it connect?" Goldfein said.

He told *Air Force Magazine* that a new Bomber Roadmap will encapsulate the thinking on modernization writ large: It will be, of necessity, a "combination of old and new," bringing together, for example, 55-year-old B-52s with state-of-the-art standoff missiles.

BEFORE AND AFTER

Goldfein declined to discuss what might be the puts and takes among USAF's top acquisition priorities as a result of having to shift more funds to readiness and people. The F-35 fighter, KC-46 tanker, and B-21 bomber all still take precedence over other programs—the next grouping usually described as the JSTARS radar plane replacement, T-X trainer, new ICBM, and Combat Rescue Helicopter. However, it's a zero-sum game and Goldfein told *Air Force Magazine* it hasn't been decided yet "what'll push outside the FYDP," or Future Years Defense Program. Some things may be "pushed right"—that is, postponed—while some may be "pushed left," or accelerated, he observed. "It's all about, how do I get the most return on investment in the connective tissue?"

Innovation has been a talking point in recent years, because the service has had to rely on innovation as a substitute for money in getting more value out of the people and assets it's got. In mid-August, Wilson ordered USAF to provide fewer directions to airmen, trusting them to find the best and most efficient ways to do things.

"Our end strength is finally on the rise," Goldfein pointed out, noting that manpower shortages have been the key factor in declining readiness rates. There will be a "laser focus on revitalizing squadrons," with much of the new manpower earmarked for "first sergeants and commander support staffs." A renaissance of the squadron as the core Air Force unit has been Goldfein's top theme in his first year on the job. (See "Revitalizing the Squadron," this issue.)

Goldfein also stated directly that USAF wants to get more of its people into top regional commands, taking to heart recent findings revealing that airmen in joint billets feel cut off from the service and don't enjoy much career progress from those jobs. Other services, though, have had great success in grooming their people for regional, joint commands. An airman is often head of US Transportation Command and US Strategic Command, but not regional theaters like US Central Command—even though USAF is the principal contributor to Operation Inherent Resolve, which dominates CENTCOM's activities. Goldfein's predecessor, Gen. Mark A. Welsh III, now retired, frequently discussed that fact.

Toward getting USAF into those joint billets, there will be "incentives" for airmen to take joint jobs and for duty in air operations centers, where "the operational art" of airpower "is practiced daily," Goldfein announced. Tours in AOCs will make airmen "more competitive for promotion." There will also be much more effort applied to getting airmen certified for joint task force duty. Ninth Air Force at Shaw AFB, S.C., will be the first focus area, "to ensure that we have certified JTF offerings to combatant commanders to respond to crises and conflict in the future."

Photo: SSgt. Trevor McBride

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Alliances also made the top five priorities list, and Goldfein said it's crucial to keep them healthy because they are the nation's "greatest strategic and asymmetric advantage." Alliances are something "we have" and adversaries don't, he said, alluding later to the need for USAF forces to be able to fall in on alliance bases in virtually any conflict. The threat from ballistic missiles wielded by adversaries in any theater will require USAF to be able to pick up and move operations quickly and with agility to other locations; healthy alliances will make that possible, Goldfein said.

ADDING TO THE PROCUREMENT PARFAIT

The Pentagon has answered Congress' demands for a quicker and more streamlined weapons acquisition system with a proposed new organizational scheme that shuffles organizations, creates 11 new offices, and adds new levels to the acquisition bureaucracy—putting, for example, four layers between the Secretary of Defense and the Strategic Capabilities Office. It also cuts a few deputy and assistant secretary jobs, which is hoped will aid progress toward a separate goal to reduce headquarters staff.

The so-called 901 Report, which takes its name from the section of the 2017 defense bill that requires it, released in August, explains how the Defense Department plans to follow Congress' order to split up the No. 3 job in the Pentagon, the undersecretary for acquisition, technology, and logistics (USD AT&L).

This position was held by Frank Kendall III for much of the Obama administration and is now occupied by Ellen M. Lord, former CEO of Textron. By Feb. 1, 2018, the position is scheduled, by law, to become two posts, undersecretary for research and engineering (USD R&E), and undersecretary for acquisition and sustainment (USD A&S). Lord is expected to move over to the latter post, but a nominee for the R&E job had not been named by mid-August.

In many ways, the R&E position is a throwback to the director of defense research and engineering job, which predated the existing USD AT&L structure. It will focus on creating new wonder weapons, while the USD A&S will have to figure out how to turn them into fielded, supported systems.

Both the Pentagon and Congress will undoubtedly tinker with the scheme in the coming few months.

In its executive summary of the 901 Report, the Pentagon laid out why all of this is necessary. While American weapons are considered the best in the world, "the current pace at which we develop advanced warfighting capability is being eclipsed by those nations that pose the greatest threat to our security," the Pentagon said, adding that relentless cost growth threatens "our ability to acquire and sustain these systems at sufficient levels." Congress' directive to speed things up is a "once in a generation opportunity" to shift things around more efficiently and to gain speed, according to the report.

The R&E post will have three roles: create a "technology strategy" for DOD, "solve the critical technical" challenges for combat forces, and quicken the delivery of "technology solutions." Billed as a "lean" organization staffed with experts in various disciplines, the R&E shop will identify key needed technologies, set priorities among them, budget for them, set up demonstrations and prototyping, and develop "high-end architectures" to connect, network, and orchestrate new with old systems, across all the services.

Under R&E will be five organizations. They will include the Missile Defense Agency, the Defense Science Board, a new assistant secretary for research and technology (ASD R&T), an assistant secretary of defense for advanced capabilities, and a Strategic Intelligence Analysis Cell. The idea will be to tie these groups tightly together so that word of new foreign advances reaches all the right people right away, and together they can quickly choose ways to answer those challenges. The Strategic Intelligence Analysis Cell, charged with either speedy reaction to, or leaping beyond, foreign advances, will effectively set budgetary priorities for defense technology.

Labs and technology hothouses such as the Defense Advanced Research Projects Agency will be under R&T. The ASD for advanced capabilities will be in charge of turning theory into hardware. The Strategic Capabilities Office will be in this organization, and there will be a deputy assistant secretary (DASD) for mission engineering and integration, and a DASD for prototyping and experimentation. The Defense Innovation Unit-Experimental will be here as well (an outfit that used to report directly to the Secretary of Defense).

SUSTAINING MEMBERS

The A&S side of the house will feature fewer new organizations. The undersecretary will have three deputies: an assistant secretary for acquisition, one for sustainment, and one for nuclear, biological, and chemical weapons (NBC).

The acquisition group will have a DASD for: policy, planning, resources, and performance; industrial base; warfare systems support; and defense procurement. The acquisition group will also be in charge of cultivating the professional acquisition workforce.

The ASD for sustainment will have DASDs for materiel readiness; transportation policy; and program support and logistics policy. It will encompass the Defense Logistics Agency and have a dotted line to US Transportation Command.

The assistant for NBC will have DASDs for nuclear matters, chemical-biological defense policy, plus one for threat reduction and arms control.

The Pentagon was less specific about the creation of a new chief management officer, a position whose exact relationship with these other agencies is still being worked out. However, this person's portfolio will include health care, personnel development, real property, logistics and supply chain, "community services," and "performance reform." This position will also oversee a streamlined information technology unit, which will combine many others, with the goal of streamlining reporting and action and reducing redundant people. Congress' last defense authorization bill directed a 25 percent cut in headquarters staff.

Deputy Defense Secretary Patrick M. Shanahan, discussing the report with journalists, said the existing system is too focused on "the here and now" and not enough on anticipating and deploying new systems. Without that shift, "we'll fall behind," he said. He also acknowledged "there will be parts of this that people don't like," but that's the nature of change.


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Forward Deployed

By Jennifer Hlad

FARP MEANS FLEXIBILITY

Airmen from the 67th Special Operations Squadron in late July conducted the first-ever Forward Arming and Refueling Point exercise between MC-130s and an F-15C, at RAF Mildenhall, UK.

A FARP is a point near a combat zone where an aircraft can transfer fuel and supplies to another aircraft, giving airmen the ability "to ground refuel fixed wing, tilt-rotor, and rotor assets," said MSgt. Jeffrey Nighbert, 67th SOS operations superintendent.

A FARP "allows our air assets to engage the enemy, get refueled, rearmed, and get back to the fight quickly," without needing a fully manned base, explained the 67th SOS combat systems officer, Maj. John Kauzlaric.

This particular FARP "helped to prove the concept of integrating the FARP capabilities of the MC-130 with the F-15C," which could mean more flexibility in the future, said Lt. Col. Jason Zumwalt, commander of the 493rd Fighter Squadron.

The exercise involved the 48th Fighter Wing, 352nd Special Operations Wing, and 100th Air Refueling Wing.

ROTATION IN THE PACIFIC

Also at the end of July, six B-1B Lancers and 350 airmen from Ellsworth AFB, S.D., deployed to Andersen AFB, Guam, as the 37th Expeditionary Bomb Squadron (EBS) assumed responsibility for Continuous Bomber Presence operations in the Pacific.

The 37th EBS will fly Block 16 B-1s; the block upgrade includes improvements to the aircraft's avionics, data link equipment, and other systems.

The unit takes over from the 9th EBS from Dyess AFB, Texas, which "relied heavily" on the new equipment during its deployment, according to an Air Force news release. The 9th EBS worked with the US Navy, Japan Air Self-Defense Force, Republic of Korea Air Force, and Royal Australian Air Force joint terminal attack controllers, and in July conducted missions from Guam to the South China Sea and from the Korean Peninsula to Australia.

The 9th EBS also was part of the military response July 7 and July 30 to North Korea's launch of an intercontinental ballistic missile; two B-1s from Andersen flew a 10-hour sequenced bilateral mission with South Korean and Japanese jets.

AAF MOMENTUM

Meanwhile, in Afghanistan, the Afghan Air Force asked to take over full responsibility for A-29 Super Tucano flight line maintenance operations. Since the beginning of July, Afghan maintainers had been responsible for maintenance operations three days a week.

"The AAF has been making great strides in their capability with the A-29," and several leaders told the US advisors they were ready for the responsibility, said Maj. Dale Ellis, the maintenance operations officer for the 440th Air Expeditionary Advisory Squadron.

Senior Master Sergeant Alokazay, an AAF A-29 maintenance specialist, said the Afghan airmen "want to be responsible for the combat missions and getting the pilots in the air. ... We want to take control and [bring] peace to our country."

An A-29 overflies Kabul, Afghanistan. The Afghan Air Force has asked for full responsibility for Super Tucano flight line maintenance.

All A-29 combat operations are flown by AAF pilots, though coalition partners fly with Afghan pilots for training missions, the Air Force said. And though aircrews operate independently, 80 percent of maintenance functions are still performed by contract maintainers, with 20 percent performed by Afghan maintainers. The goal of Train, Advise, Assist Command-Air is to reverse those percentages by 2022.

MSgt. Jonathan Vickery, maintenance advisor lead for the 440th AEAS, said he thinks AAF maintainers are progressing faster than projected. "Our original plan was to increase responsibilities one day every six months," he said. "This is a point in the program that we did not believe would be possible for another couple of years."

Vickery said the timeline may compress if the Afghan airmen "continue to have the motivation and initiative."

Advisors say the ability of the Afghans to conduct maintenance on their own is critical to the mission, and the request for more responsibility is a step toward the AAF becoming a sustainable force.

The request "demonstrates a desire to take ownership of their operations and shows that these AAF leaders believe in their capabilities," Ellis said. The advisors remain there to support their efforts, but "this is momentum towards the AAF long-range vision. This is Afghans taking action, and it is quite amazing," he said.

DRONES OF AFGHANISTAN

Also in Afghanistan, the 455th Expeditionary Security Forces Squadron at Bagram Airfield has been working with the Air Force Research Lab to teach airmen how to fly remotely piloted aircraft and use them to train coalition forces on how to react when they see other drones on the battlefield.

The program allows the airmen to learn how the enemy may use unmanned aircraft and test how to counter them.

"This allows us to be better prepared," said 1st Lt. Ryan Wilkerson, a researcher with the 455th ESFS. "The best way to train is to actually put something in the air and see how people react. We train how we fight, so this is the most efficient way to counter this growing concern amongst coalition partners."

Jennifer Hlad is a freelance journalist based in the Middle East and a former *Air Force Magazine* senior editor.

Photo: SSgt. Larry Reid Jr.

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By Megan Scully

Air Force F-35As conduct flight training in May. This fall, Congress will take up myriad defense issues ranging from strategy to personnel readiness to spending levels.

The To-Do List

Congress returns after the month-long August recess with a number of national security items on the fall to-do list, not the least of which is Senate debate on the must-pass Fiscal 2018 defense authorization bill.

Senate Armed Services Committee Chairman John McCain is expected to return to the Capitol from treatment for an aggressive brain tumor to manage floor consideration of the massive Pentagon policy bill, adding an emotional undertone to a measure that typically draws heated debate but ultimately receives wide bipartisan support.

The Arizona Republican has already signaled that he doesn't expect his diagnosis to slow him down, particularly as he battles the Trump administration on a number of national security fronts.

Indeed, McCain put the administration on notice just days after beginning chemotherapy: Either produce a new strategy for the 16-year war in Afghanistan before Senate debate begins, or he would do it himself.

McCain has been agitating for a new war strategy, criticizing the current and previous administrations for failing to devise a new plan in Afghanistan to achieve US national security interests in the region. McCain, a key proponent of the Iraq surge during the George W. Bush administration, has advocated sending several thousand more troops to Afghanistan.

"The reason for this failure is a lack of successful policy and strategic guidance from Washington over many years, which has continued in the first several months of this new administration," McCain said in an Aug. 3 statement, following news reports that Trump wished to fire Afghan war commander Gen. John W. Nicholson Jr. "Our Commanders in Chief, not our commanders in the field, are responsible for this failure," McCain said.

While Afghanistan will be a centerpiece of this year's much-anticipated debate on the defense bill, the measure will attract a myriad of other amendments, from changes to Pentagon bureaucracy to levels of defense spending.

Personnel matters may factor big in this year's defense debate, following a tweet in late July from Trump stating that he would seek to ban transgender individuals from serving in the military, effectively overturning a policy put in place by his predecessor. Trump argued the military cannot bear the "tremendous medical costs and disruption" associated with allowing transgender service members to serve.

The tweet drew immediate backlash from Democrats, such as New York Sen. Kirsten Gillibrand, who called the proposed ban "cruel and discriminatory," warning that it would hurt military readiness and morale.

But defense hawks also opposed the President's tweet. McCain blasted the President for attempting to make policy on Twitter and said his plans were "unclear" and premature, considering the military Chiefs were still conducting their own review of the issue.

"Any American who meets current medical and readiness standards should be allowed to continue serving," McCain said in a statement. "There is no reason to force service members who are able to fight, train, and deploy to leave the military—regardless of their gender identity."

Also on tap for this fall are the annual appropriations bills for the fiscal year beginning Oct. 1. In late July, the House passed a so-called "security minibus," a package of four appropriations measures that included the defense spending bill.

The defense bill totals $658 billion, dramatically exceeding existing budget caps.

Before leaving for the August recess, Senate Majority Leader Mitch McConnell (R-Ky.) put the House-passed bill on the Senate calendar, effectively lining it up for consideration once Congress returns. But Senate appropriators have yet to consider the defense bill in their own panel, and would likely be loath to move to debate on the House's version of the measure.

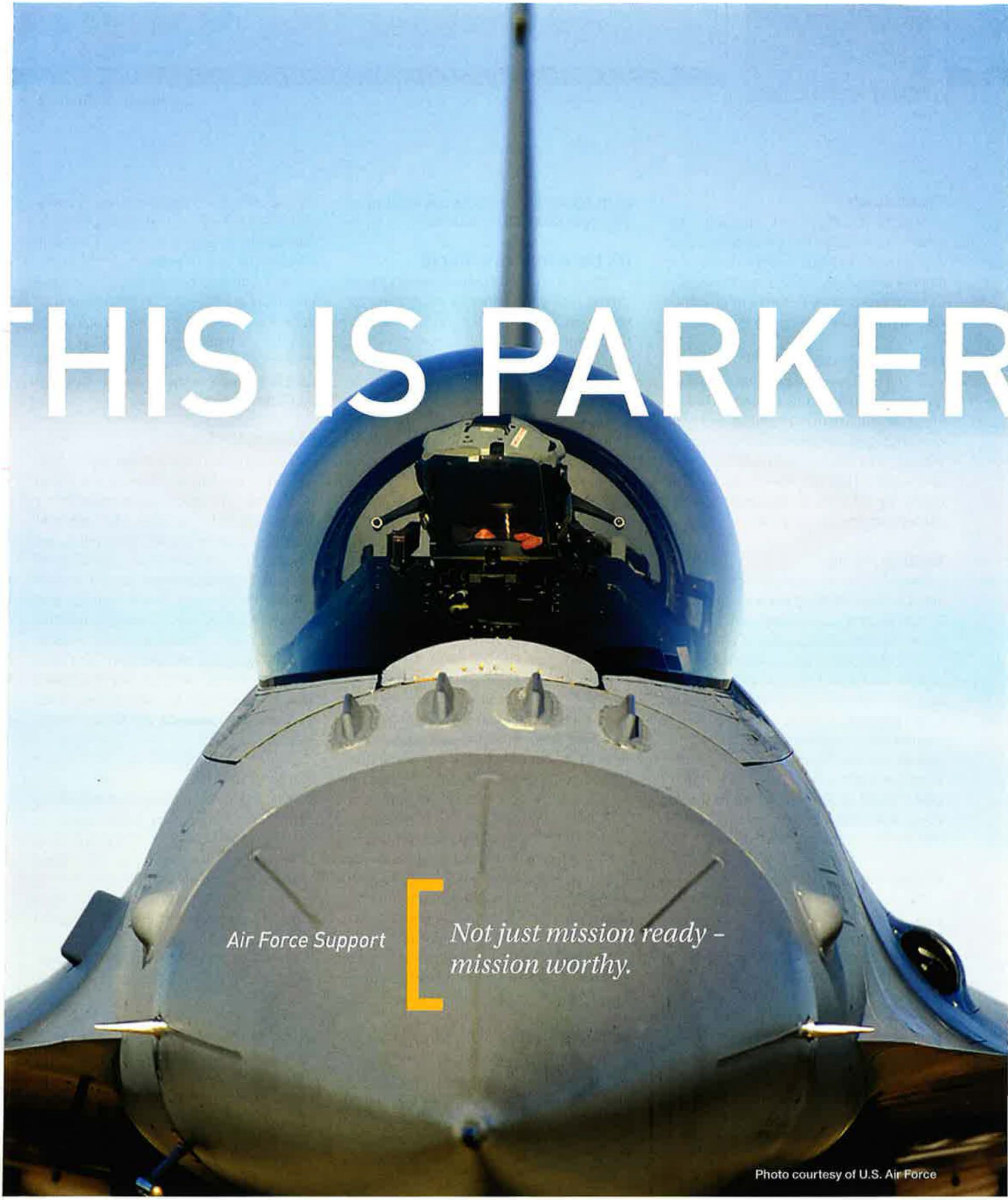
The two chambers typically take different approaches to defense spending, with senators preferring to pay for add-ons like additional F-35 fighter jets by making surgical cuts elsewhere in the budget. The House, as it did this year, is more likely to simply blow past budget caps.

McConnell's floor strategy on appropriations in September is unclear at best. Even if he did attempt to bring the minibus to the floor, Democrats would block the legislation because it ignores those caps and includes $1.6 billion for construction of a wall along the US-Mexico border.

With just a few weeks until the start of the new fiscal year, Congress will almost certainly need to approve a stopgap funding measure, or a continuing resolution, and spend the rest of the fall trying to negotiate spending levels for defense and non-defense programs, an exercise that has become almost a fall ritual in Washington.

Megan Scully is a reporter for *CQ Roll Call.*

Photo: SSgt. Andrew Lee



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By Robert S. Dudney

Countdown

"The IC [Intelligence Community] assesses North Korea has produced nuclear weapons for ballistic missile delivery, to include delivery by ICBM-class missiles."—**Excerpt from a new Defense Intelligence Agency paper, *Washington Post*, Aug. 8.**

Harris Doctrine

"I don't know if those [North Korean] missiles can actually hit what they're aimed at, but like in horseshoes and hand grenades, getting close is all that's needed when you're dealing with nuclear weapons."—**Adm. Harry B. Harris Jr., head of US Pacific Command, Japan-US Military Statesmen Forum, July 28.**

Getting Along

"We are more interdependent ... as services than we have been in our history. For 26 years of continuous combat since Desert Storm, we've produced a truly joint team that excels in simultaneous combat, where we often focused on sequential and deconflicted operations in the past. ... Our greatest strategic advantage in any future conflict are our allies and partners. Simply put, we have them [and] our adversaries don't."—**Gen. David L. Goldfein, USAF Chief of Staff, remarks to the Air Force Association's Mitchell Institute for Aerospace Studies, July 26.**

Milley the Myth Slayer

"[It is a myth that] you can win wars from afar. ... Human beings can survive horrific things from afar. ... Look at what ISIS has done for almost six months in Mosul. They're losing. They got pounded. But it took the infantry and the armor and the special operations commandos to go into that city—house by house, block by block, room by room—to clear that city. And it's taken quite a while to do it, and at high cost. What I'm telling you is, there's a myth out there that you can win from afar. To impose your political will on the enemy, it typically requires you ... to close with and destroy that enemy up close with ground forces."—**Gen. Mark A. Milley, US Army Chief of Staff, speech at National Press Club, July 27.**

Job Security

"He [Russian President Vladimir Putin] is going to be around for a long time. He's coup-proof."—**Lt. Gen. Frederick B. Hodges III, head of US Army forces in Europe, *The New York Times*, July 31.**

It's the Adversary, Stupid

"There's no such thing as war in space; there's just war. There's no such thing as war in cyber; there's just war. We have to figure out how to defeat our adversaries, not to defeat the domains where they operate. You can't fall into the trap of saying 'There's a space problem, so I'll ask the space guy to go fix the space problem.' It's a problem with an adversary. I may not want to [direct] a response to a space problem in space. ... I may go a different direction. So it has to be from an adversary perspective, not a domain perspective."—**USAF Gen. John E. Hyten, head of US Strategic Command, remarks at a space symposium in Huntsville, Ala., Aug. 8, defensenews.com.**

Experience Counts

"As we see Russia bring on stealth fighters, and we see China bring on stealth fighters, we have 40 years of learning how to do this, ... how to integrate non-stealth and stealth together in packages [and] how we can hide. ... I would still say that the 40 years of training, the 40 years of operation, the 40 years of integrating, is really going to give us an advantage. ... When we brought on the F-22 for the first time, we really didn't understand how to operate a fifth generation, low-observable airplane. We still flew in visual formation when we started flying. We didn't know how to train with it."—**Retired USAF Maj. Gen. Mark A. Barrett, former F-22 pilot, remarks to AFA's Mitchell Institute, July 26.**

And Not Even a Solution ...

"Sounds like a solution in search of a problem."—**Sen. Tom Cotton (R-Ark.), referring to House plan to carve a new "Space Corps" out of the Air Force, defensenews.com, July 22.**

Righteous Nukes

"We have stated a requirement ... to have variable yield [for nuclear weapons]. So, that is a path we're pursuing pretty quickly. ... If the only options we have now are to go with high-yield weapons that create a level of indiscriminate killing that the President can't accept, we haven't provided him with an option. ... As horrible as nuclear war is, we do still apply some of the rules of war to it. So, a proportional reaction to an enemy's attack is actually a righteous and reasonable thing to do. ... I don't think a conventional response to a nuclear attack would be sufficient to deter the kind of people that would contemplate a nuclear attack."—**USAF Gen. Paul J. Selva, vice chairman of the Joint Chiefs of Staff, remarks to the Mitchell Institute, Aug. 3.**

Blowback

"I would like to see them try to kick me out of my military. You are not going to deny me my right to serve my country when I am fully qualified and able and willing to give my life. We have pilots, we have doctors, we have combat medics, we have security forces members like myself. We are everywhere in the military, and for our President to not have a military member's back ... blows my mind."—**SSgt. Logan Ireland, a transgender Air Force security forces airman, on President Trump's decision to bar transgender persons from service, *Air Force Times*, July 26.**

Culture Clash

"No one is entitled to surreptitiously fight [his or her] battles in the media by revealing sensitive government information. ... This nation must end the culture of leaks. We will investigate and seek to bring criminals to justice. We will not allow rogue anonymous sources with security clearances to sell out our country any longer."—**Attorney General Jeff Sessions, announcing a new crackdown on leaks, Aug. 4.**

Imagination Gap

"Many people have talked about military options with words like 'unimaginable.' I would probably shift that slightly and say it would be horrific, and it would be a loss of life unlike any we have experienced in our lifetimes, ... but as I've told my counterparts, both friend and foe, it is not unimaginable to have military options to respond to North Korean nuclear capability. What's unimaginable to me is allowing ... a capability that would allow a nuclear weapon to land in Denver, Colorado. That's unimaginable to me."—**USMC Gen. Joseph F. Dunford Jr., Chairman of JCS, Aspen Security Forum, July 22.**

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★ SCREENSHOT

08.06.2017

TSgt. Jonathan Carr, a crew chief with the 62nd Aircraft Maintenance Squadron, JB Lewis-McChord, Wash., checks the engine of a C-17 Globemaster III during a Mobility Guardian exercise at the base.

Photo: TSgt. Nathan Lipscomb

By Wilson Brissett, Senior Editor

■ Retired A-10 Pilot Awarded Silver Star

A retired A-10 pilot on June 30 received the Silver Star more than 14 years after helping save a US Army task force under fire from Iraqi armor. Then-Capt. Gregory D. Thornton was flying his Warthog supporting Advance 33, a ground forward air controller attached to Task Force 2-69, 2nd Battalion, 69th Armored Regiment, near Baghdad on April 6, 2003.

The group's lead element came under fire from enemy tanks and armored vehicles, and Thornton, "with complete disregard for his personal safety," provided support to the ground forces despite lowered visibility caused by a sandstorm. Thornton "braved the ever increasing hailstorm of anti-aircraft fire" for 33 minutes and killed and demobilized three T72 tanks, six armored personnel carriers, and multiple utility vehicles.

His actions allowed the task force to cross the river and accomplish their objective: linking up with coalition forces to fully encircle Baghdad.

"The sound of her gun makes our enemy run and hide, but the distinct sound of her engines makes our friendly forces give a little bit more. They get a little bit stronger, and it can turn the momentum of a close air support fight," said Thornton during a ceremony at Wright-Patterson AFB, Ohio. "We've had many people come and tell us that, man, when they heard the sound of the A-10 engine, I felt like I was OK now, and it turns the tide of the entire battle."

Gen. Mike Holmes, commander of Air Combat Command, presents retired Lt. Col. Gregory Thornton with the Silver Star in a ceremony at the National Museum of the US Air Force in Dayton, Ohio.

Air Combat Command chief Gen. James M. "Mike" Holmes presented Thornton with the award.

■ US, Allies Respond to North Korea's ICBM Tests

North Korea launched its first two intercontinental ballistic missile tests during the month of July.

The missiles tested were of a type unseen before by the Pentagon and traveled farther than in any previous test, in a dramatic escalation of that country's nuclear ambitions.

The first missile, the Hwasong-14 ICBM, was launched on July 4 and prompted a "snap" exercise by the US and South Korean armies to demonstrate missile defense and surface-to-surface missile capabilities. The US Army fired the Army Tactical Missile System once, and South Korea fired its Hyunmoo Missile II into territorial waters on its east coast.

The second North Korean missile test launched on July 28. The missile flew about 45 minutes and 621 miles before landing in the Sea of Japan.

A USAF B-1B (top), deployed from Dyess AFB, Texas, is joined by South Korean F-15s on a mission over the Korean Peninsula in July.

The US and South Korea again responded with snap exercises. Two B-1B bombers, deployed to Andersen AFB, Guam, from Dyess AFB, Texas, were escorted by Japanese and South Korean fighters during a 10-hour flight in "direct response" to North Korea's test.

The Missile Defense Agency on July 30 also conducted a successful test of the Terminal High Altitude Area Defense system in the Pacific.

An Air Force C-17 air-launched a medium-range target ballistic missile, which was intercepted by a THAAD system at the Pacific Spaceport Complex Alaska, located in Kodiak.

■ USAF Completes New START ICBM Reductions

The Air Force announced it has fulfilled its requirements for ICBM reduction under New START well ahead of the February 2018 deadline. New START was signed by the US and Russia in 2010 and requires the US to reduce its stockpile of deployed nuclear delivery vehicles to a total of 700 bombers, ICBMs, and submarine-launched ballistic missiles (SLBMs).

To meet the requirements, the Department of Defense directed the services to draw down to 400 ICBMs, 60 bombers, and 240 SLBMs. The Air Force began removing ICBMs from its three missile bases in Wyoming, Montana, and North Dakota in 2012.

The 50th and final ICBM for New START was decommissioned at F. E. Warren AFB, Wyo., at the beginning of June. The cost of removing the ICBMs, including storage and shipping, was $24 million.

A transporter erector is raised at the 90th Missile Wing complex in June, preparing for removal of a missile from its silo.

■ Squadron Officer School Gets Redesign

Air University's Squadron Officer School reopened at the end of July with a revamped curriculum designed to integrate Chief of Staff Gen. David L. Goldfein's top priorities. SOS had closed during the month of June, canceling an entire class, to make the changes.

The new course will focus on four areas of study: leadership, team building, logical and ethical decision-making, and multidomain joint warfare. These are intended to coordinate with Goldfein's focus on revitalizing squadrons, developing joint leaders, and improving multidomain command and control across the Air Force.

The new course will take six-and-a-half weeks to complete instead of five, and the first class began on July 31. With a longer course, USAF will only be able to hold six versions of the course per year, instead of seven, but the size of each class will be increased from 600 to 700 students.

President Trump announces re-establishment of the National Space Council at the White House. Flanking him, l-r, are: former astronaut and retired USAF Col. Benjamin Drew, Vice President Mike Pence, and former astronaut Buzz Aldrin.

■ National Space Council Established

President Donald J. Trump signed an executive order re-establishing the National Space Council on June 30. The order names Vice President Mike Pence as chair of the council that also includes the secretaries of Defense, State, and Homeland Security, as well as the Director of National Intelligence, the NASA administrator, and the Chairman of the Joint Chiefs of Staff.

At a White House signing ceremony attended by retired Air Force colonel and astronaut Buzz Aldrin, Trump said the council would serve as "a central hub guiding space policy within the administration." The order instructs the council, within its first year, to prepare a report for the President, including long-term planning and recommendations for US space activities.

Trump said that, in the past, the US had been a "nation of pioneers" when it came to space. "We started," he said, "but we never completed. We stopped." Now Trump sees the council as a way of returning the US to a place of leadership in space activities.

"Today's announcement sends a clear signal to the world that we are restoring America's proud legacy of leadership in space," he said.

Photos: Wesley Farnsworth/USAF; TSgt. Kamaile Casillas; A1C Breanna Carter; White House video image

By the Numbers

1,300 The number of official Air Force Instructions.

Air Force Secretary Heather A. Wilson on Aug. 4 announced a dramatic push to cut Air Force red tape over the next two years, saying USAF has too many AFIs and shouldn't "tell airmen how to do everything." Instead, she said,

"Let's tell them what to do and let them surprise us with their ingenuity."

40% Percent of the current AFIs Wilson says are outdated.

Source: Heather A. Wilson, National Defense University speech

■ Pawlikowski: Faster Software Development Needed

The Air Force is working to change the way it develops new software through several pathfinder programs that are focused on business and logistics systems, Gen. Ellen M. Pawlikowski, commander of Air Force Materiel Command, said July 14.

Pawlikowski

These efforts will seek to demonstrate the service's ability to abandon traditional Pentagon systems engineering methods and embrace commercial software development processes, known as "agile software development," Pawlikowski told the audience at an Air Force Association Mitchell Institute for Aerospace Studies event in Washington, D.C.

The problem is a serious one because while "software is at the heart of most of what we do," Pawlikowski said the Air Force continues to prioritize hardware development on major weapons systems—leaving software development as an afterthought. But in the multidomain command and control warfare of the future, speed of networking and decision-making will be decisive, she said, and a responsive, agile software development process will be indispensable.

The traditional Pentagon systems engineering process is not set up to produce new and updated software with speed. A typical milestone, like the preliminary design review, "doesn't make very much sense" in the software development process, Pawlikowski said. Also the Pentagon testing regime puts barriers between coders and operators that prevent quick adjustment of software capabilities to on-the-ground needs.

Pawlikowski said organizationally, the Air Force is working to develop "software teams" that can integrate into squadrons and bring coders and operators closer together. In some cases, the Air Force might even need to develop "software squadrons."

The pathfinders in business and logistics systems will precede more complicated work on software problems like an "operational flight profile," Pawlikowski said, where the risk is greater and mistakes could lead to "losing an airplane."

■ AMC Partially Lifts Dover C-5 Grounding

Air Mobility Command on Aug. 2 returned five of 18 C-5M Super Galaxys to flight following the July 17 standdown at Dover AFB, Del., due to issues with the airlifter's landing gear. At the same time, AMC Commander Gen. Carlton D. Everhart II ordered a fleetwide replacement of all C-5 ball screw assembly parts to prevent further problems.

On June 18, Everhart ordered all Dover-based C-5s to stop flying after two separate incidents where C-5s experienced failure of their landing gear at Naval Station Rota, Spain. During the standdown, AMC officials inspected the aircraft's landing gear to ensure proper extension and retraction.

"Our airmen are working deliberately and methodically at Dover and across the command to identify and resolve any issues impacting the C-5 fleet," Everhart said in a news release. "We have put measures in place to ensure aircrew safety and reduce wear and tear on the aircraft."

While the aircraft at Dover are returning to flight, Travis AFB, Calif., is replacing parts on its aircraft. The C-5's nose landing gear has two ball screws, with both working together to retract and extend the landing gear. If one screw assembly is broken, the gear cannot operate, according to AMC. Everhart also ordered the C-5 fleet to limit kneel operations.

"With an aging fleet, it is important to take all potential measures to reduce stress on the aircraft," he said.

The grounding came as Air Mobility Command began Mobility Guardian—its largest-ever exercise. The C-5 grounding did not impact flying operations for the exercise, but more C-17s were tasked to help carry equipment to make up for the missing C-5s, exercise officials said.

A C-5M gets a nose landing gear check July 28 at Dover AFB, Del., after a standdown, following two incidents of nose gear failure.

Photos: Dave Grim/USAF; SrA. Zachary Cacicia

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■ Raymond Adds Role as STRATCOM Space Commander

Gen. John W. "Jay" Raymond, commander of Air Force Space Command (AFSPC), will also become the joint space component commander for US Strategic Command, STRATCOM boss Gen. John E. Hyten told reporters.

The move comes as Hyten works to restructure his entire command, consolidating 18 component commands under four components for air, space, sea, and missile defense, each with its own four-star commander, except for missile defense, which will continue to be led by a three-star general.

Hyten said he "directed the consolidation" of STRATCOM on June 16, but "it will take a number of months to work out all the joint relationships." Hyten said he did not know exactly when the transition would be complete, but that it could be "into early next year before we reach the point where we can fully make that change."

The US military already benefits from having "a four-star who is focused on space all the time" at AFSPC, Hyten said. But to improve operational control of space forces and assets across the services, "I want to elevate that responsibility to be the joint force space commander under STRATCOM" as well, he said.

Vice Chairman of the Joint Chiefs of Staff USAF Gen. Paul J. Selva told Congress the move would give Raymond unified control over the US military's satellite constellations and would result in new efficiencies.

An unarmed Minuteman III ICBM launches during an operational test in August at Vandenberg AFB, Calif.

■ Drone Defense Becoming Critical

Air Combat Command needs the authority to better defend against small drones, because they're an increasingly dangerous threat even in peacetime operations, ACC Commander Gen. James M. "Mike" Holmes said in mid-July. The Pentagon is taking first steps toward a solution.

He said an F-22 on short final at JB Langley-Eustis, Va., nearly collided with a large hobby drone. The pilot "felt strongly enough to make a report on it." The same day, Holmes noted, an airman observed a drone "fly over the gate shack, [he] tracked it while it flew over the flight line a while, then ... [the drone] left."

Holmes said the only defense he has is a sign identifying the area as "a no-drone zone" and the authority to pull the license of an operator of one that overflies the base. That assumes he can track the drone's place of origin and catch the operator, "but they're hard to get at." The problem, he said, is "the rules are basically the same as if it [were] a small civil aircraft," and he can't simply shoot one down. Civilian agencies like the FAA need to hurry up and help with the issue, he said.

An attack drone demonstrates part of a counter-unmanned aerial system: a net.

"We're working to get authorities for the nuclear sites first," Holmes stated. In the meantime, "we're looking at things that can jam the communications" of a drone, to force it to land, as well as "looking at things that let you take control of them, so you can fly them where you want them to go." Ultimately, "we're looking at opportunities to shoot them down, too."

About one month later, the Pentagon announced it had issued "specific but classified" guidance detailing how service members can counter threats from small unmanned aircraft. "The Department of Defense is committed to the safety and security of our personnel, installations, and equipment, as well as communities near our DOD installations," according to the statement. "We support civilian law enforcement investigations and the prosecution of unauthorized [drone] operations over military installations. Although we will not discuss our specific force protection measures, DOD personnel retain the right of self-defense."

■ The War on Terrorism

As of Aug. 9, a total of 44 Americans had died in Operation Freedom's Sentinel in Afghanistan, and 43 Americans had died in Operation Inherent Resolve in Iraq and Syria.

The total includes 84 troops and three Department of Defense civilians. Of these deaths, 41 were killed in action with the enemy, while 46 died in noncombat incidents. There have been 208 troops wounded in action during OFS and 44 troops in OIR.

Photos: SrA. Ian Cudley; Wesley Farnsworth/USAF; Adobe Stock

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By Brian W. Everstine, Pentagon Editor

Fuel From the Desert

USAF's tankers make the air war possible.

SOUTHWEST ASIA

About 30,000 feet over northern Iraq, an Air Force KC-135 Stratotanker—call sign Python 25—is "dragging" two F/A-18C Hornets up the airborne "avenue" toward Mosul, topping off the fuel tanks of the Navy jets, so they can provide airborne fire support in the operation to rid the country of ISIS. The Python 25 mission, flown by an aircrew from Fairchild AFB, Wash., and operated out of Al Udeid AB, Qatar, is one of dozens of such daily missions in Operation Inherent Resolve (OIR).

The two Hornets stick to Python on their way north. The airspace is crowded: A few thousand feet below, a KC-10 Extender from another base in Southwest Asia crosses Python's path. Two French Dassault Rafale fighters closely follow, with another two on their way.

This is a small snapshot of the constant need for fuel in the skies over Iraq and Syria, where USAF tankers flew 13,064 sorties in 2016 and are as busy in 2017. Last year, Air Force tankers flew 45 percent of the total sorties as part of Operation Inherent Resolve. Meanwhile, the need to refuel aircraft over Afghanistan continues.

"We enable everyone to do their job," said Capt. Casey Lynn of the 340th Expeditionary Air Refueling Squadron. He was copilot of Python 25 when *Air Force Magazine* flew along. "If they don't have gas, they don't fly, and bombs don't get dropped. We are ... the linchpin here."

On this particular May afternoon, as ambient temperatures nudged 100 degrees Fahrenheit, a line of USAF tankers waited their turn to take off at Al Udeid. Some were headed north to Iraq and Syria for Inherent Resolve. Others would go south to support the Saudi Arabian-led fight in Yemen. Still others were on standby to support President Trump's visit to Saudi Arabia.

In addition, C-17s loaded with cargo sat patiently in line, waiting to go east to Afghanistan.

The massive US Central Command (CENTCOM) tanker

A 186th Air Refueling Wing KC-135, deployed to the 379th Air Expeditionary Wing, refuels a Navy F/A-18 over Iraq in May.

Photo: Brian W. Everstine/Staff

and airlift effort all needs to be balanced by USAF officials both at home and in the nerve center of the combined air operations center (CAOC) at Al Udeid.

"When you look at being expeditionary, there's really nobody else who does this business the way we do it," said Brig. Gen. John Williams, the director of mobility forces at the CAOC, in a recent interview here. "If you don't have refueling support, you just can't do the offensive operations. ... If you don't have that, you aren't supporting the troops in contact."

Williams is in charge of maintaining the current force of mobility aircraft and crews, especially the tanker fleet providing support for OIR from three bases in the region.

Airlifters, including C-17s and C-130s operating from this base in Southwest Asia, flew 46,900 passengers in 2016 and airlifted 72,800 short tons of cargo as part of the war against ISIS. Tankers and airlifters are both on pace to at least meet, if not surpass, those totals for 2017, all while the pace of operations in Afghanistan looks to increase.

The plans to address this need are "changing all the time" and are hampered by short-term strains, such as the May presidential visit or surges in operations, Williams said.

It is "one of the games we play. Is there going to be a future requirement coming, and are we going to have forces ready for that?" he said.

Officials at the CAOC work with the 618th Air Operations Center at Scott AFB, Ill., and the CENTCOM Deployment and Distribution Operations Center to validate the lift requirement, and then work with US Transportation Command and Air Mobility Command to plan the number of tails and aircrews. In May, dozens of KC-135s lined the flight line at the 379th Air Expeditionary Wing, representing several bases across the US. At times, that number might not be enough and more must be requested.

"Obviously you've got your plan, and no plan survives contact with the enemy," Williams said. "When something comes up, you have to deal with it."

At the 380th Air Expeditionary Wing at another base in a nearby country, about a fourth of the 59-strong KC-10 Extender fleet is deployed and operating daily, so "you can tell how important this mission is," Wing Commander Brig. Gen. Charles S. Corcoran said in an interview.

Seven partner nations have provided refueling assets for OIR, bringing "tremendous flexibility" when needed, Corcoran said. There is a "small effort" among foreign partners for airlift, an effort that US officials would like to see grow to help address surges.

The airlift provided at the 379th AEW and other bases in the region has been integral to US and allied operations and has been available on demand.

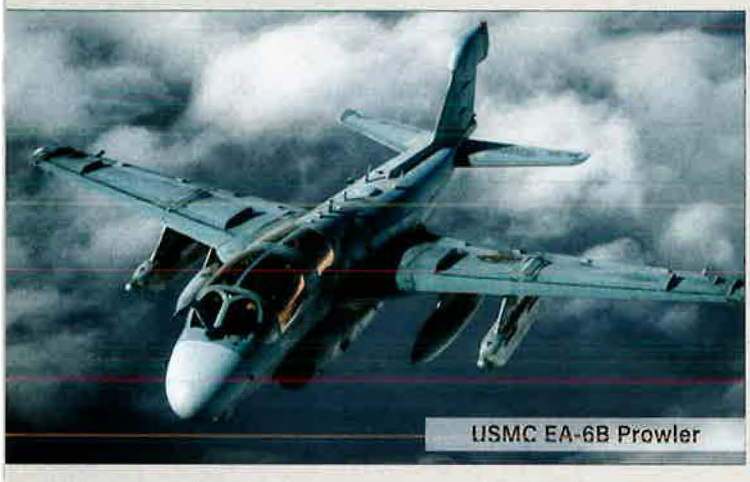
"It's a lifeblood of what happens around here," Williams said. Air refueling underwrites offensive and defensive air operations alike. Without it, "you don't have air. It's all a part of that system. It's gotta happen, or you're sunk. And it takes a lot of adjustments, and it takes a lot of planning," he said.

AIRLIFT SUPPORT

Al Udeid is a sprawling base that sees a steady diversity of airlift aircraft rotate through. The cargo mission requires a

Giving Gas: Refueling All Comers

These Operation Inherent Resolve photos—taken between May and July from KC-135 and KC-10 tankers—hint at the interservice, international variety of aircraft that USAF aerial refuelers must handle.



USMC EA-6B Prowler

USMC F-18 Hornet

USAF B-52 Stratofortress

USAF F-15E Strike Eagle

large and reliable port operation to move critical materiel.

The airmen who get cargo where it's supposed to go are a vital connection to forward locations throughout CENTCOM. Increasingly in the anti-ISIS fight, the pallets go to remote airfields undisclosed by the military and directly serving special operations forces and US-backed fighters.

Air Force contingency response airmen have in the past two years built multiple, remote airfields in places like Qayyarah West in Iraq and Kobani in Syria. Within weeks, those airfields were able to receive C-130s and C-17s regularly to resupply frontline forces.

At Al Udeid, airmen with the 8th Expeditionary Air Mobility Squadron were vital to the initial push by Iraqi forces toward ISIS-held Mosul.

"A lot of airlift support came from Al Udeid," said Lt. Col. Aaron Lane, the operations officer for the squadron. "They were pushing a lot of blood downrange, a lot of ammo, a lot of weapons."

The airmen at Al Udeid handle the most critical cargo that must flow into CENTCOM. Airlift is almost instant, and there are only so many aircraft, so leadership determines what is urgent and tasks airmen with the 8th EAMS to get it ready.

"If it goes by air, it's probably the top priority in the AOR [area of responsibility]," Lane said. "It's the most crucial, most time-sensitive. The folks at CENTCOM have the theater view of what's most important. ... [If] this needs to get downrange now, we can't send it by boat. We can't send it by landlines of communication."

On that May afternoon, airmen with the 8th EAMS were finalizing cargo to be loaded on a C-17 headed for Kandahar, Afghanistan. Teams of airmen used heavy equipment and their own hands to quickly load the aircraft on the Al Udeid flight line. The pallets included human blood and ammunition. In a matter of hours, the load was airworthy and on its way. For the Iraq and Syria mission, Lane said the most critical and most requested cargo is ammunition to continue the fight against ISIS.

ENABLING AIR COVERAGE

Python 25 refueled the two F/A-18Cs —assigned to the VFA-37 "Ragin' Bulls" on USS *George H. W. Bush*—twice on their way to support US-backed Iraqi forces near Mosul. The KC-135 was outfitted with a hose and an "iron maiden" basket so a Hornet's probe could receive fuel.

"We enable American air coverage in the sky for 24 hours, seven days a week," the aircraft's Command Pilot Capt. Timothy Black said.

The day starts with an intel brief, where the crew learns

French air force Rafale

Royal Australian Air Force E-7A Wedgetail

USAF E-3 Sentry

USAF MC-130J Commando II

about potential threats en route: anti-aircraft missiles in the region, noted by other aircraft in the area. Sometimes, the crews get to see strike videos from aircraft they had refueled.

"Knowing that you supported that, they couldn't do it if you were not there, that's a pretty cool thing," said Lynn, the copilot of Python 25.

At the same time, maintainers are out on the flight line as the mercury rises. The Al Udeid flight line is packed full of KC-135s, all of them old and needing TLC and attention to make sure they are ready for the mission. "As tankers, that's our job—to be reliable," Lynn said.

The flights last more than eight hours, hitting designated sections of airspace where combat aircraft nearby can come for a top-off. Aircrews talk over the radio, usually to hear updates on how the battle is going. In the case of the Python 25 aircrew, they sometimes bring Trivial Pursuit cards to quiz the receiving pilot as a way to kill some time.

The pilots fly north through the airspace of several countries, checking in with each along the way. The KC-135 regularly flies with three airmen: two pilots and the boom operator.

On this recent mission, 340th EARS boom operator A1C Megan Hatch refueled the Hornets, passively monitoring the "basket." She prefers using the KC-135's hydraulic-operated boom, which requires that she use a joystick to expertly ma-

A C-17 undergoes engine maintenance on a flight line in Southwest Asia in May. In the war against ISIS, airlifters like this one transported nearly 73,000 tons of cargo last year.

Photos: SSgt. Michael Battles; SSgt. Trevor McBride; Brian Everstine/Staff

The Raptor: Unseen and Integral

SOUTHWEST ASIA

America's most advanced air superiority fighter has been at war for almost three years now, flying over Syria, escorting and directing air packages, and monitoring that country's air force and Russian-made air defense systems.

For almost all of those combat sorties, the F-22 Raptor has only been seen when the pilot wants to be seen.

Although "we're not invisible, we are oftentimes unobserved," said the commander of the 27th Expeditionary Fighter Squadron, who goes by the call sign Shell. (For security reasons, the Air Force does not release the full name of pilots flying in hostile airspace.) "If they know we're there, most of the time it's because we allowed them to know we're there."

In August 2016, two Syrian Su-24 Fencers flew close to US special operations troops near the city of Hasakah. USAF F-22s flew within a mile of the Syrian aircraft and "encouraged" them to leave, the Pentagon said at the time.

Raptors stationed at an undisclosed base here are flying daily missions to support the US-led fight against ISIS in Iraq and Syria. The F-22's operating pace has increased steadily since the operation began in August 2014, and deployed Raptors are now flying at their "full capacity," Shell said. The F-22s don't train in the area and are operating solely in support of Operation Inherent Resolve.

The aircraft is a "quarterback" in the fight, then-Air Combat Command chief Gen. Herbert J. "Hawk" Carlisle said in 2015, adding that he wouldn't send a strike package into Syria without a Raptor escort.

While the Raptor relies on command and control assets, such as the USAF E-3 AWACS or the Royal Australian Air Force E-7 Wedgetail, the jet uses its sensor fusion to fine-tune the strike package. The Raptor's unique sensor package helps deconflict multiple aircraft. They track non-coalition aircraft and urge them to move along. The F-22's sensors are packaged into one screen with a fused picture, whereas other aircraft such as F-15Es have individual displays for each type of information. The Raptor pilot thus has the best situational awareness of any element of the air armada.

"The pilot can put it together and make a mental 3-D picture," Shell said. "We have more information at our fingertips than other aircraft. We have an easier time making big decisions."

An F-22 receives fuel over the Middle East from a KC-135.

F-22 pilots are usually the mission commanders, directing other aircraft— F-15Es and B-52s, for example—as to when to attack and where, Shell said.

Raptors have encountered Russian aircraft in the theater and have at times had to reach out through an internationally used military distress radio frequency to deconflict, Shell said. Every time, the Russian pilots have been "professional."

While the F-22's main mission is air superiority, the only air-to-air incidents so far have not involved Raptors. In June, a Navy F/A-18E Super Hornet shot down a Syrian Su-22 Fitter as it threatened US special operators and allied fighters at Ja'Din, southwest of Raqqa. Moreover, F-15Es twice shot down large Iranian-made drones that were flying in southern Syria. For these three air-to-air kills, fourth generation fighters took the lead while the F-22 was retained for other missions or was simply not flying in the region.

Because F-22 pilots spend most of their time at home training, to then hand the close air support mission over to aircraft such as A-10s and F-15Es, they often need CAS refreshers before they deploy for OIR. In this battle, "ISIS doesn't have an air force," so the F-22 is providing two of the Air Force's core missions: air superiority and precision strike.

When the 27th Fighter Squadron deployed from its home base at JB Langley-Eustis, Va., for this mission, just two pilots had combat experience, Shell said. They "train and train and train," Shell explained, but flying combat, often 10 hours or more, and with multiple air refuelings, helps "tie them to their work a little more." Now, the squadron is "getting to execute the mission, real world, in combat, against the nation's enemies," Shell said.

neuver the boom into the receiving aircraft.

From her perspective, lying flat in the back of the massive, four-engine tanker and looking out through a small plexiglass window, she can watch the war unfold.

"The fuel is there for the fighters," she said. "There's troops on the ground who are needing that."

Black, the Python aircraft commander, said the role of the tanker is possibly the least-known and least-understood aspect of the war against ISIS. While social media sites show videos of bombs exploding, the enablers don't get much play.

"People understand there's something happening over here, but I'm not sure that people really grasp the extent," Black said. "There's not a lot of coverage. ... Maybe because it's predominantly an air war. We do have troops on the ground, but not as many as we did in Iraqi Freedom or the opening days of Enduring Freedom. But 24/7, "there's a tanker in the air. You do hear about the strikes, but you don't hear about us much. ... I think we like it that way. We give them the gas; we're not the ones dropping bombs."

The slogan NKAWTG—or "No Kick-Ass Without Tanker Gas"—is true, Lynn said. "Other people can't do their job if we're not there. We're a support platform. We try to provide the best in-air gas station possible to extend those guys, keep them on target, so they can drop the bombs."

Photos: SSgt. Michael Battles

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REVITALIZING THE SQUADRON

Squadrons, the heart and soul of the Air Force, have been under unrelenting strain. USAF seeks to fix that.

Soon after Gen. David L. Goldfein took command as the Air Force Chief of Staff in July 2016, he put three big rocks in his jar of priorities for the service. At AFA's Air, Space & Cyber (ASC) Conference in September 2016, the 21st CSAF announced that his tenure would be defined by the development of multidomain command and control, the cultivation of joint leaders within the Air Force, and the revitalization of the squadron.

While work is underway in all three areas, Goldfein clearly prioritized squadron revitalization during his first year. Given the problems of readiness, retention, and tempo of operations across the force, the effort was a logical starting point.

"It is at the squadron level where we succeed or fail as an Air Force," Goldfein said at ASC16. "It's where our culture resides. ... It's where airmen are developed. It's where airmen and families thrive. It's where training and innovation occur."

But that heart of the service has been hollowed out in recent decades. Vice Chief of Staff Gen. Stephen W. "Seve" Wilson sounded the alarm on Capitol Hill in February. He told Congress that readiness across the Air Force was at its worst level since the 1970s—"less than 50 percent ready across our Air Force, and we have pockets that are below that." He added that USAF was off balance due to "nonstop combat, paired with the budget instability and lower than planned toplines."

The service's squadron revitalization has barely begun, but USAF is already acting on some initial findings. In testimony before the Senate Appropriations subcommittee on defense in June, Secretary of the Air Force Heather A. Wilson said a portion of the new manpower the Air Force is requesting for next year will be directed specifically toward squadron requirements. She said the budget request contains "over a thousand new positions to add in at the squadron level."

Wilson explained that many of these positions were lost in 2013 as a result of sequestration, and the Fiscal Year 2018 budget "puts more support back in at the squadron level." Some 200 of the positions will be commander support staff, and 961 will be civilian positions.

SrA. Matise Venett inspects munitions before they are loaded into a B-52H at Minot AFB, N.D. His team was participating in a bomb-loading competition. USAF views training as a core readiness enhancer.

Photo: SrA. J. T. Armstrong

By Wilson Brissett, Senior Editor

The goal of the move, according to Air Force spokesman Maj. William J. Lewis, is to "alleviate military airmen from administrative duties and increase overall readiness by allowing those military members to focus on their primary warfighting mission roles."

The squadron revitalization team helped to inform that decision. The leader, Brig. Gen. Stephen L. Davis, director of manpower, organization, and resources, said they learned that "we've taken cuts in some places that made sense to take cuts at the time, but that the long-term effect of that had been cumulative."

When those people were no longer in squadrons, their duties fell to those who remained, making it more difficult for them to focus on their primary duties. The increased burden that came from squadron-level cuts is "primarily seen at home station and not downrange," Davis contended.

Despite the strain, Air Force leadership saw squadrons performing with heroic perseverance, he said.

"From a macro sense it's pretty clear that our squadrons [are] the best in the world," Davis told *Air Force Magazine.* Even so, he said, when Goldfein became Chief, he "looked around and saw some symptoms of some things" that troubled him.

A LOT ON OUR BACKS

"We've put a lot on the backs of our airmen over the last five years," Davis said: "Certainly sequestration, the continuing resolutions, the reductions in manning that we've seen," as well as "nearly 27 years of continuous combat." Within such a climate, Davis said Goldfein asked him to "take a deliberate look" at the health of Air Force squadrons "to see if we can help them out in a variety of ways."

The task set before Davis is certainly unique, if not quite unprecedented. Though it has undertaken lots of manpower reviews and climate surveys in the past, the Air Force has never conducted a servicewide evaluation of squadrons.

"We didn't find any super exact precedent for doing this sort of thing," Davis admitted. The closest matches were the Force Improvement Programs of recent years. "We used those as a guide in some ways," he said, though they "modified [them] for this specific task."

The initiative is not motivated by problems alone. Davis' team wants to identify challenges and develop workable solutions, for sure. But they also want to figure out what is already working.

"If you're in a really good squadron," the team is interested in finding out what made it that way. Ultimately, Davis wants to determine how the Air Force can best leverage such practices to make them work in other squadrons. He said he wants to "actively go out and look for what's working well and spread that around."

In fall 2016, Davis and his team began their work with "a metadata analysis"—combing "existing sources of Air Force data," including climate surveys, retention data, results of inspector general interviews, and readiness data. They were looking for recurrent areas of interest to better focus their own investigation into squadrons. Davis said they found "about 21 areas" they thought were crucial and wanted to learn more about.

Davis

They built their own survey in January "to get after this idea of revitalizing squadrons." Within the month, they received about 13,000 responses to their survey across the Total Force—Active Duty, Guard, and Reserve. Those responses helped them further refine their scope and prepare for the current stage of the effort, field interviews.

Davis and his team spend a lot of time traveling these days. They are in the midst of some 20 base visits that will make up the core data collection portion. To gain the broadest possible perspective, they are conducting interviews at each of the nine Air Force major command (majcom) headquarters, one operational base connected to each majcom, plus the Air National Guard headquarters and an additional deployed location, Al Udeid AB, Qatar.

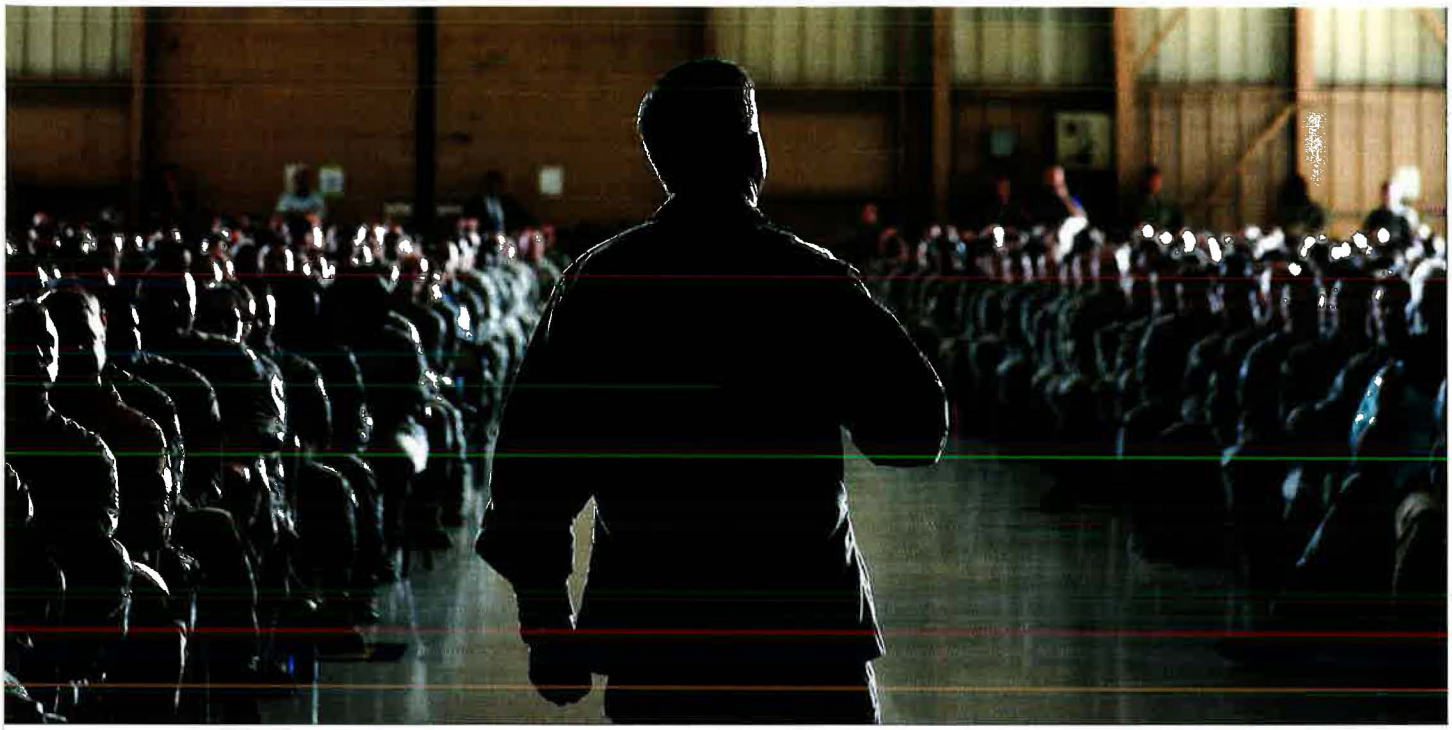
They complete one base every week.

During their visits, they mostly talk with airmen. "What we're attempting to do is get past what the symptoms are and get down to the root causes," he said. The central methodology is "peer-to-peer interviews."

Davis goes to every base, and the interview team always includes a colonel, at least one lieutenant colonel, and a chief master sergeant. This mix ensures that interviewees are sitting across from someone who "understands their perspective as they ask these sets of questions."

While the basic "model remains the same" from one place to another, Davis said the team has been changing and refining the questions it asks as it goes along in response to what they have been learning.

In addition to the one-on-one interviews, the team con-



Air Force Chief of Staff Gen. David Goldfein speaks about Air Force operations during an all-call at Shaw AFB, S.C., in May. Squadron revitalization is one of Goldfein's top three priorities.

ducts small-group interviews with squadron commanders, and they typically will hold a "large group event" that can host as many as 100 airmen. Often these are held in the evening to allow "an opportunity for folks that work shift work or other things to come and participate and also gives an opportunity for spouses of our airmen to come and participate."

Moreover, the team is collecting data through a "web-based crowd-sourcing platform" launched in March. "We realize we're not going to be able to touch every single airman" with the base visits, Davis said. The website will "give every airman a chance to provide input into what we're doing." The first forum on the website averaged 3,000 views per day. Engagement levels were good, with more than 16,000 user votes registered and more than 600 ideas generated.

Davis expected the field interviews to be completed by the end of July. The team will review their data and seek to identify the root causes of the problems they're studying and propose solutions with the help of subject matter experts. They will "brief those to Air Force leadership in the fall."

The solution and implementation phase will take some time. "This is not build a team, make recommendations, and then disband the team," Davis said. "This is a four-year effort in the Chief's view." After the year of data collection, Davis thinks three years is not too long to spend identifying causes and preparing solutions. "It will take some time to figure out what we need to do and do that in a deliberate way," he said.

KEEPING IT GRASSROOTS

Davis emphasized that his team is not waiting until the end of their process to fix problems they already understand. "If there's something we find that we think is more immediately actionable, ... we're going to start working that right away."

The team did this on the issue of squadron commander and squadron superintendent preparation and training, he said. The team "identified that as a shortfall" early in their process, they presented the issues at Corona, and "it's been tasked to Air University to look at and provide recommendations back to the Chief."

Another early recommendation has impacted the Air Force budget request for Fiscal 2018. That request includes an increase of 4,100 Active Duty members and 1,700 Guard and Reserve, and squadron revitalization has helped the service to better target where some of those increases should land.

In this case, the squadron initiative was able to identify a need and recommend speedy, well-resourced change to alleviate the problem.

This kind of responsiveness is crucial. At AFA's 2017 Air Warfare Symposium, Goldfein told reporters he recently met with wing commanders and told them that squadron revitalization is not about delivering a solution from the top down. "I don't want them all waiting around for me to solve it," he said. "Don't wait for me to come to you with the big program," Goldfein said.

Davis said his team has spent a lot of time trying to build this bottom-up strategy into their methodology. They want to listen well to what exactly squadrons really need. "When we interview, we don't want to get our own ideas echoed back to us. We want to get the interviewees' ideas," he said. So the team spends a lot of time "training our folks to fight against injecting themselves and their own views" into the conversation. The gold standard is the grassroots idea that no one in the Pentagon has yet considered.

Not all the problems Davis and his team have uncovered have quick fixes. Some are more deeply ingrained in the organizational structure of a sprawling global bureaucracy. Indeed, some are almost sociological in nature. That's why the Air Force sometimes uses the word "cultural" to describe particularly hairy issues.

> THE GOLD STANDARD IS THE GRASSROOTS IDEA THAT NO ONE IN THE PENTAGON HAS YET CONSIDERED.

One concern that quickly and consistently emerged in the team's interviews was the need to push authorities down to the squadron level.

At Al Udeid AB, Qatar, a 340th Aircraft Maintenance Unit maintainer adjusts the window of a KC-135 boom pod before a flight for Operation Inherent Resolve. Al Udeid is one of 20 bases Davis' squadron team is visiting to solicit feedback from airmen.

A Force Improvement Program—Plus

The Air Force has recently turned to Force Improvement Programs (FIPs) to address big problems, by surveying airmen on the ground. A FIP allows the service to better understand the root causes of those problems and develop workable solutions based on the data.

In 2014, Air Force Global Strike Command launched such a FIP in response to a series of controversial mistakes in the management of the nation's nuclear weapons. The data culled from the surveys identified cultural problems in the missileer career field, which had grown isolated from the rest of the service and had failed to keep step with personnel best practices.

Solutions focused on developing professionalism in the force, clarifying promotion tracks, immersing leadership in the mission, making myriad quality of life improvements, and bringing new resources into the mission area.

In late 2015, Air Combat Command announced the results of a similar survey-based study—a Culture and Process Improvement Program—related to entrenched manpower issues in the remotely piloted aircraft (RPA) enterprise.

The resulting "get-well" plan concentrated on overhauling professional development, leaning more on the Guard and Reserve to meet a high demand for the mission, and pouring $3 billion over five years into the RPA community.

Squadron revitalization is borrowing some methodology from the FIPs but deploying it on a much larger scale.

"Authorities have migrated up over time, and that's what naturally happens with authorities," Davis said. He offered the example of notifications of major professional events—promotions, deployments, special assignments.

Previously, squadron commanders had the duty to notify airmen of these developments. But because information would sometimes leak, airmen would be notified outside the chain of command. To deal with that problem, the Air Force began using an electronic notification system.

Today, promotion notification "goes out on the web and everybody sees it at the same time," Davis explained.

That fix created another problem, though. Making notifications electronic took away from squadron commanders a significant duty that connected them to the lives of their airmen, often in a positive way.

Those commanders "have to perform difficult tasks and deliver difficult news," Davis said. "Let's allow them to be the ones to deliver good news as well." Better to risk occasional leaks than to take away from commanders altogether the authority to notify.

Still, the solution is not as simple as changing the rules. Davis doesn't want to just fix this one problem about notifications. "We're more focused on the cultural change," he said. The question that motivates his team is: "How do you create leaders that create an environment where authorities are pushed down to the right level?" This is where the problem gets sticky and where Davis wants to be purposeful about addressing it.

Another example—one that initially arose outside the revitalization—is the service's ongoing review of Air Force Instructions (AFIs). These are the documents, often hundreds of pages, that govern ongoing operations in a squadron.

Photos: A1C Christopher Maldonado; SSgt. Michael Battles

SrA. Rachel Revels (left) and SrA. Tailor Wimberly inspect a C-130J engine at Ramstein AB, Germany. Lessons from the squadron interviews are already influencing where the Air Force will place new airmen.

Airmen are required to read these periodically and officially acknowledge that they are aware of their contents.

In the same way that authorities naturally tend to migrate up and centralize over time, Davis said AFIs "have a natural tendency to proliferate." Have a problem in a squadron? Write a new AFI to solve it. "Things are put in the AFI for good reasons at the time," Davis said. But more AFIs eventually create "a cumulative effect" that can hamper squadron effectiveness by "putting an additional burden on the squadron that's not warranted."

The team wants to take its time developing a solution to this problem. A new AFI aimed at reducing the number of AFIs would certainly seem less than satisfactory. And it would fail to get at the root cause.

A new AFI is, in many cases, the path of least resistance to solving a problem. Instead, Davis wants to tackle the tougher challenge of creating "the right leadership culture so that you put a check against" things like AFI proliferation.

RETENTION AND READINESS

So what is all this adding up to? The larger goals of the program are getting more airmen to stay in the Air Force and making them better prepared for the mission at hand. These are certainly the two faces of the manpower struggles the service has been confronting in recent years. It's too early in this initiative to gauge results, but Davis knows what he's looking for.

One of the keys to keeping people in the force is more choice and more flexibility. "I think we're addressing the retention problem writ large," Davis said.

An issue that cropped up in interviews was the desire for multiple professional development tracks in the Air Force. A number of airmen said they wanted to see the service implement "a technical track and a leadership track." Right now, the Air Force sees every airman "as being on the potential leadership path," Davis said. Changing that would make it possible for "folks that just want to be good, solid, strong technicians to be able to stay in the Air Force and just focus on that."

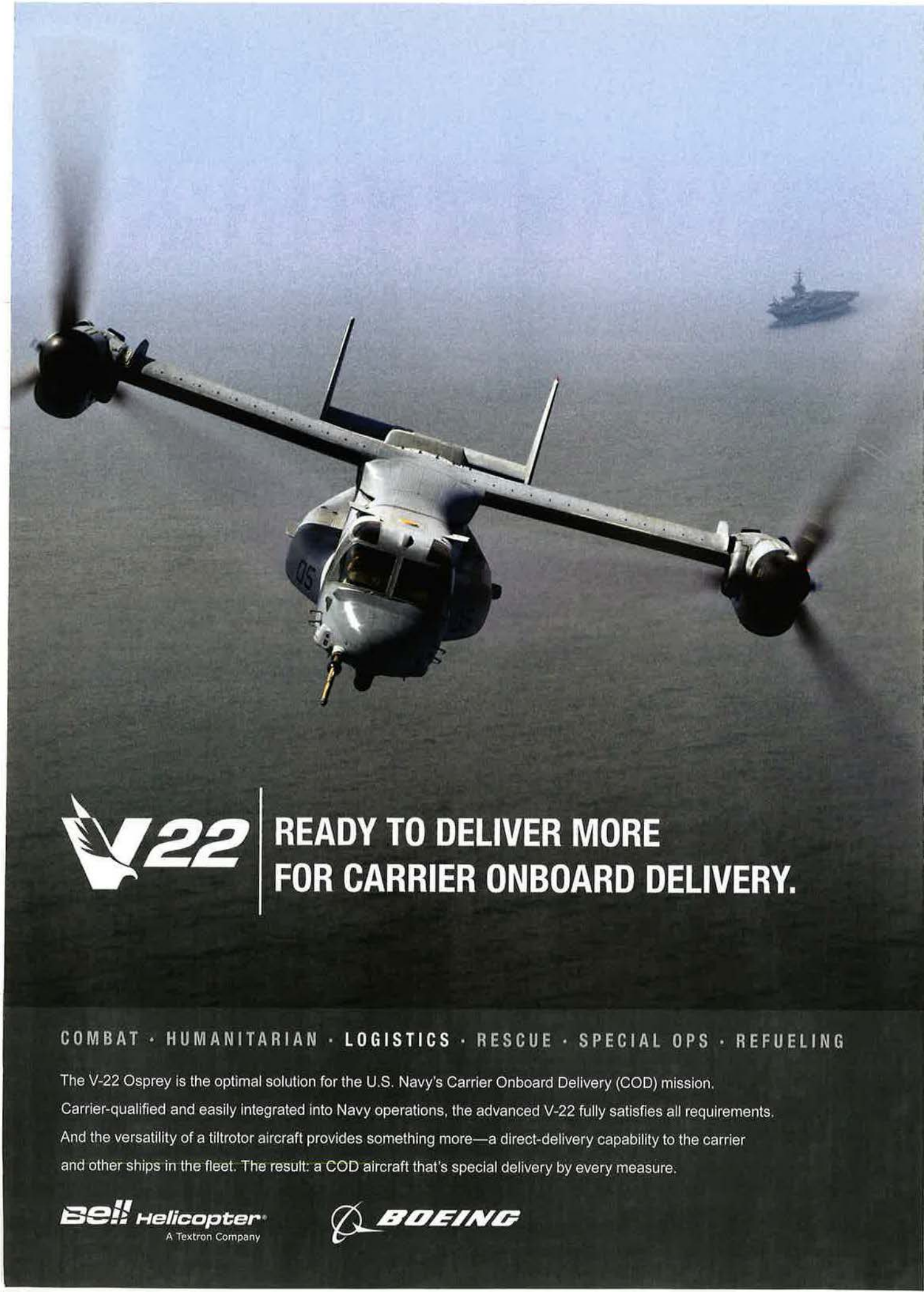
A1C Darricka Sides (left), an airfield systems apprentice, reads technical orders to A1C Cheyenne Bradley, a ground radar technician, at Shaw in March. Leadership is seeking ways to return authority to lower ranks.

There's no clarity yet on how the service will address that concern, but Davis said his team will be successful if they have an impact on retention. "I'm convinced, based on what we're seeing so far, and where we're headed," he said, "that we're going to do things that help retention across the Air Force."

The other measure will be how prepared airmen feel. "We would expect that if we do this right, we're going to see increases in readiness," Davis said. He wants to see real movement on the numbers the Air Force uses to gauge readiness: "personnel, training, equipment, and resources." He plans to watch the regular climate surveys. "That will be our metric going forward for how we're doing on this."

In the end, Davis wants squadron revitalization to be a truly grassroots effort that culls the best ideas from airmen on the ground, doing the mission. But that doesn't mean the program lacks ambition. On the contrary, Davis has instructed his team to "look for the big opportunities that address all or most squadrons." If the result is an Air Force that fewer high-performing airmen want to leave, and an Air Force that is better prepared to face the challenges of the complex missions of the 21st century, then the four years of trying to figure out how to revitalize squadrons will seem like time well spent. ✪

Photos: SrA. Elizabeth Baker; A1C Destinee Sweeney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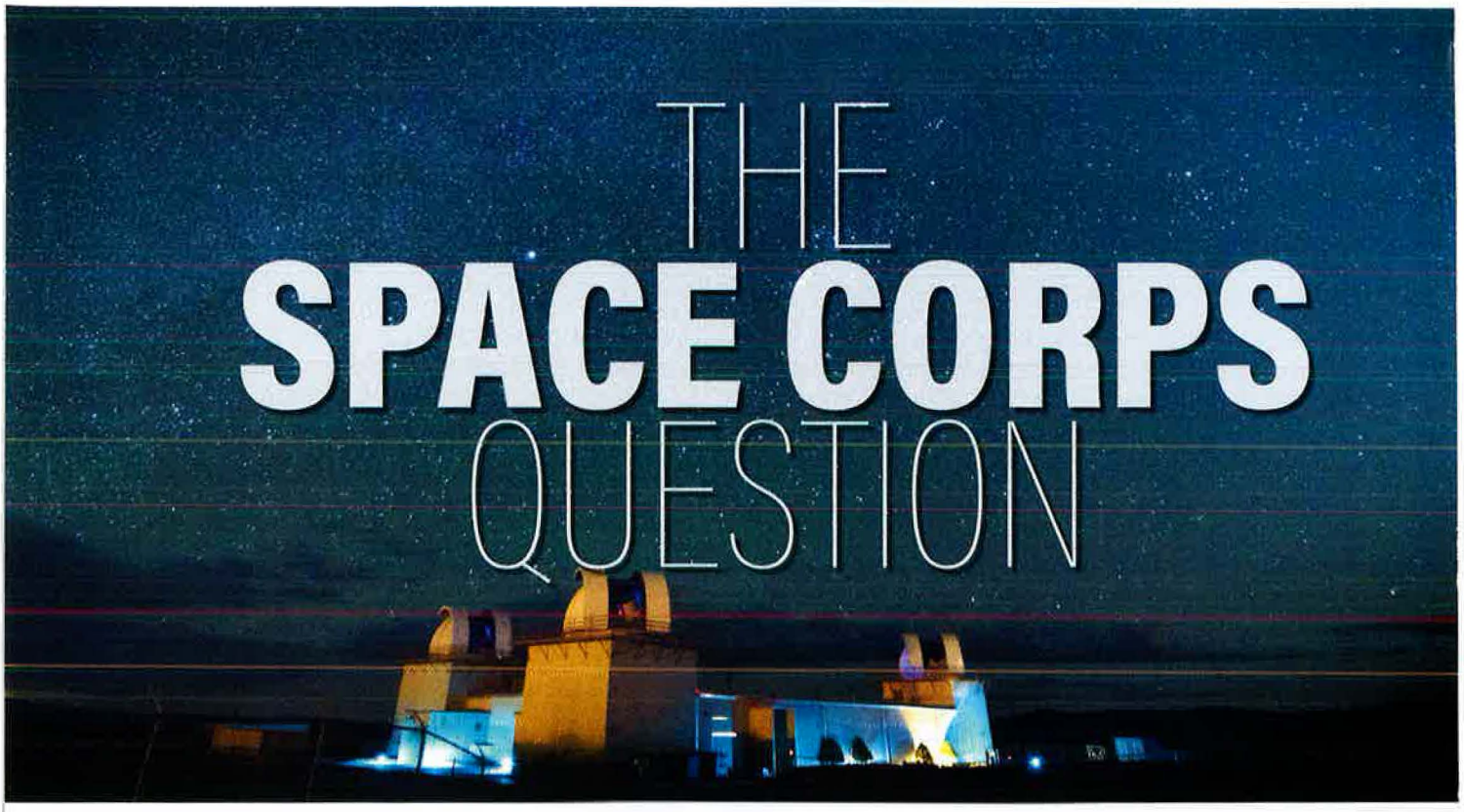


THE SPACE CORPS QUESTION

Depending on whom you ask, the time to create a new Space Corps separate from the Air Force is now. Or not now.

AUG. 7, 2017

By Wilson Brissett, Senior Editor

There were snickers and "Star Trek" jokes when Rep. Mike Rogers (R-Ala.) told an audience at the national Space Symposium in Colorado Springs, Colo., in April that the US needs a separate Space Corps. In Rogers' view, this would give proper priority to the mission of assuring access to space and protecting US assets and operations there.

No one was laughing three months later when the House passed its 2018 national defense policy bill, containing a section directing the creation of a Space Corps within the Department of the Air Force by Jan. 1, 2019.

This potential new branch of the armed forces is not a done deal. The Senate's version of the 2018 National Defense Authorization Act (NDAA) had no similar proposal, and the Trump administration and Air Force leadership have publicly opposed it. Nevertheless, the idea rapidly vaulted over several big legislative hurdles and steamrolled its way through some real opposition.

Where has all this energy come from?

Rogers has been the driving force behind the idea of a Space Corps in recent years. He believes the US is falling behind China and Russia in treating space as a full combat domain and blames the Air Force for putting too much priority on traditional airpower at the expense of space capabilities.

In his Space Symposium speech, Rogers said, "Conflicts of interest between space and the Air Force's other priorities" produce a "lack of a tribe mentality" among USAF space officers, who know the deck is stacked against them. A sense of pride among space operators and in space as a combat domain is just what Rogers thinks is missing. He said a glance at USAF's funding priorities reveals the lack of a clear and centralized chain of authority for acquisition and the failure to develop a professional group of dedicated officer-specialists in space.

Since 2013, Rogers asserted, Air Force research, development, and procurement funds in non-space programs had increased 23 percent, while comparable Air Force space funding had declined by 30 percent.

Rogers also claimed that the USAF space enterprise lacks an "operational, acquisitions, and resourcing authority aligned" from top to bottom. The Air Force doesn't put priority on space operations in its professional development programs, he maintained, noting that only two out of 40 classroom hours at Air Command and Staff College focus on space. Thus, it should come as no surprise that the Space and Missile Systems Center "does not compete favorably for senior officers" and that general stars "go overwhelmingly to pilots," he argued. Rogers said that of 37 Air Force general officers promoted in 2016, 25 were pilots but none were

"BOLD REFORM IS NEEDED, AND WE MUST START NOW."

—Rep. Mike Rogers (R-Ala.)

Stars fill the sky above the electro-optical deep-space surveillance telescope located on White Sands Missile Range, N.M.

The X-37B Orbital Test Vehicle landed at the Kennedy Space Center Shuttle Landing Facility in Florida May 7. The X-37B program is managed by the Air Force Rapid Capabilities Office.

space professionals; this produces a lack of advocacy for space programs at the most senior leadership levels.

Rogers said space "must be a priority, and it won't be if you get out of bed every morning thinking about fighters and bombers." He said a separate space service would "reduce bureaucracy" and produce "clear lines of responsibility and accountability." It would put space "on par with" other combat domains like air and sea, "so the space accounts are not raided" in hard fiscal times.

Rogers capped his proposal by saying a Space Corps would create "a cadre of space experts" and produce "an integrated National Security Space program." He claimed that what he's advocating is "not radical surgery," but that "bold reform is needed, and we must start now."

AIR FORCE OPPOSITION

The Air Force opposes Rogers' idea. Chief of Staff Gen. David L. Goldfein told Congress in May, "Any move that actually ends up separating space" from the air and cyber forces of USAF, "as opposed to integrating space, I would argue, is a move in the wrong direction."

Goldfein said he's willing to "keep that dialogue open," but contended that a Space Corps is a bad idea "at this time in our history" because the Air Force is in the midst of "a strategic shift" from viewing space as "a benign environment" to treating it as "a warfighting domain."

"To get focused on a large organizational change would actually slow us down" while this transition to a new concept of operations is ongoing, Goldfein said.

Despite their opposition to Rogers' solution, USAF senior leaders acknowledge some of the problems he's identified. In February, Goldfein spoke at an Air Force Association Mitchell Institute event about the need to develop "a coherent acquisition strategy" for space. He said the service must "have a discussion at a strategic level" about how guidance on space as a combat domain is offered to the Joint Chiefs and the Commander in Chief.

The Air Force has already moved to address the concerns noted by Rogers by creating a new position: deputy chief of staff for space. The new A11 post gives USAF a leader who will "come to work every day focused on" integrating space operations into the joint US war machine, Air Force Space Command (AFSPC) boss Gen. John W. "Jay" Raymond said at the Space Symposium.

Air Force Secretary Heather A. Wilson said in June that the new deputy will be "a strong senior space advocate" within the service who will provide "oversight across Air Force headquarters staff" for space issues. The position will help normalize the requirements process and serve as a career manager for space personnel, she said.

To show that USAF is taking the matter seriously, service leaders are touting a requested 20 percent increase in space spending in the 2018 budget.

"TIME FOR US TO ACT"

The Air Force's proposed changes aren't enough for some in Congress, however. At the same event where Wilson praised the new A11 position, Rep. Doug Lamborn (R-Colo.), who sits on the House Armed Services Committee's strategic forces subcommittee, told the audience that "we can't afford to rearrange the deck chairs."

The HASC strategic forces subcommittee did just that during late June, when it released a budget markup that provided for a new Space Corps within the Department of the Air Force, much as the Marine Corps is a separate service under the US Navy. It's only a paragraph long, but according to the proposal, the new service would be headed by a Space Corps Chief of Staff. This officer would be a four-star general appointed to a six-year term and would become the eighth member of the Joint Chiefs of Staff.

Wilson and Goldfein immediately spoke out against the proposal. "This will make it more complex, add more boxes to the organization chart, and cost more money," Wilson told reporters. "I don't need another Chief of Staff and another six deputy chiefs of staff," she added. Goldfein agreed, telling reporters, "Now is not the time to build seams and segregate or separate. Now's the time to further integrate."

At the subcommittee hearing to debate the markup, Rogers stood his ground. Noting that he was "willing to work with" Air Force leaders to develop the best plan to reorganize space operations, Rogers nonetheless said he was "shocked by the response from the Air Force leadership." He threatened to "take this mission totally away from the Air Force" if its leaders continue to resist his reform efforts.

"The department cannot fix itself on this issue," Rogers said. It was the Air Force that "got us into the situation where the Russians and the Chinese are near-peers to us in space," he claimed, and "we will not allow the status quo to continue."

Rogers also dismissed the Air Force's new A11 position as simply one more addition to an organization already overcrowded with "people who can say

Photos: A1C Dennis Hoffman; Bud Hancock/USAF; USAF

no to space projects." If left alone, Rogers said, "the Air Force would continue to force space to compete with F-35s. And we know who's going to win that competition."

While admitting that his proposed reforms "won't be easy and will be disruptive in the short term," it will all be worth it, he said, because China and Russia have already reorganized their space forces and "we must act now if we wish to maintain the advantages the US military obtains" from its space operations. The subcommittee voted to approve the entire mark, including the Space Corps provision, and recommend it to the full HASC.

At the committee level, the proposal received its first congressional opposition. Rep. Michael R. Turner (R-Ohio) offered an amendment to remove the Space Corps provision from the NDAA.

By moving to create a new service, "this mark is asking us to do something we have not done since 1947," Turner told the committee. "Several discussions" are simply not enough on which to base a move of such gravity, he said.

"Certainly, I agree with the chairman on the failures in the space subprogram under the Air Force," Turner allowed, but "we're only going to solve it by empowering the Air Force, funding the Air Force, and holding the administration accountable." As such, he called for a delay of the reorganization in order to conduct an in-depth study of the impact of forming a separate Space Corps.

Rogers contested the idea that the proposal hasn't been thoroughly vetted. He told Turner the subcommittee had been "incredibly deliberative" in its work on the Space Corps. Not only had they "started working on this last September as a committee, vigorously," Rogers said, but the idea itself is as old as the 2001 Commission to Assess United States National Security Space Management and Organization—the so-called Rumsfeld Commission—and was revisited in the 2008 Allard Commission. (See: "The Space Commission Reports," March 2001.)

HASC Chairman Rep. Mac Thornberry (R-Texas) sided with Rogers, saying, "I believe there are some changes that the Pentagon cannot make on their own. And it's our job to make those changes." He compared the creation of a Space Corps to the creation of the Air Force and of the Department of Defense. "There are times when an issue becomes developed and ripe and it is our responsibility to act," he insisted. "This is the time for us to act."

Offering bipartisan support, Rep. Jim Cooper (D-Tenn.), the HASC strategic forces subcommittee ranking member, echoed Thornberry's comments.

"Whether we like it or not, space is the new warfighting domain," he said. "And space has not been given adequate priority by our friends in the Air Force." He called on the committee to rise to the challenge set before them. "This is a historic moment for this committee, and I am proud of it," he said.

At the full HASC level, Turner's amendment to block the Space Corps was defeated by voice vote, and the HASC approved the NDAA as a whole by a vote of 60 to one.

TAKING THE HOUSE

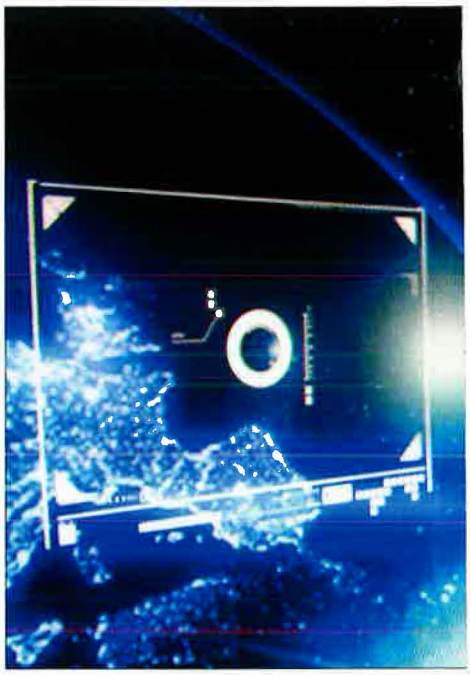
After clearing the HASC, the full House was set to consider the Space Corps proposal during the second week of July. Turner resubmitted his amendment to block the Space Corps to the House Rules Committee, which decides what amendments will be allowed for floor debate.

The Air Force and DOD lined up behind Turner. Wilson and Defense Secretary James N. Mattis each sent letters to Turner outlining why a Space Corps is not the right answer right now.

Wilson wrote that a new Space Corps "would create additional seams between the services, disrupt ongoing efforts to establish a warfighting culture and new capabilities, and require costly duplication of personnel and resources." She said that AFSPC is currently too small to merit "a headquarters element similar to the Marine Corps."

The Air Force today has only 2,500 "true space operators," Wilson wrote.

> "NOW IS NOT THE TIME TO BUILD SEAMS AND SEGREGATE OR SEPARATE. NOW'S THE TIME TO FURTHER INTEGRATE."
>
> —Gen. David Goldfein, USAF Chief of Staff



"If we can justify a separate space force, we can justify a separate service for submarines, for cyber warriors, for the Army Corps of Engineers to run our water projects, for the military health service, or for special operations."

Mattis used his letter to urge Congress "to reconsider the proposal of a separate service Space Corps." While saying he shares "congressional concerns about the organization and management of the department's space capabilities," he insisted that "a properly integrated approach is better for carrying out this mission."

The Trump administration also opposed the plan in its NDAA policy statement, calling a separate Space Corps "premature." The administration said the Pentagon is conducting "strategic reviews" of the organization of National Security Space operations, and it wants to wait for the completion of that review before moving forward with any changes.

Turner referenced the letters of Wilson and Mattis in his comments before the House Rules Committee, where he restated his position that the plan needed more time and study. He told the committee, "Most members of the House have no idea that we're about to create another service branch, and I think that bears—at that level—a need for us to have debate on the House floor."

He urged that the cost of the move be studied. Though Rogers has said creating a new service will have essentially no cost, Turner found that hard to believe, telling the committee, "We do not know what the proposed costs are."

The Congressional Budget Office hasn't scored the proposal, and Air

MSgt. Rich Davis checks out Command Center Alpha, a space-centric Air Force marketing and recruiting tool, at the National Museum of the US Air Force in Dayton, Ohio.

Air Force Chief of Staff Gen. David Goldfein (l) and Secretary of the Air Force Heather Wilson (r) speak with Sen. Deb Fischer (R-Neb.) before a hearing of the Senate Armed Services subcommittee on strategic forces in May.

Force spokesperson Capt. Annmarie Annicelli said the service has not prepared its own estimate, saying in an email it would "take great analysis." Releasing information "at this point on draft legislation would be premature," she stated.

Turner also told the Rules Committee that Rep. Devin Nunes (R-Calif.), chairman of the House Permanent Select Committee on Intelligence, and Rep. Rodney P. Frelinghuysen (R-N.J.), chairman of the House Appropriations Committee—two committees that bear congressional responsibility for space programs—were both opposed to the formation of a Space Corps.

Rogers and Cooper appeared before the Rules Committee to respond to Turner. Rogers rejected the idea that the Intelligence Community would object to his proposal, insisting, "We took our language through the Intelligence Committee," and "we exempted all intelligence assets" from the proposal as well. He said no Intelligence Community space operations would be forced into the new Space Corps.

On the cost of the proposal, Rogers admitted, "We don't know what cost there will be, if any. It hasn't been designed yet." He was insistent, though, on the urgent need for the move.

"The national security risks are real and to delay this another year would be just completely irresponsible," he told the committee. Cooper sharpened the message, saying that classified briefings on the capabilities of US adversaries had convinced him that a failure to solve the problems in National Security Space decision-making could lead to "the risk of another 9/11 or Pearl Harbor." If the nation fails to respond adequately to the threat, he said, "We would be blinded, deafened, and impotent before we knew what happened."

When the Rules Committee asked Rogers why his proposal had garnered such strong opposition from DOD, he offered, "They don't like Congress meddling in their business." Rogers said the move is crucial because "if we take space and separate it into a separate corps, that money goes with that corps," preventing the Air Force from using space money on air superiority.

"When they think Congress is not giving them enough money for their fighter jets and their bombers," Rogers claimed, "they reach into the space budget." Rogers told the committee that he has "objective facts over a 10-year period of time" showing that the Air Force has "consistently gone into the space budget to pay for air domain needs."

In the end, the Rules Committee sided with Rogers and disallowed Turner's amendment. There was no debate of the Space Corps proposal before the full House, and the provision's fate became tied to that of the entire NDAA.

After two-and-a-half days of floor debate, considering more than 200 other amendments, the House passed its version of the NDAA—including the Space Corps provision—by a vote of 344 to 81 on July 14.

It may not be time to start designing Space Corps uniforms yet, though. For Rogers' plan to become law, the Senate would need to approve it and President Trump would have to sign the resulting legislation, over his own administration's stated opposition.

It's not easy to predict what happens next. As the House was passing its version of the defense policy bill, the Senate was planning to take up the NDAA after its August recess. Without a Space Corps proposal in the current Senate version of the NDAA, the final outcome of the proposal would have to wait even longer for the reconciliation process.

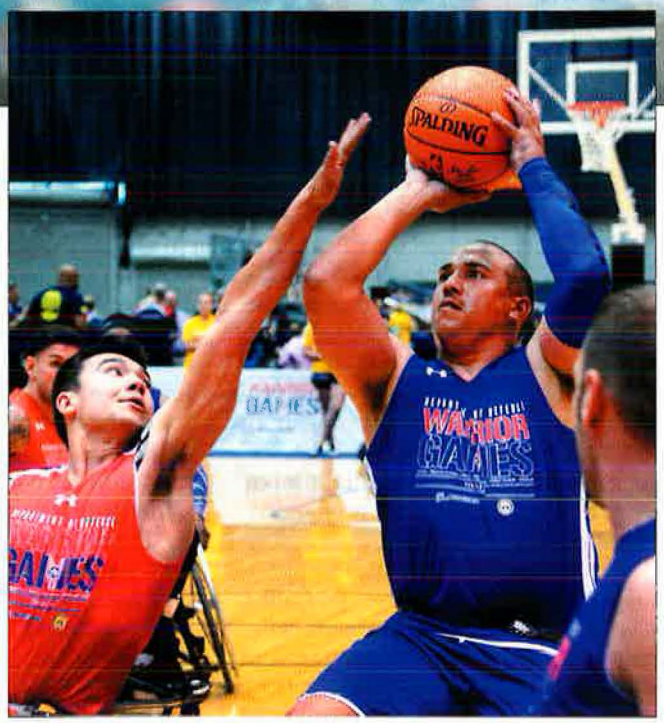
At press time, no senators had given any clear indication they support the proposal. Trump hasn't offered an opinion on a new Space Corps beyond his administration's policy statement on the House version of the NDAA. These would seem to be two huge obstacles to overcome. So far, however, Rogers has mustered enough momentum to blow past USAF, DOD, and administration opposition in the House.

It seems that whatever the outcome in this budget cycle, management of National Security Space seems likely to change quite a bit over the next two years. ✪

Photo: Dale Eckroth/USAF; Scott M. Ash/USAF

DEPARTMENT OF DEFENSE
WARRIOR GAMES

MSgt. Linn Knight competes in swimming during the 2017 DOD Warrior Games at the University of Illinois at Chicago July 8.



MSgt. Brian Williams, a security forces instructor from Sierra Vista, Ariz., prepares to shoot during a wheelchair basketball game.

Their New Normal

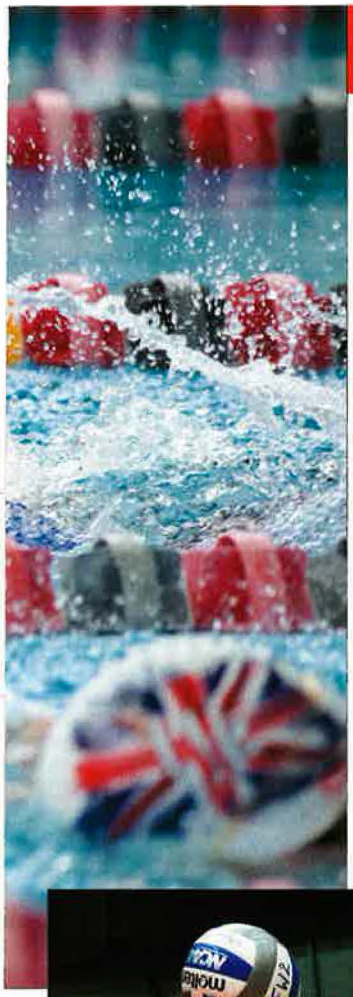
The Warrior Games give wounded, ill, and injured airmen and their caregivers a vital community of support.

By Amy McCullough, News Editor

Gold, silver, and bronze medals were handed out at the 2017 DOD Warrior Games in Chicago, but the more important prizes were a sense of fellowship and achievement among the participants—and a broader feeling of community as they pursue their recovery.

Whether cheering on the sidelines or pushing a teammate across the finish line, the spirit and resiliency of some 265 wounded, ill, or injured service members was on proud display at the games, which took place June 30 to July 8.

Athletes from the US Air Force, Army, Navy, Marine



Maj. Teresa Sellers, a nurse anesthetist from Albion, Iowa, races around the course during the cycling competition.

Austin Williamson, a former developmental engineer officer from Louisville, Colo., serves during team volleyball practice.

Corps, Coast Guard, the United Kingdom's armed forces, and Australian Defense Force competed for medals in eight events: archery, cycling, field, shooting, sitting volleyball, swimming, track, and wheelchair basketball.

"It's been absolutely fantastic to see the camaraderie in all the services. It goes straight to your heart," said Brig. Gen. Kathleen A. Cook, director of Air Force Services. "We're seeing athletes ... pick up something new for the first time, and that's the beauty of what these adaptive sports can do" for them. She said the games are designed to help the participants recognize and focus on the capabilities they have, rather than those they don't.

"The beauty of this program is to get them through their recovery and rehabilitation so that they can thrive in their new normal," Cook said.

The Paralympic-style event was created in 2010. It was overseen by the US Olympic Committee until the Defense Department took it over in 2015 to better align the games with service members' recovery processes.

Each military service takes turns hosting the games. The 2017 Navy-sponsored games in Chicago were the first to be held outside a military installation. The Air Force will host the 2018 games at the US Air Force Academy in Colorado Springs, Colo.

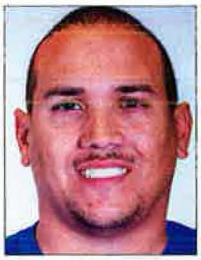
Athletes suffer from a range of afflictions, including upper- or lower-body injury, spinal cord injury, traumatic brain injury, visual impairment, serious illnesses, and/or post-traumatic stress. While their individual symptoms vary widely, often their challenges are similar, and by sharing their stories and pushing themselves physically, mentally, and spiritually, they inspire each other and those around

Photos: Roger Wollenberg/DOD; SSgt. Alexx Pons; SSgt. Keith James; SSgt. Alexx Pons

them to never give up and to keep fighting.

Here is the story of four members of the Air Force team:

MSGT. BRIAN WILLIAMS



Service Status: Active Duty
Air Force Specialty: Security forces instructor flight chief
Location: JBSA-Lackland, Texas
Warrior Games Sports: Basketball, volleyball, and cycling

Then-SSgt. Brian Williams was on his sixth deployment—the second to Afghanistan—when the explosion happened. It was April 25, 2012, and the military working dog handler was attached to an Army unit in Helmand province that was tasked with clearing a known Taliban compound.

Williams swept the stairs of the compound before sending his German shepherd, Carly, upstairs. Everything was clear, but Carly didn't come back out. Williams called for the dog but he still didn't come, so he went inside to get him. As he was going up the stairs, an improvised explosive device (IED) went off.

"I don't feel like I was ever knocked out, but when I landed, my leg was already torn below the knee, I had a compound fracture in my left wrist, soft tissue damage, missing teeth, TBI [traumatic brain injury]. You name it," said Williams.

Carly was not injured in the blast, and Williams never did find out what was keeping the dog inside. He was medically evacuated and sent back to the States within a week, where he would spend a year-and-a-half recovering at Walter Reed National Military Medical Center in Bethesda, Md.

Doctors amputated Williams' leg above the knee to prevent infections and later told him that his left hand likely would have been blown off if it weren't for a $20 Casio watch he purchased right before deployment so he would always know what time it was back home.

While at Walter Reed, Williams underwent more than 15 surgeries and endured more than 500 hours of rehabilitation therapy, but he tried not to reflect on "how horrible it could have been, or was," he said. "I see other people who had it worse than me. Some people lost two [limbs], some people lost three, some people lost four. I was just thankful, and it was humbling to be around those individuals because they seemed to be very spirited, almost happy."

Despite all the support he received from his then-girlfriend—now wife—family members, and others at Walter Reed, Williams said he still felt a "void" because there wasn't "a lot of Air Force love" at the hospital. His friend, MSgt. Benjamin G. Seekell, a fellow military working dog handler who's also on the Air Force's Warrior Games team, had been wounded about a year before Williams, when he and his dog, Charlie, stepped on a land mine in Bagram, Afghanistan. Seekell also had his left leg amputated below the knee and was able to help Williams through his recovery.

"Part of the reason why I didn't freak out is because he [Seekell] had already returned to duty, so I knew it

Secretary of the Air Force Heather Wilson checks out a bow with security forces SSgt. Vincent Cavazos, from Fresno, Calif., during a meet-and-greet at the games.

Vice Adm. Mary Jackson, left, passes the DOD Warrior Games torch to Lt. Gen. Gina Grosso, USAF deputy chief of staff for manpower, personnel, and services, during the closing ceremony in Chicago.

was possible to do if I kept my mind right," said Williams.

But it wasn't until he became involved in the Air Force Wounded Warrior (AFW2) Program that Williams really started to connect with other airmen he could relate to. The Air Force reached out to get him involved while he was going through the medical board process, but Williams' first priority was getting back to work.

On Oct. 28, 2013—a year-and-a-half after the explosion—Williams returned to work at JB McGuire-Dix-Lakehurst, N.J., but it would still be a long time before he was officially cleared for duty. Though he acquired a running leg, it is difficult for Williams to run because his bone density is too low from the explosion. That and his TBI made the Air Force question whether he was fit for duty. He went before a medical evaluation board, which initially recommended he medically retire. He appealed, but lost again. Finally, the decision went all the way to then-Air Force Secretary Deborah Lee James who in February 2015 gave Williams the green light to continue serving in the Air Force.

Williams was thrilled to see his Air Force career back on track, but he still felt a little "isolated." That's when he got involved with AFW2.

"There are so many different people, different stories, different injuries and sicknesses," said Williams. "It was nice to be around those people at that point in time. I hadn't had that yet."

He arrived at JBSA-Lackland, Texas, for a four-year tour as a security forces instructor in 2015. That same year, he competed in his first Warrior Games. In 2016, he had an opportunity to give back to the Air Force for giving him another chance. During the sitting volleyball gold medal award ceremony at West Point, James handed Williams his gold medal and was surprised when he handed it back to her.

"I was on a natural high and I just wanted to extend the same thing to her because I don't know if she's ever going to get a gold medal," Williams told ESPN. "So here. Here's mine. Take it. She was taken aback at first. She said, 'Are you sure?' I said, 'I'm serious. I've won golds before and I know how it makes me feel.' "

Williams has competed in three Warrior Games and one Invictus Games—another international Paralympic-style games—and he planned to compete at the next Invictus Games in Toronto in September.

"I will keep going until they tell me otherwise," said Williams.

MSGT. LINN A. KNIGHT

Service Status: Active Duty
Air Force Specialty: Explosive ordnance disposal
Location: Tyndall AFB, Fla.
Warrior Games Sports: Cycling, swimming, track

MSgt. Linn A. Knight's vehicle blew up on the first mission of her first deployment to Afghanistan in 2010. The explosive ordnance disposal (EOD) technician was embedded with US marines in Marjah when her Humvee rolled over an IED.

Fortunately, the vehicle's armor shielded her from the full impact of the blast and Knight escaped relatively unscathed. She continued on with her deployment, but the team was to take worse.

On their last mission together, Knight's convoy hit another IED and two of her closest friends—Cpl. Justin Gaertner and Sgt. Gabriel Martinez—were badly wounded.

"Gabe was on the side of the road. He was screaming bloody murder. I was on the other side with Justin. I put tourniquets on his arm and leg ... and his intestines were coming out of his body," said Knight.

Her mission commander, who was outside the most intense blast zone when the other two marines lost their legs, was still seriously wounded. He ended up taking a medical retirement from the Marine Corps after several vertebrae had to be removed from his neck.

All three marines lived, but the sound of their screams and the images from that day would torment Knight for years.

"Gabe was my favorite guy on the convoy and then he got blown up. He haunted me for quite a while. I would see him out running with me even though he had no legs," said Knight.

After the casualty report was filed, the Air Force tried to get Knight involved in the Wounded Warrior Program, but she wasn't ready. "I was just ... avoiding my issues," she said.

Instead, she threw herself into work and tried to ignore the relentless memories.

In 2013, while deployed to South Korea, Knight was diagnosed with Stage Three breast cancer. The Air Force brought her back to the "patients squadron" at JB San Antonio, Texas, and once again pushed her to get involved in the Wounded Warrior Program.

Sick and tired from chemotherapy, Knight grudgingly attended her first camp in 2015 and it changed her life. The other participants' support and passion quickly won her over and the judgment-free zone allowed her to finally address her invisible wounds.

At one camp, Knight took a music class, though she's not necessarily musically inclined. She and the others sat in a circle and listened to Fleetwood Mac, changing the lyrics to match their mood. During another session, she tried painting. Each brush stroke helped free the pain she'd been hiding.

"They treat your body, your mind, [and] your spirit," Knight said. "This may sound really weird, but I'm kind

Photos: E. J. Hersom/DOD; SSgt. Alexx Pons

Gold, silver, and bronze medals are prepared for official presentations.

of thankful I got breast cancer because that's probably the only way I would slow down and take care of me." She said it was "really hard to throttle back, and when you finally do slow down, you have to think about what's going on in your head and who you are. You know, you're not just the mission."

Knight was still "struggling" in her mind, but continued to put on a happy face for her peers. That is, until she got to the forum at the camp.

EOD, she said, is "a macho career field, so you'll probably get more jokes than anything, but a lot of that ... hides the pain. ... It may take a minute, but people do open up. You see a side of people that maybe you don't see in the sports. You see them being a strong warrior, but in that session you see why they have to be so strong. It's because they went through some shit."

"It's cathartic to tell your own story," she explained, "and for other people who may have gone through similar things, it's therapeutic to hear it and know that you're not alone."

Knight had always been in good shape—it was a necessity in her career field. She was used to running 5Ks in her heavy bomb disposal suit, but the chemotherapy made her feel like she was "melting into the couch." The fatigue was overwhelming. The chemo also affected her heart and her blood's ability to carry oxygen. It took everything she had to make it two laps around the track the first time she ran after completing radiation.

"Coming to the camps showed me that I could push myself," said Knight.

The word "can't" wasn't in the coaches' vocabularies. If a participant was struggling, they just showed them a different way to accomplish the task. It was exactly what Knight needed to get her fitness level back.

Now four years into remission, Knight is just a year away from being declared "healed," and her work ethic is as strong as ever. Leading up to her first Warrior Games in Chicago, Knight immersed herself in a rigorous training regimen. Not only did she conduct regular unit training five days a week and squadron PT two days a week, she strived to get in three track sessions, three bike rides, and three swims each week. She was routinely training two to three times a day, in addition to her full time Air Force requirements.

Her hard work paid off. She won 10 medals at the games, including four swimming golds in the 50 freestyle, 100 freestyle, 50 backstroke, and 4x50 relay; four silvers in the 100-meter sprint, 200-meter sprint, 400-meter sprint, and 50-meter breaststroke; and two bronze medals in the 4x100 sprint relay and in cycling.

AUSTIN WILLIAMSON

Service Status: Veteran
Air Force Specialty: Developmental engineer
Warrior Games Sports: Archery, cycling, field, shooting, sitting volleyball, swimming, track, wheelchair basketball

Retired Capt. Austin Williamson had a choice to make. He could compile a bucket list and "start checking things off," or he could "live life in spite of the disease." He chose the latter.

In April 2015, Williamson, 27, was diagnosed with Stage Four Synovial Cell Sarcoma—an advanced cancer that affects soft tissues in the body. The "primary tumor" started on the bottom of his right foot and then grew up through his ankle. His doctors conducted a biopsy of lymph nodes in his groin and behind his right knee, and though the results were clear, a full-body scan revealed multiple tumors in his lungs. To prevent the cancer from spreading even further, Williamson's right leg was amputated below the knee and he started chemotherapy a few months later.

At the time, he was a first lieutenant and was working as a developmental engineer at Tinker AFB, Okla.

"I got promoted on June 6 and my amputation was June 4, so I always joke that my promotion cost me an arm and a leg and I got it for half price," Williamson told *Air Force Magazine* shortly after he finished his upright cycling race in Chicago. It's a "well-used joke among amputees," he admitted. "I've stolen that many times."

Despite his positive attitude, Williamson has struggled with his illness. Even though the biopsy of his groin was clear, it took time for the wound to close because of complications from the surgery.

"I felt like I was a magic trick," said Williamson, smiling. "They had to pack ... four or five feet of gauze into [the wound] and they would pull it out and pack it again. I felt like one of those magicians that had the ribbon coming

out of their sleeve, but it was coming out of my leg."

He relied heavily on his wife, early on. "I was just getting used to dealing with not having a limb and being too tired to get up and get a leg or get on my crutches," he said. "We went from sharing a lot of the roles at home to her having to take on a lot more than I would like."

It was around this time that Williamson and his wife attended their first camp for wounded warriors at Eglin AFB, Fla. Dubbed "care events," the camps are much more than just sports. Williamson spent some time talking about employment outside of the Air Force (he would eventually take a medical retirement), and his wife was introduced to the resources available for caregivers. The games and the Air Force Wounded Warrior Program put her in touch with other caregivers, many of whom have become close friends.

"They are able to support each other when they see us struggling, and of course, they struggle, too," said Williamson. "They have times when they get scared or upset with the process and everything that goes on through dealing with disease or injury, with transitioning out of the military, dealing with how to get those benefits," all "on top of taking care of us. It's a lot. So they definitely need a break and an outlet to get some support, and they get it here."

After the Eglin camp, Williamson had to be fitted for a new prosthetic because the volume of his limb changed. It's a painful process—one that's challenging both physically and mentally—but Williamson pushed through. Being around other wounded warriors helped.

Two years after he was diagnosed, Williamson is still undergoing chemotherapy. The tumors in his lungs are still there, but they are now slightly smaller. He completed his 22nd round of chemo about two-and-a-half weeks before he started the games in Chicago, where he competed in every event.

"Leading up to this, it wasn't great training. I had a cough I couldn't get rid of and I was really just focusing on trying to stay healthy, as healthy as I could, to be ready for this," said Williamson.

He earned a silver medal in the ultimate championship competition and said it made the "tough week ... worth it."

"When we have a bad day, we pick each other up and cheer each other on," said Williamson. "That camaraderie between the branches is a big deal and that's what the Warrior Games are all about." That esprit de corps was "one of the big reasons why I wanted to be here and be a part of it."

MAJ. TERESA SELLERS

Service Status: Active Duty
Air Force Specialty: Surgical operations nurse
Location: JB Elmendorf-Richardson, Alaska
Warrior Game Sports: Shooting, cycling, swimming

Maj. Teresa Sellers never thought of herself as an athlete. She still doesn't, even though she competes in triathlons and won three gold medals at this year's Warrior Games.

Sellers is a planner and has always loved a challenge. She enlisted in the Air Force in 1992 as a medical laboratory journeyman, earned her master's degree in nursing science, and received her commission in 2003. After deploying to Afghanistan in 2014, Sellers said she had the next 40 years of her life "all planned out." But she got "a little sidetracked" when she was diagnosed with cervical and endometrial cancer just a few months after returning home.

An Active Duty surgical operations nurse at JB Elmendorf-Richardson, Alaska, Sellers went through five months of chemotherapy and was feeling "pretty discouraged with my cancer" and the toll it took on her body. Because of the chemotherapy, she will always suffer from lymphedema, a chronic condition that prevents her body from properly draining fluid, and it causes her leg to swell. She also has neuropathies in her feet, which sometimes makes them feel like they are on fire.

"I carry a lot more weight in this leg. The chemo destroyed the nerves in my feet. Those are things that will never go away," said Sellers. "You just learn how to deal with it."

That's when her recovery care coordinator encouraged her to get involved in the Air Force Wounded Warrior Program. Like many others, Sellers initially resisted. She dismissed the program as designed "for people who are missing a limb or something like that." Eventually, Sellers relented and the experience has "been awesome," she said.

She attended her first camp, an equestrian camp, in Colorado Springs in 2015. Then she went to another in San Antonio in 2016 and yet another at JB Lewis-McChord, Wash.

"From there, the coaches were like, 'You're an athlete. You can do this stuff.' " They were right. Sellers won a gold medal in the air rifle prone competition, gold in the air rifle standing competition, and gold in the 200-meter freestyle swimming relay. She also finished in sixth place in upright cycling.

The camaraderie and support she's received from the coaches and other athletes have really helped in her recovery. Sellers said it's encouraging to see people "who have more disability than I do," go from thinking, "I can't, I can't, I can't" to realizing, actually, "they can."

"There are a lot of people out here that have way more issues than I do. You just deal with it. You move on. You don't let that stop you. ... If they can do it, by George, I can, too. If they can overcome it, so can I," said Sellers.

The Warrior Games have motivated Sellers to push past the "side effects of chemo" and "keep going, and keep setting goals, and get my health back."

But the best thing about the games, she said, is "the family that you just inherited." ✪

"THE BEAUTY OF THIS PROGRAM IS TO GET THEM THROUGH THEIR RECOVERY AND REHABILITATION SO THAT THEY CAN THRIVE IN THEIR NEW NORMAL."

—Brig. Gen. Kathleen Cook, director of Air Force Services

Photo: SSgt. Alexx Pons

A live-fire demonstration of large caliber self-propelled guns as North Korean People's Army artillery forces celebrate the 85th anniversary of the army in April. Dictator Kim Jong Un supervised the combined fire demonstration.

The Reunification Option

By James Kitfield

Standing on an observation post at the edge of the Demilitarized Zone in April, Vice President Mike Pence said he found it "chilling" to see for himself the eyeball-to-eyeball faceoff between the totalitarian North Koreans and their counterparts from the democratic south.

The barbed-wire scar running the width of the Korean Peninsula and the cocked weaponry on either side are remnants of mind-numbing carnage in the 20th century. Between 1950 and 1953, the Korean War claimed the lives of an estimated 2.7 million Koreans, 800,000 Chinese, and 33,000 Americans. It all ended roughly where it started—on the 38th parallel, where Pence recently stood. Though there has been a prolonged cease-fire, a peace treaty between North and South, and their allies, has never been signed.

Pence delivered an unequivocal message at the DMZ on April 17: The long stalemate is ending. North Korea's determination to threaten the US and its Asian allies with indigenous long-range nuclear missiles has put the "Hermit Kingdom" squarely on a collision course with the United States.

"The era of strategic patience is over," Pence said, referring to a quarter-century the United States has spent offering carrots in the form of aid, and sticks in the form of sanctions, in an unsuccessful bid to halt Pyongyang's nuclear weapons and missile programs.

"President Trump has made it clear that the patience of the United States and our allies in this region has run out, and we want to see change," Pence said. Either China pressures its client North Korea to abandon its nuclear weapons program, he said, or the US and its allies will achieve that goal "ultimately by whatever means are necessary."

The US Intelligence Community had estimated that sometime soon, North Korea would be able to plausibly threaten the US with a nuclear-armed ICBM. American officials

A memorial tourist area at the border of North and South Korea.

With the US and North Korea on a collision course that would threaten Pyongyang's survival, some experts are thinking anew about reunifying the peninsula.

Kim embraces a North Korean military official as he celebrates the successful launch of a Hwasong-14 ICBM during a test firing July 4.

continued to repeat the mantra that "all options" are on the table in response.

In fact, in 2015 the US and South Korea reportedly updated the classified Operations Plan 5027 for a potential conflict on the peninsula to reflect that new reality, according to globalsecurity.org. Last year, retired Army Gen. Walter L. Sharp, former commander of US Forces Korea, declared that North Korea's preparations to launch a long-range missile with an unknown warhead should trigger a preemptive strike.

UNSAVORY AND RISKY

"Kim Jong Un has threatened the preemptive use of nuclear weapons against the US and other regional targets," Adm. Harry B. Harris Jr., commander, US Pacific Command, said in his prepared statement for the Senate Armed Services Committee on April 27. "Kim's strategic capabilities are not yet an existential threat to the US, but if left unchecked, he will gain the capability to match his rhetoric. At that point, we will wake up to a new world."

That stark reality confronts the Trump administration with the geopolitical equivalent of a ticking time bomb and a small handful of unsavory, risky options.

- The US can accept North Korea as a nuclear weapons state, possibly provoking a nuclear arms race in Asia and condemning the US and its allies to constant nuclear brinksmanship and blackmail on the part of Kim Jong Un.
- With China's cooperation, the US could tighten sanctions on Pyongyang until the regime gives in—seen by many experts as unlikely—or collapses altogether.
- The US could launch a preemptive military strike that destroys North Korea's nuclear weapons and missile facilities and attempt to decapitate its leadership. Such a course, though, could well spark a catastrophic Second Korean War that the Pentagon has estimated would cost more than a

Photos: KCNA/DPR Korea; KCNA; Amy McCullough/Staff

million lives, even if nuclear weapons are not used.

Confronted with such dismal options, a number of experts are thinking anew about an old idea: reunification. Whether Kim is ousted as a result of an internal power struggle, the regime is strangled by sanctions, or there's an outright war on the Korean Peninsula, the escalating crisis makes regime change more plausible. That raises the question of what happens the day after.

"I think China increasingly understands that North Korea's pursuit of nuclear weapons and intercontinental ballistic missiles is taking us all down a disastrous path that will only end in hardship and heartache for everyone," former Defense Secretary William S. Cohen, chairman of the Cohen Group, said in an interview. With China's backing, a tough sanctions regime could slowly squeeze Pyongyang "like a python," he said, until the Kim regime either changes course or collapses from the pressure.

"I've told the Chinese publicly that it is in their long-term interests to have a unified Korean Peninsula. Already, North Korea has proven a big liability to China, while South Korea is one of [China's] biggest trading partners. So I think a unified, capitalist Korea that serves as a stable trading partner for the Chinese is something we should already be negotiating with them," Cohen asserted.

REUNIFICATION SOUTHERN STYLE

For an older generation of South Koreans, reunification is a dream that stretches back to the country's partition more than half a century ago. During the Cold War it was mainly considered in the context of another possible invasion from the north, and a Second Korean War that would inevitably spell the end of the communist rule. Regime collapse has become seemingly more likely after a crippling famine in the mid-1990s that, by most estimates, killed more than three million North Koreans. This fundamental weakness of a Pyongyang that couldn't even feed its own people has become a driving scenario that could facilitate reunification.

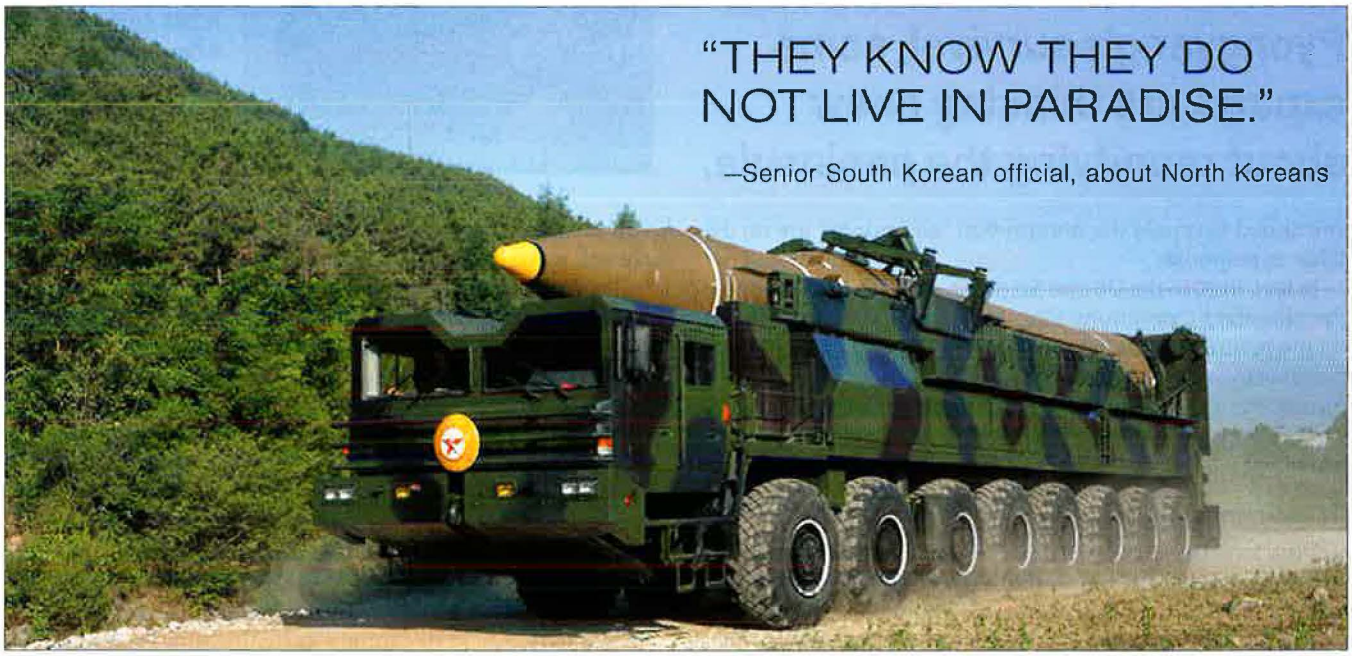
The dream was rekindled by recently impeached South Korean President Park Geun-hye, who made preparing for reunification the centerpiece of her North Korean policy. Arguably more than any previous Korean President, Park sought international support for the idea and used it to try to inspire a more ambivalent younger generation of South Koreans who have known only partition. As part of a "unification as jackpot" project, Park formed a special committee to "prepare for Korean unification." It was chaired by the President herself and included 70 Korean thought leaders from government, business, and academia.

Park's push to keep the idea of reunification alive received a major boost in 2009, when the Obama administration and the South Korean government signed a "Joint Vision Statement" that made it a central goal of bilateral US-South Korean policy to establish "a durable peace on the peninsula ... leading to [the] peaceful reunification on the principles of free democracy and a market economy."

That "declaration was one of the most explicit policy statements on Korean unification ever made by Washington. It was also the first time that reunification was cited as a specific shared goal of the US-ROK [Republic of Korea] alliance," said Evans J. R. Revere, a nonresident senior fellow in the Brookings Institution's Center for East Asia Policy Studies, speaking at a 2015 conference on "Cooperating for Regional Stability in the Process of Korean Reunification." Most importantly, he said, "the Joint Vision Statement made clear the US position that the governing principles of a new Korea would be those of the ROK."

The implication of the US-ROK strategic vision was clear: A democratic and capitalist South Korea would essentially absorb the North in much the same way that a democratic and prosperous West Germany ultimately absorbed formerly communist East Germany at the end of the Cold War. In the case of North and South Korea, though, the disparities in relative wealth would be an order of magnitude greater and the challenges of integration far greater. According to the website Trading Economics, North Korea had a gross domestic product of just $16.1 billion in 2015, compared to South Korea's GDP of $1.4 trillion.

Park envisioned a gradual outreach to the North in three



A North Korean Hwasong-14 ballistic missile on a transporter on July 4. According to the state-run Korean Central News Agency the new ICBM is capable of hitting the United States with nuclear warheads.

Two USAF B-1Bs, deployed to the Pacific from Dyess AFB, Texas, and a South Korean air force F-15 fly over the Korean Peninsula to demonstrate solidarity between the ROK and US.

phases, with a confidence-building first phase of economic aid followed by a "commonwealth" of shared government responsibility, culminating in the peaceful reunification of Korea in the 2040-50 time frame, according to a 2014 report by the South Korean Ministry of Foreign Affairs.

REUNIFICATION NORTHERN STYLE

From the beginning, that idealistic vision of peaceful reunification faced major obstacles that made it more of a pipe dream than a viable strategy. First and foremost, the regime in Pyongyang saw Seoul's vision as an invitation to surrender and commit regime suicide. In typical fashion, it responded to the outreach with insults, threats, and military provocations, including North Korea's 2010 sinking of a South Korean warship, killing 46 sailors, and an artillery barrage targeting a South Korean island that same year. It killed two marines.

More recently, Kim Jong Un reportedly has developed a "reunification" plan of his own. It starts with massive artillery and short-range missile barrages to pound Seoul, followed by missile strikes with chemical warheads on US bases and ports in South Korea and Japan, hindering US reinforcements. This is all followed up by a lightning invasion by a million-man army, led by special forces shock troops. The goal would be to capture Seoul within a week, before US forces could arrive to back up the roughly 30,000 troops the US maintains in South Korea.

"The President has said that North Korea cannot be allowed to acquire a nuclear ICBM capability, and that all options are on the table, which is why here in Pacific Command we always talk about being prepared to 'fight tonight' and bring a rapid and overwhelming capability that is ready at any moment," USAF Gen. Terrence J. O'Shaughnessy, commander of Pacific Air Forces, said in an interview with *Air Force Magazine.*

Beginning the recent deployment to South Korea of the THAAD (Terminal High Altitude Area Defense) antimissile defense system, and the deployment of the USS *Carl Vinson* carrier battle group to the region, were steps taken to heighten readiness in a time of growing tensions. "That kind of preparation is necessary because at any moment a tactical situation with North Korea could escalate into a strategic conflict," O'Shaughnessy said.

Regardless of how it begins, such a war in North Korea "would be probably the worst kind of fighting in most people's lifetimes," Defense Secretary James N. Mattis said on CBS News' "Face the Nation" on May 28. North Korea has hundreds of artillery cannons and rocket launchers that can reach greater Seoul, where 25 million civilians live in a dense urban environment. "Bottom line is, it would be a catastrophic war ... if we're not able to resolve this situation through diplomatic means," Mattis said.

A MAJOR OBSTACLE

In the past, China has offered a major obstacle to talk of reunification. The communist regime in Beijing has refused to even officially broach the subject, rejecting the idea of a strong, unified Korea to its south that would be closely aligned with the United States. Chinese officials have also resisted the imposition of truly crippling sanctions that might actually convince Pyongyang to finally abandon its nuclear weapons program. They fear such coercion could destabilize the North and possibly create a flood of millions of refugees pouring over the Chinese border.

North Korea's fast-tracked nuclear and missile programs under Kim Jong Un and the tensions they have caused, however, have already changed the strategic calculus of key players in the escalating drama. The US insistence that the era of "strategic patience" with North Korea is over, in particular, has forced China to reconsider whether the status quo on the Korean Peninsula is actually sustainable. The South Koreans are being compelled to confront the possibility of reunification on an accelerated timetable—and under far more destabilizing conditions. For their part, North Korea's military and security leaders have to wonder whether an untested and erratic leader that critics in China have taken to calling "Kim Fatty the Third" is leading them to national ruin.

"Kim has executed a lot of generals and used brutality to try and gain the loyalty of the country's military and security elite, so there's already an undercurrent of internal instability that is undoubtedly growing as a result of rising tensions," said Bruce W. Bennett, a senior defense researcher at the RAND Corp., and author of the report "Preparing for the Possibility of a North Korean Collapse."

Meanwhile, Bennett said, Chinese leaders genuinely dislike Kim, despite their connections to him, "and they have been fuming for years over his provocations and their inability to influence him."

Last year Chinese leader Xi Jinping gave a major address, stating that Beijing would not allow war or chaos to develop on the Korean Peninsula. Some knowledgeable observers interpreted the comment as a willingness to send in Chinese

Photos: KCNA; courtesy photo

ground forces at the first signs of conflict or regime collapse.

"That would likely be met with South Korean and possibly US forces entering from the south, and you could get a World War II-like race to Berlin, only with US and Chinese forces rushing to secure North Korea's nuclear weapons and possibly confronting each other on the outskirts of Pyongyang," said Bennett. "The larger point is, the US and South Koreans have not done nearly enough to prepare for the possible collapse of the North Korean regime."

Perhaps the most important preparation would be talks between US and Chinese officials on deconflicting their forces. Both sides will view securing North Korea's nuclear weapons and avoiding a "loose nukes" scenario as a priority. They will likewise want to prevent a massive humanitarian crisis that could send refugees fleeing North Korea.

Such missions could indeed easily bring the Chinese and US-ROK military into close proximity. In any reunification scenario, the Chinese will undoubtedly demand assurances that no US forces would be permanently stationed above the 38th parallel. Those issues have already reportedly been the subject of "Track II" behind-the-scenes talks between US and Chinese experts and former officials.

"War between the United States and China sounds crazy to a lot of people, but it seemed even crazier before the first Korean War [in 1950] when a much weaker China attacked an uncontested world superpower to drive US soldiers out of North Korea and below the 38th parallel," said Graham T. Allison. He is director of the Harvard Kennedy School's Belfer Center for Science and International Affairs and author of the forthcoming book *Destined for War: Can America and China Escape Thucydides' Trap?*

Allison said he believes "China would go to war again if the alternative seemed to be a regime backed by the US military on its border with what is now North Korea."

REGIME COLLAPSE?

Another useful preparation for possible regime collapse would be overt and covert messages to the North Korean military and security elite that they can look forward to a prosperous future in a unified Korea. Such messaging is needed to counter the perceived lesson of the 2003 US invasion of Iraq, when after the fall of the dictator Saddam Hussein, the ruling class was purged by US officials who dissolved the Iraqi military and launched a de-Baathification campaign. It cost many government functionaries and technocrats their livelihoods. As charter members in the George W. Bush administration's "Axis of Evil," the North Koreans haven't forgotten the Iraq War.

"The Iraq example sent a very negative message to the North Korean elite, which the Kim regime has continued to reinforce with propaganda insisting that they would be executed by the West if reunification occurred," said Bennett. "Compare that with the example of West Germany, which for decades broadcast a message to the East German secret police that they would be granted amnesty and pensions in the event of unification. There's evidence that message stayed the hand of the East German police when collapse eventually occurred peacefully."

USAF 1st Lt. Glenn Miltenberg conducts a preflight inspection on an F-16 during Exercise Max Thunder 17 at Kunsan AB, South Korea.

US and South Korean officials will also need to agree on a time line for ratcheting up pressure on North Korea with sanctions. Given the existential stakes involved, South Korean officials insist on close consultations on any escalation in the current crisis, and they have asked for less red-hot rhetoric and saber rattling from Washington.

"Now is the time to abstain from tough talk that can send the wrong signal or be misinterpreted in a way that causes unintended consequences," said a senior South Korean official, speaking on background in order to talk candidly. A surge of thousands of defectors from North Korea in the last 10 years, and subsequent debriefings, have convinced South Korean leaders that dissatisfaction with the Kim regime is now widespread and increasing.

"The North Korean people have a growing understanding of the outside world, and they know they do not live in paradise," he said. "So if all the major players, including the Chinese, are willing to construct a very strong system of sanctions, we believe it could lead to the collapse of the regime. I wouldn't bet against a united, denuclearized Korean Peninsula." ✪

James Kitfield is a senior fellow at the Center for the Study of the Presidency & Congress. His most recent article for *Air Force Magazine*, "Airpower Comes of Age," appeared in the September 2015 issue.

Photos: TSgt. Jeff Andrejcik; SrA. Colville McFee

Airmen establish a line of communication on Kunsan Air Base in 2016.

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Devastation

Security forces airman Brian Kolfage survived injuries difficult to comprehend.

By Tara Copp

My first journey into Iraq started with a sandy convoy, four airmen from Texas, and a Humvee named "Linebacker 10."

It was March 26, 2003. The four guys were from the Air Force's 17th Security Forces Squadron at Goodfellow Air Force Base, San Angelo, Texas: A1C Valentine Cortez, 21; SSgt. Chad Wurm, 28; SrA. Daniel Holmes, 22; and A1C Brian Kolfage, 19.

I was a 28-year-old embedded reporter along for the ride; I had no prior military experience whatsoever. In my multiple trips to Iraq since, none of the experiences or people I've met or reported on have made as deep of an impact as those four airmen made on my first ride in. But in 2003, as the weeks wore on, I was called back to Washington, to my "real" job covering Congress. The guys stayed deployed.

Our lives would not intersect again until a year later, when Wurm reached out: "Have you heard about Kolfage?"

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Top: A severely injured A1C Brian Kolfage receives the Purple Heart in Iraq in 2004.

Top right: Kolfage tackles rehabilitation at Walter Reed Army Medical Center in Washington, D.C.

SEPT. 11, 2004: A streak of dust and sunlight pushed Kolfage awake. He blinked to relieve dry eyes and with a squint and a grunt Kolfage stretched out of his Air Force tent bunk at Balad Air Base, Iraq. Time to hit the gym.

It was shortly after 2 p.m.

Kolfage didn't have to be there. He and Cortez were both on a second deployment. They had been assigned to Kuwait-based duty, but then Cortez's name was picked in a lottery to send additional Air Force security forces forward to protect Balad's flight line.

and Inspiration

There was no way Kolfage would let Cortez go back to Iraq without him. He looked for someone he could scare into switching, to convince that Iraq was too dangerous, so that he could take his spot and be with Cortez. He found a new kid, a soon-to-be dad. Kolfage growled: You might lose your legs. He scared the guy into staying back, and Kolfage got his place next to Cortez.

Cortez and Kolfage were only on their first weeks at Balad, but they already had a system. Night shift. Sleep. Gym. Eat. Repeat.

"We did everything together," Cortez said.

On this day, Kolfage awoke first. He put on his shorts and a T-shirt and shuffled out of the tent that he, Cortez, and a handful of other men shared outside of Balad's flight line. Cortez was slower to rise. As Kolfage opened the tent flap, he asked Cortez if he wanted bottled water, and got only a muffled, yawning reply. Then he stepped out into the sunlight and turned left in the sand toward the gym tent.

There was no "duck and cover," no "giant voice"—those sirens installed all over Iraq and Afghanistan in the following years that gave troops a four- to eight-second head start to run for a bunker and escape incoming fire.

This was 2004, and Balad wasn't expecting the 107 mm rocket shell that exploded five feet from Linebacker 10's baby-faced airman.

The blast flattened Kolfage to the sand. His eyes were stuck open but he only saw darkness as his body and hair disappeared into a cloud of sand and smoke. Each of his senses knocked to black.

"I'm dreaming," Kolfage thought, "those malaria pills give crazy, crazy dreams."

Then his senses raced back, screaming, "You've been hit."

Hearing returned first. Kolfage shuddered at the wail of a base siren. He heard a soldier who'd been not 10 feet away start to shriek.

"Oh shit ... wasn't I just walking?"

Next came taste. Kolfage sensed sandy wet grit in his mouth. Then he smelled smoke.

"Oh shit oh shit."

Sight returned. "Is my hand blown off? Oh shit oh shit I am hurt bad." Kolfage opened his lungs and yelled for help. He tried to move but Cortez and nearby soldiers were already on him, they stuffed muscled hands and forearms and towels into Kolfage's lower bleeding half to try and save his life.

Kolfage looked at Cortez crazy with blood on him. He pushed against his battle buddy and yelled for Cortez to let him see his legs. Cortez put his bloody hand over Kolfage's eyes to protect him from deadly shock.

The attack and response was 30 seconds, start-stop. Kolfage screamed for water and Cortez dumped a bottle on his face and mouth as medics arrived screaming, "don't do that you'll kill him." Kolfage slumped and told him he was tired. Cortez slapped him hard again and again to piss him off and into consciousness.

The medics slammed him onto a blue body board and it was not until that very second Kolfage's last sense returned. He started crying out and

Photos: Courtesy Brian Kolfage

cussing in agonized pain. Every nerve in his body convulsed with panicked throbs, searching for his two missing legs and missing right arm. They were there but they weren't. His hips led to a mash of bright red blood and tissue left pulsing under flapping pieces of skin. His right arm was shredded bone and more skin after the bend in his elbow. Cortez helped the medics push all of it, the flesh and bone and tissue from Balad's sandy ground up onto the body board, all those ripped up pieces of a young man they now raced to keep together.

Kolfage screamed as the ambulance sped toward the hospital tent. He begged for morphine which the medics could not give. He cursed loudly at the medical staff who met the gurney with absolute shock.

And then, nothing. Kolfage passed out.

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CORTEZ STILL HAD HIS HANDS ON KOLFAGE'S WOUNDS when the medics finally separated them. It gave Cortez a moment of reality. He looked at the ground. He saw things. Bloody things. He pushed away from them and jumped beside Kolfage in the ambulance. When the medical team charged the gurney through Balad's field hospital Cortez was left outside. He stood by the hospital's tent flaps, wondering why he was wearing his buddy's bloody hat.

The base issued a call for blood. Within minutes a line of airmen, marines, sailors, and soldiers formed around the hospital's sandbags and canvas. Some came on bikes, some just came running as soon as they heard the call.

It was barely 3 p.m.

Cortez waited out the news.

Kolfage survived the first surgery.

"We had to amputate," the doctors said.

He stood watch through the night. Cortez endured as people gave more support than he could stand. His team gathered. The chaplain hovered. A bunch of other people were just ... there.

Some minutes he'd crouch. Some minutes he'd stand, or walk in the sliver of light seeping from the hospital tent. Cortez waited. And overnight, Balad's medical team saved Kolfage's life. He was stabilized to fly. Word went out: Kolfage would be evacuated immediately on a massive C-5 Galaxy. The men and women of Balad Air Base who had lined up to give blood shifted into a line to salute Kolfage's path to the plane. They stood, some silent, some cheering support as the ambulance slowly drove an unconscious Kolfage to the flight line.

L-r: Kolfage, reporter Tara Copp, SSgt. Chad Wurm, and SrA. Daniel Holmes at what's now known as Camp Bucca, back then just an empty desert field. Convoy operations had shut down for the day, March 27, 2003.

Security forces airman Kolfage in March 2003 during the initial push to Baghdad.

Cortez had 1,000 thoughts running through his head as the ambulance approached the plane.

"You can say goodbye," he'd been told. Cortez was given special permission to approach the gurney before it was lifted into the C-5's hold.

Cortez walked up to his friend. Kolfage was intubated, his neck was in a brace. His face was barely visible through gauze and bruises and wiring.

Cortez thought of all they had shared, serving in these dangerous lands. Cortez knew this was the last time he would see his friend for a long time. He remembered what they used to shout to stay motivated during long night watches and when they pushed each other at the gym.

Cortez leaned in close to Kolfage's face and repeated the words.

"We live together. We fight together. We die together. We Band of Brothers."

✪✪✪

TWO WEEKS LATER, compassionate doctors eased Kolfage into news he vaguely grasped as he drifted in and out of morphine-infused consciousness at Walter Reed Army Medical Center.

"Oh that really did happen. My legs are gone."

I visited Kolfage at Walter Reed shortly after, because Wurm had reached out.

The room was dim, with blinds halfway drawn across the lone window. Kolfage was propped on pillows, a blanket covered him from his waist down. It went flat after his hips, except for small ridges of fabric caused by a dozen lines of tubing that connected him to fluids and medicine.

His arm was now a white bandaged nub that seeped yellow pus.

I had just recently returned from a second reporting trip to Iraq, but that experience had left me jaded. As the war had settled in, so had bad habits, greed, corruption and the first indications that the United States' vision for Iraq's future was not the path it was taking.

This Walter Reed room, with its cold bareness, was the exact opposite of the opulent and wasteful Baghdad I'd last seen. This was the real price and real life of war.

As we said our first "hellos" in a year,

HE AND ASHLEY HAVE REPEATEDLY VISITED WALTER REED TO SHOW MORE RECENTLY INJURED SERVICE MEMBERS THAT A GOOD FUTURE IS STILL POSSIBLE.

I looked into the hollow and drugged eyes of my friend and wondered if he knew he was smiling.

"You can sit on the bed," she said. It was a direct but almost challenging welcome from his then-girlfriend, a pretty 20-year-old whom Kolfage had dated on and off since high school.

Kolfage had lived in Hawaii back then. He'd been a sandy, 15-year-old punk of a kid who was hanging out on an apartment balcony with friends when he saw her riding a skateboard and called down. When the Air Force moved her family to Texas he'd followed. Then he decided to enlist.

When the phone rang where she was staying in San Antonio during his second deployment she couldn't stop screaming until someone could convince her Kolfage was still alive.

I sat on the bed. I don't know what exactly I said to her or to Kolfage. I remember it was a muting task to open my mouth because every crutch I used to reconnect—"How's it going? What have you been up to?"—was an embarrassing failure. I knew how Kolfage was. He was one-half. He was right in front of me. I still asked. What the hell else do you do? I asked about the hospital food.

"I just started eating solids again," he said.

"The food sucks," she corrected.

I asked if his parents were OK.

I asked what I could do to help.

That one was the trigger. His young girlfriend had the weight of the world on her shoulders, but said nothing. How do you complain about the stress and the fear and the responsibilities that did not exist three weeks ago, when you have both of your legs and your arm and you did not serve our country in Iraq? Kolfage never, ever said this. But it was in her head, in her mind, in her heart. It was in the eyes of every new "friend," all those doctors and nurses and hospital coordinators who would make small talk of their own: "How are you doing?"

The first few times when she dared show fraying she saw the flicker of judgment. Of pity. And she quickly learned to just smile and say she was fine.

Instead she focused. She moved back and forth from checking on his bandages, like the nurses had taught her, to staring at her phone for the 100th time, wondering if this next number she'd been told to dial would finally get them the support they needed.

Access to cash. A place for her to crash while Kolfage healed. She had nowhere to go, she didn't want to be anywhere but here. At night she curled up beside Kolfage on the bed, her shampooed hair a soft and welcome respite from the medical smell of the sheets.

When I asked what I could do to help, it was a hollow offer like so many others would be. She quickly shut me down; in even the few weeks since the attack she'd learned to read a real offer from an empty one. It was a survival instinct.

She was right, there was not much I could do. But I could take my notebook and my pen and four weeks after Kolfage was hit the best thing I could do was to write and write and get their story on our wire.

A few days after "United for the Journey" hit our newspapers they married. With no dress and no ring they were joined by a Walter Reed chaplain. They were a young man and a young woman who sat together on Kolfage's hospital bed with no legs and no right hand.

Kolfage visited 11-year-old Mykola in December 2015, just months after the boy had suffered injuries similar to Kolfage's. Mykola and his friends found a grenade near his eastern Ukraine village and it exploded, maiming him.

He put his left hand in hers and they vowed to face this unknown together.

✪✪✪

FOUR YEARS LATER, it wasn't the unknowns that broke them. It was the incompatibilities glossed over in a moment of crisis that could not survive outside of Walter Reed. They'd moved to an apartment in Arizona, where a grateful Air Force told Kolfage he could have any desk job he wanted. He still wasn't using his legs. Kolfage still tried to avoid that public world and the relentless "holy shit" factor when people took in his injuries.

The night she left, he was sitting at his kitchen table, staring down at the papers before him.

Could he really do this?

Not bachelor life—he knew he could do that.

What Kolfage wanted was to get into architecture school. But first the formerly right-handed guy had to learn to write his name again.

He put the pencil in his left hand, and began to draw.

✪✪✪

THAT ACT WAS THE FIRST STEP TOWARD PARIS, a bubbly, blonde little girl who flirts and demands Kolfage pick her when he's in his wheelchair. It was the first step toward Beckham, his son, who was born about a year and a half after his sister. It was the first step toward Ashley, the love of his life who sat in his lap and rolled down the aisle and under the Air Force's Saber Arch with him in Arizona in May 2011, white dress and long, blonde hair draping over them both.

"It was 100-plus degrees," Kolfage said. "And I had my military uniform on. I was sweating my ass off."

During the wedding the photographer caught a moment of the two of them. They were holding hands, taking it all in. They had their backs to the camera, on an outdoor stone patio looking out over the ridge.

"Being injured forever changed me," Kolfage said. Once he took the first steps to draw and walk and drive his new

Photos: Courtesy Tara Copp; courtesy Brian Kolfage

Range Rover, he went after Ashley. He'd first seen her in a Chili's in San Angelo when he was a young airman, before his deployment and before his injuries. That night she told him off; he told his buddies, "I'm going to marry that girl."

So he did.

"Being remarried was a significant milestone," Kolfage said. "It was a happy moment that set the path to my future again. It led me to children."

Then the Gary Sinise Foundation called. They offered to build Kolfage a house. But he said "no thanks;" he was working on finishing his degree at the University of Arizona's Architecture School, he didn't think they needed it.

"But in my last year in college, Paris was born, and I started realizing how difficult things really were, chasing a kid around. My [good] left hand was getting worn out just doing random things," Kolfage said. He also started to notice how many times he had to ask for help, and how their house design made that worse. For example, it had a huge master bath, but the toilet was in a separate closet that was too skinny for his wheelchair.

So Kolfage called the foundation back.

"We want to do this," he said.

The coordinator asked back, "Where do you want to move?"

Kolfage graduated from the University of Arizona's program in May of 2014 and, just after he graduated, he and Ashley and Paris got in the car and hit the road. They found Miramar Beach, Fla. "The people are super friendly" and many were from nearby Eglin Air Force Base.

"We told the Sinise Foundation," Kolfage said, "and we started looking for land."

Their finished house gives Kolfage independence he previously had to create. Over the course of a day, those extra tasks put additional wear and tear on the couple.

Like having to ask Ashley to fill a pot of water for him to boil pasta.

"Normally I could never fill a pot of water," he said. "It would spill everywhere."

But in their new house there's a spigot built-in right beside the burner. So a pot can be filled while it is sitting on the stove.

Little things like that have made a huge difference.

Kolfage too has made a huge difference in others' lives now. He and Ashley have repeatedly visited Walter Reed to show more recently injured service members that a good future is still possible. But few visits have struck as deep as a request that came in late 2015.

"I got a random message on my Facebook page, from a nurse in Canada," he said. "The nurse asked, 'Is this you?' "

There was a picture of Kolfage holding newborn son Beckham. The nurse had found it taped above the bed of an 11-year-old patient they were caring for, a young Ukrainian boy named Mykola.

Like Kolfage, Mykola was a triple amputee. He lost both legs and an arm, and his little brother was killed, after Mykola mistook a live grenade on the ground for a toy near his home in eastern Ukraine.

"He's my hero," Mykola told the nurses of the blond young father in the photograph; and they set out to find Kolfage.

A few weeks later Kolfage and Ashley were flying to Canada to meet him. Kolfage was nervous, they stopped in New York and made a side trip to pick up LEGO sets as gifts, thinking they would be an icebreaker.

Instead, Mykola turned his back and hid in the corner of his bed in tears.

So Kolfage tried another approach.

"I took off my arm, it disconnects at the elbow," he said.

Mykola turned around.

"He came out of his shell a little bit, he looked at the arm, smiling. I thought, 'Alright, I got his attention now.' " Kolfage said, "My LEGO arm broke the ice."

They spent hours talking. Kolfage told him, through a translator, that it was going to be alright. Mykola had more of his legs remaining on both sides, and Kolfage told him, "You are going to be able to walk and run. You will be able to play soccer still."

By the time it was time for them to go Mykola was showing off in his wheelchair and they took several pictures together.

"This was just a bump in the road," Kolfage told him. "You can always do everything. You just have to find a new way to do it." ✪

Tara Copp is Pentagon bureau chief for *Military Times*. This article, her first for *Air Force Magazine*, is adapted from her book *The Warbird*, published by Squadron Books. Copp and Kolfage are now working together on a new book about his life and what drove Kolfage after the attack.

Brian Kolfage works today as a motivational speaker, volunteer, and capitalist. This year he launched a coffee company, Military Grade Coffee, because, as he put it, "Everybody drinks coffee."

Kolfage and wife Ashley (carrying son Beckham), with daughter Paris.

Photo: Courtesy Brian Kolfage

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REBOOTING THE AOC UPGRADE

USAF must modernize the software underpinning its ops centers. This has been easier said than done.

By **Gideon Grudo,** Digital Platforms Editor

The Air Force has decided to start over on a software upgrade for its air and space operations centers (AOCs), the heart of USAF's combat connectivity and information fusion. After years of blowing past deadlines and going hundreds of millions of dollars over budget, the Air Force in July fired the contractor developing AOC Weapon System 10.2 and decided to do the work largely in-house.

Although military software development is always fraught with uncertainty, service officials hope this new approach will allow the program to proceed at a fraction of the expected cost of relying on a contractor—assuming Congress allows funds to be reprogrammed to do so.

Despite the setbacks, the AOC software upgrade is critical and must go forward, Lt. Gen. Arnold W. Bunch Jr., USAF's top uniformed acquisition official, told *Air Force Magazine.* The reincarnated project is named, appropriately enough, AOC Pathfinder. The upgrade, previously led by Northrop Grumman, is necessary to better sort, collate, and organize the vast streams of information that flow into an AOC.

The modernization had previously been budgeted for $3.5 billion over its lifetime. How USAF plans to achieve the same ends is still to be determined, as is what exactly the service will need after it spends its first $36 million—if and when it gets it. But according to Bunch, it has to happen one way or another, labeling the effort critical.

The new acquisition strategy aims to apply industry's best practices, an Air Force spokesperson explained. The idea is to obtain "more rapid and transformative AOC capabilities, to create near-immediate and repeated value to our warfighters," she said.

Of the $36 million USAF has asked to spend on the revamped project, some $22 million would be spent on development contracts, $10 million would buy commercial off-the-shelf products and services, and $4 million would pay for other government support.

AOC Pathfinder will take the novel approach of relying on airmen to figure out the way ahead. Assuming it gets the green light, USAF will partner with Defense Digital Service—the agency called in to review the predecessor Northrop Grumman project when it was foundering—and the Defense Innovation Unit-Experimental (DIUx), which

Photo: SSgt. Alexander Martinez. Illustration: Pete Linforth

bills itself a "fast-moving government entity" able to quickly solve defense problems.

USAF expects about 100 people to work on Pathfinder, including government, military, civilian, and support contractors. It will be managed out of Hanscom AFB, Mass.

The goal is to achieve "a partial replacement AOC software capability" just a year from the moment AOC Pathfinder gets underway. The "path" part is still being worked out.

BEHIND SCHEDULE

The original project was intended as an upgrade to AOC Weapon System 10.1, which receives, hosts, and parses incoming data used in "fusion warfare," as it has done for two decades. Tagged AOC-WS 10.2, the upgrade's focus was on cybersecurity and open architecture, two elements that weren't a priority when 10.1 came online in the 1990s. While chiefly a software improvement, the program also aimed to deliver some hardware in the form of computers, servers, and related equipment.

Back then, "we weren't as worried about cyber," Bunch told *Air Force Magazine*. "Cyber vulnerabilities and cybersecurity weren't on any of our screens."

Adding cybersecurity open architecture was no mean undertaking.

First, Lockheed Martin, having worked on the project from 2006 to 2011 in what Bunch's office called "a small initial investment to begin concept development activities," opted not to bid when the Air Force put the AOC upgrade out for contract.

The project wasn't officially a program of record until Frank Kendall III, then undersecretary of defense for acquisition, technology, and logistics, decided it was technologically feasible in 2013, a determination defined as Milestone B. That's when Northrop Grumman stepped in and was awarded the development contract.

Northrop Grumman's price for the development phase of the project was $374 million in 2013, but had since risen to $745 million, according to Bunch's office. Over its lifetime, including procurement and support, the program's total cost was recently estimated at over $3.5 billion.

The AOC modernization was also nearly three years behind schedule and not expected to go live until December 2019. Northrop Grumman declined to comment on the program or its termination.

The doubled development cost, continued difficulty meeting milestones, and the schedule delay exceeding 12 months brought the program to a halt this May—as these criteria officially triggered the need for a critical change—months before it was officially terminated. USAF couldn't keep the project going without an additional $66.3 million, which Congress declined to provide on top of the program's already appropriated—and spent—$28.9 million this year.

USAF issued a stop-work order April 19.

While the scope of AOC Pathfinder hasn't been set, the goal is the same: Modernize the AOC.

The AOC 10.2 program rested on two pillars: Cybersecurity must be built into the current AOC network, and the components of the network need to be upgradeable. By way of example: a new mobile app, which can be installed on older smartphones. Such an app can be just a few days old but work on a much older phone because the phone was created with an "open architecture" that accepts new programs.

This capability is crucial because some of the apps that the AOC uses now and will likely create in the future aren't wholly owned or controlled by USAF, Bunch said. Some of them are third party.

RE-BASELINED

"If I move a captain who works in air operations in CENTCOM [US Central Command] to the Pacific area, I don't have to retrain [him or her]," Bunch said, adding he wants AOC veterans "to have standard things they're looking at." Avoiding "retrains," as Bunch put it, is another one of the goals of the new network, aside from the cybersecurity and programming openness.

As the program overran its schedule several times, Bunch was forced to submit a Critical Change Report to Congress. (This was the program's second critical change, the first one being the 2013 change bringing Northrop on board.)

According to DOD guidelines, such a report outlines among other things—whether the program is "essential to national security," if any alternatives could provide "equal or greater capability at less cost," whether new cost estimates are reasonable, and whether the management of the program is "adequate." Though this is similar to a so-called Nunn-McCurdy breach, somewhat different rules are at work.

"We had a bunch of people go in and look," Bunch said, describing the group as in-house experts and members of the Office of the Undersecretary of Defense for AT&L's Defense Digital Service, which is now a key partner on AOC Pathfinder.

DDS is a small team that "talks to engineers, talks to decision-makers" for about

> WHILE THE SCOPE OF AOC PATHFINDER HASN'T BEEN SET, THE GOAL IS THE SAME: MODERNIZE THE AOC.

The 612th Air and Space Operations Center provides command and control of air and space power in US Southern Command, including 31 countries.

MSgt. Kyle Tschida and Lt. Col. Terry Brennan review data link software changes in July at the Combined Air Operations Center at Al Udeid AB, Qatar.

a week and comes back with recommendations based on best commercial practices and other technical wisdom.

A variety of other DOD experts also delivered feedback on the program in the form of, among other things, unreleasable "deficiency reports."

After getting feedback from these experts, Bunch's office changed the methodology of the project, he said. The program was re-baselined, including a change to how Northrop Grumman developed the software and how it conducted interim testing on the software instead of waiting on milestones.

"You have to rapidly test that code," former acting Air Force Secretary Lisa S. Disbrow told *Air Force Magazine* about the new methodology, describing the team's findings. "If you don't—if you take an incremental approach, which we tend to do in the acquisition system—you allow the code to fail while you're building other code." Under traditional processes, USAF wouldn't necessarily know if the initial code was failing because it wouldn't test it until after the Air Force had "a number of different systems together," she said.

Setting a new baseline—a fresh scope of work to be done, the schedule, the cost—required more money than was appropriated, so Bunch had to ask Congress to reprogram Fiscal 2017 dollars to keep the project above water. That didn't happen, and the Air Force is keeping everyone abreast of the program's development and needs because "with a critical change, you have to be very transparent," Bunch said.

While AOC 10.2 is in limbo, 10.1 must keep functioning, and that means maintenance. Just seven days after USAF ordered Northrop Grumman to stop working on AOC 10.2, it awarded Raytheon a $375 million contract to sustain 10.1.

While Northrop Grumman's contract was about replacing "legacy infrastructure with a new, modern architecture," sustainment wasn't part of the deal.

"The contract just awarded to Raytheon is to modernize and sustain the AOC weapon system," the Air Force explained. "Raytheon's immediate effort will focus on sustaining 10.1 as the currently fielded system and will transition to modernizing and sustaining 10.2 if/when it is fielded."

Raytheon's Todd C. Probert, vice president for mission support and modernization, intelligence, information, and services, said in an interview that "depending on the need," readiness or relevance will take the lead as the focus of sustainment.

OLD BUT RESILIENT

How does that affect Raytheon's work on a system that needs to be completely recast? There is no classic set of requirements, Probert said.

Whatever the requirements are, Probert said Raytheon will be hiring nearly 200 engineers and related personnel for the project, which he called "a really exciting and really important weapons system for the government."

Bunch's office said the awarding of the sustainment contract was "unrelated and happens to be coincidental to the AOC 10.2 stop-work order." Jacobs Technology of Texas was in charge of sustainment previous to Raytheon.

In addition to a shortage of coders to deal with software-driven projects, DOD struggles with management. There isn't enough expertise in place to manage state-of-the-art coders, Disbrow said. The Air Force is "looking at what's the right mix" of contract, civilian, and DOD entities, she said.

"I really think it's more that cyber and IT are areas that have rapidly progressed outside the department and we don't have the workforce in place," said Disbrow.

The very antiquated nature of some of USAF's systems could ultimately be their saving grace, Disbrow noted.

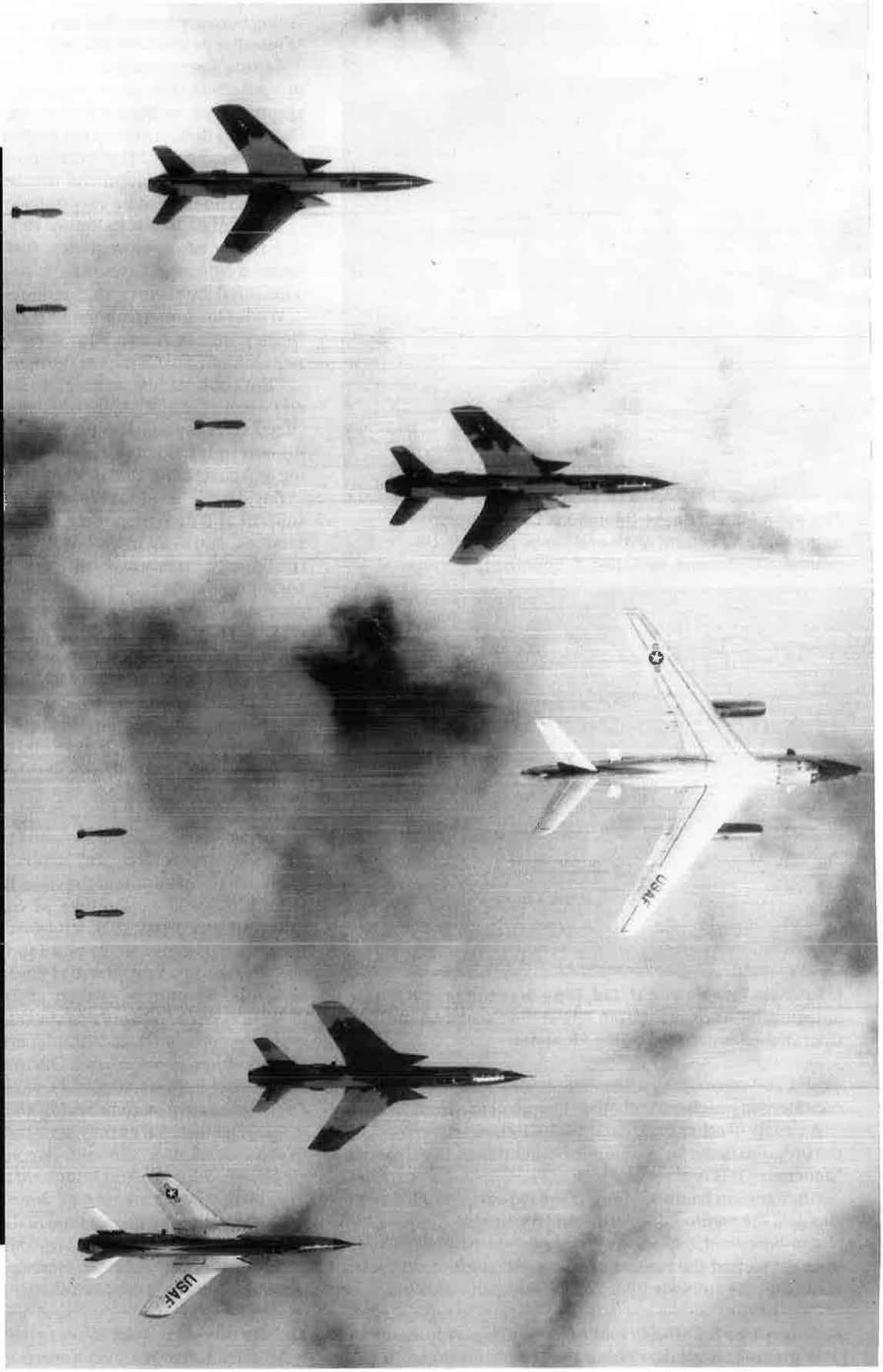
"Just being as old as they are—not in the network—builds in some resilience," she said. "We've got shortfalls out there we have to address. And I think we are—it's a matter of how long [before] you can get it all done."

The lessons derived from the AOC modernization debacle can be applied to other modernization programs as well.

"Almost all the weapons systems we're modernizing are software-centric," Disbrow told *Air Force Magazine* in June, adding that the service is trying to "change the way we develop and the way we acquire these systems."

Military software development is never easy, and every entity agrees on one thing: Upgrading the AOC is critical. Whatever gets done has got to be done quickly. ✪

Photos: Capt. Justin Brockhoff; SSgt. Alexander Riedel



An EB-66 uses its radar as a bombsight to penetrate heavy cloud cover and direct F-105 pilots where and when to drop bombs during a mission over North Vietnam.

By John T. Correll

ROLLING THUNDER

Air Force and Navy airmen carried the war deep into North Vietnam.

If the United States ever had a chance of winning the war in Southeast Asia—and that is a big if—it was Operation Rolling Thunder, the air campaign against North Vietnam from March 2, 1965, to Oct. 31, 1968.

Rolling Thunder began when the war escalated in early 1965. Less than two months later, President Lyndon B. Johnson and Secretary of Defense Robert S. McNamara reached the conclusion that airpower could not achieve decisive results and adopted a different strategy, amounting in effect to a land war in Asia.

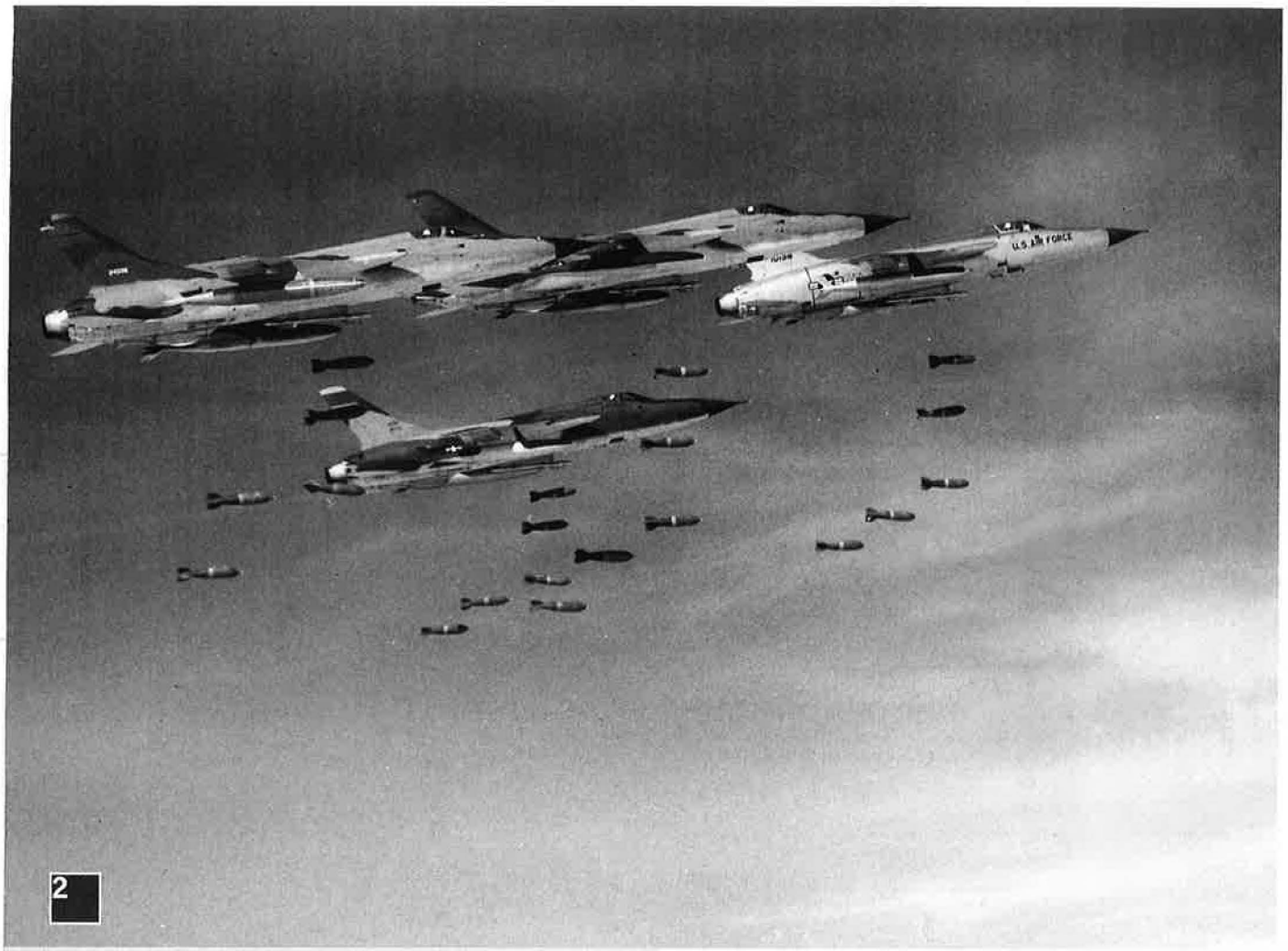
Airpower would be employed in both North and South Vietnam to support the main effort by ground forces in the south, but there would be no attempt at victory in the north. Targets in the south got first priority for available airpower. Rolling Thunder had no clearly defined military objective.

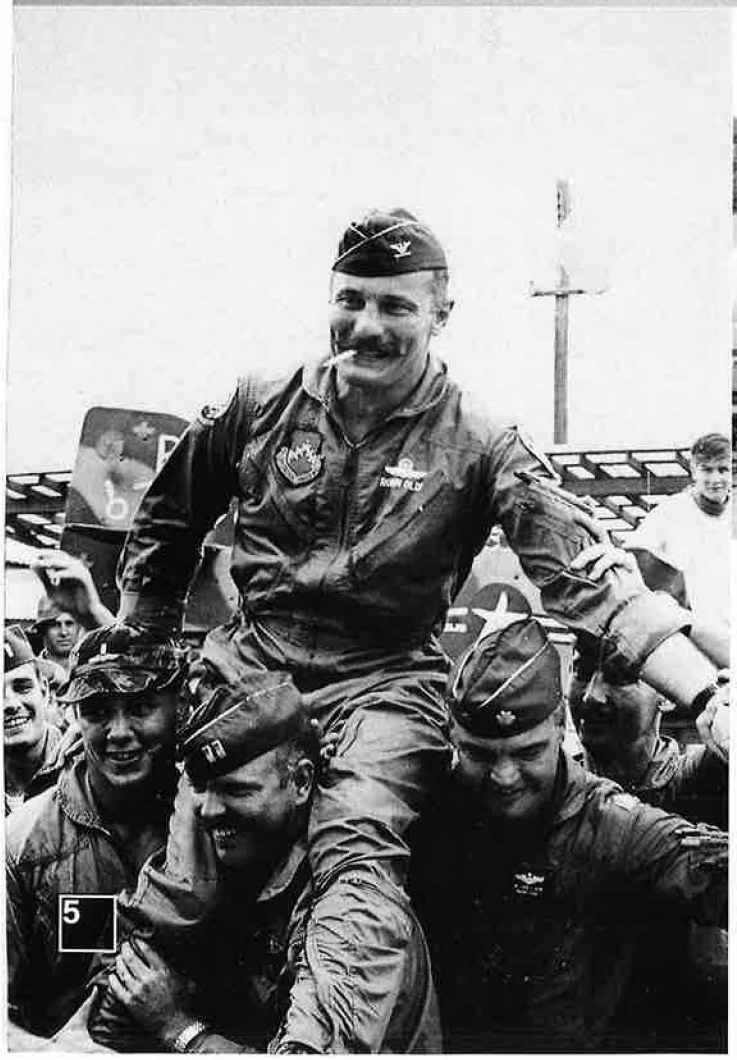
For the next three years, Air Force and Navy fighter-bombers would fly more than 300,000 combat sorties over North Vietnam from bases in Thailand and South Vietnam and carriers in the Tonkin Gulf. The signature aircraft of Rolling Thunder was the Air Force F-105 Thunderchief, known to all as the "Thud," which flew more strikes than any other type and took more losses.

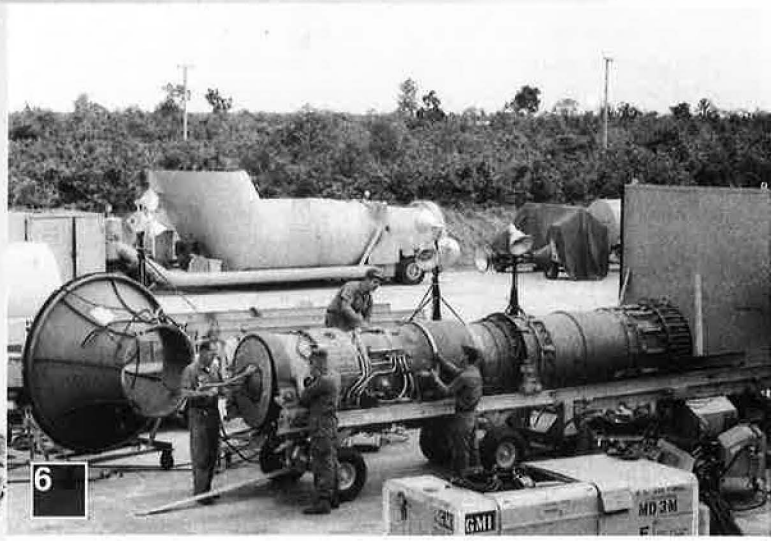
The operation was tightly controlled from Washington. Targets had to be approved by the White House, which also imposed endless restrictions and prohibitions. No strikes were allowed within 20 miles of Hanoi or Haiphong. For the first two years, airmen were not allowed to strike the MiG bases from which enemy fighters were flying. The rules of engagement kept changing. A target on the approved list one week could be off limits the next week. There were frequent bombing halts.

THE STRATEGIC MISTAKE

The problem with the Johnson-McNamara southern strategy was that the war was not an indigenous conflict. It was instigated, planned, directed, and sustained from North







1/ L-r: SSgt. Gary Kightlinger, SSgt. Gene Andrews, and Sgt. Ronald Smitherman install a new wing on a Thud at Takhli AB, Thailand, in 1968. 2/ A four-flight of F-105s under radar control bomb a military staging area in North Vietnam in 1966. 3/ A1C David Panther touches up the gun port of an F-105 at Korat AB, Thailand, in 1967. 4/ A missile's tail protrudes from the engine of an F-105 after a mission over North Vietnam. The Thuds faced a high concentration of enemy fire. This aircraft received a new tail section and went back into action. 5/ Col. Robin Olds is carried off the airfield after completing a mission on the first day of Operation Bolo, an operation that lured North Vietnamese MiGs, believing they would be facing more vulnerable F-105s, into an ambush by the more lethal F-4 aircraft. 6/ Airmen run a final check on an F-105 engine at Korat Air Base.

Vietnam. War materiel and reinforcements were infiltrated through mountain passes to the Ho Chi Minh Trail in the Laotian panhandle and on to client forces in the south.

US pilots could see weapons, equipment, and war supplies moving on the railroad near Hanoi and being unloaded from ships in the Haiphong harbor. They could look but not strike. The main interdiction campaign, Operation Steel Tiger, ran alongside Rolling Thunder and attacked the supply system in small loads, truck by truck, on the hundreds of miles of the Ho Chi Minh Trail.

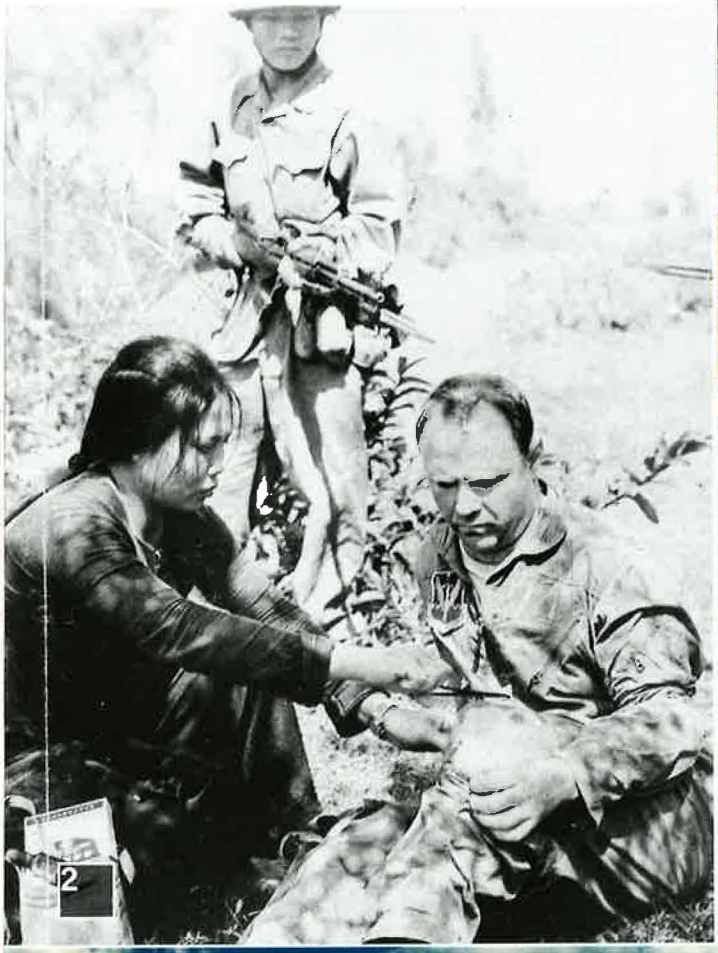
The number of approved targets was expanded in 1967, but as always, political considerations were trumps. A strike on Phuc Yen air base was called off because the State Department had promised a visiting European dignitary that he could land there without fear of bombing.

The MiG-17s and MiG-21s were no match for the US F-4 fighters. In the "MiG Sweep" in January 1967, USAF F-4 Phantoms within 12 minutes shot down seven MiG 21s over the Red River Valley in North Vietnam.

Anti-aircraft guns and SA-2 surface-to-air missiles were more difficult to defeat, and accounted for most of the US aircraft lost. The North Vietnamese placed as many of their SAM sites as they could within the restricted zones, where they were safe from attack.

The most effective counter to the SAMs was "Wild Weasel" aircraft, especially equipped to find and destroy the Fan Song radars that directed the SAMs. The Weasels—initially F-100s but later F-105s—used themselves as bait. Their most famous tactic was the "SAM break," a high-speed dive past the rising missile, followed by a sharp pull up and change of direction. It was dangerous work.

1/ EB-66 aircraft at Takhli Air Base. 2/ Capt. Wilmer Grubb receives first aid from his North Vietnamese captors after his unarmed reconnaissance aircraft crashed in 1966. He died in captivity. 3/ A photo of the flight line at Korat shows USAF C-121s and F-105s. 4/ A KC-135 tanker refuels Thuds en route to bomb military targets in January 1967. F-105s (and, earlier, F-100s) flew "Wild Weasel" missions seeking out and destroying Fan Song radar sites that directed North Vietnamese SAMs. 5/ Armed F-105s on the line at Takhli. 6/ An F-105 approaches a KC-135 while preparing to take on fuel during a bombing mission in 1965.



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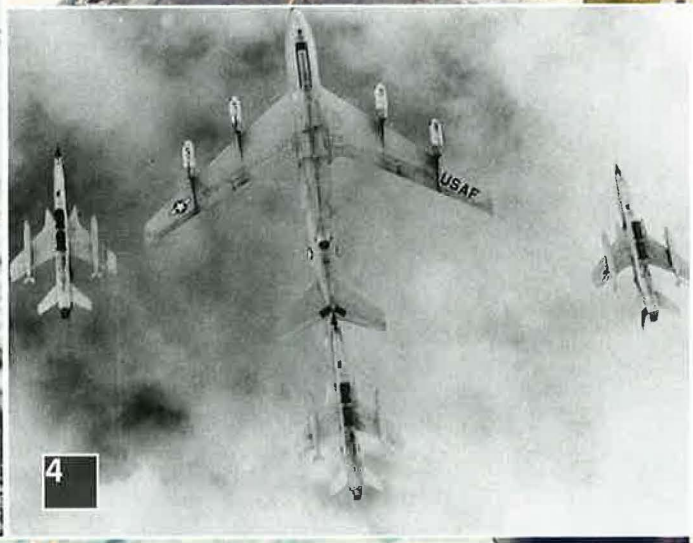

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The North Vietnamese shot down 922 US aircraft in Rolling Thunder. The fate of many of the airmen is unknown, but some were rescued and hundreds of others were captured and confined in Hoa Lo—the "Hanoi Hilton"—and other prisons. Among the POWs was Lt. Col. Robinson Risner, who led the very first Rolling Thunder mission on March 2. He was shot down Sept. 16 and held by the North Vietnamese for more than seven years.

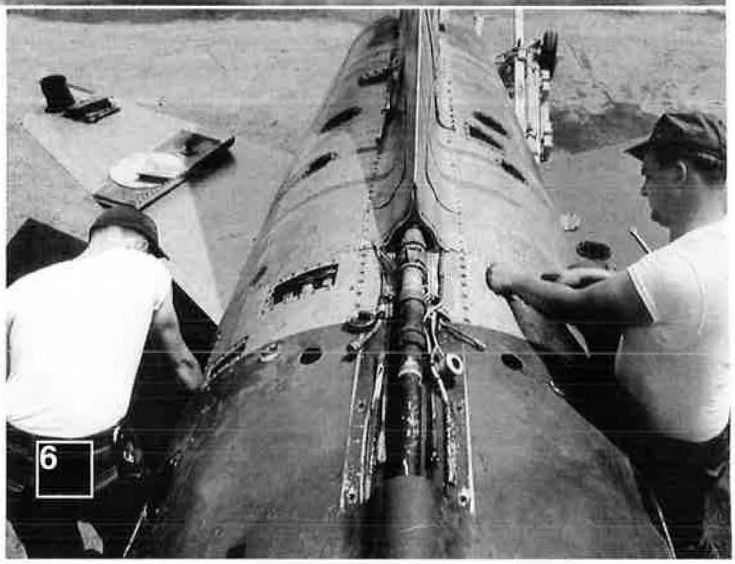
END OF THE THUNDER

Meanwhile, US troop strength in South Vietnam climbed steadily and by 1968, had reached 500,000. The war dragged on without resolution. In January, the North Vietnamese Army and the Viet Cong delivered a resounding shock to both US leaders and the public with a major offensive over the Tet lunar new year holiday. Military Assistance Command Vietnam asked for 207,000 more troops, which was soon discovered and reported in the newspapers. Support for the war dropped severely.

President Johnson decided it was time to seek a negotiated settlement to the war. He ordered a partial halt to the bombing of North Vietnam in March 1968 and a complete stop on Nov. 1. The last day of Rolling Thunder was Oct. 31, almost three years and eight months after it had begun.

Critics of airpower were quick with the accusation that Rolling Thunder had failed. That was true, but complicated by the fact that it was not intended to win. McNamara had pointed repeatedly to its limited objectives and secondary strategic priority.

The net effect of the restrictions and prohibitions was that there was never a serious threat to the regime in Hanoi or to its support for the war in the south. Gradual



1/ F-105s line up for fuel behind a KC-135 en route to bombing targets in North Vietnam. 2/ Sgt. Joseph Runyon kneels atop a fuel bladder as fuel is pumped into a KC-135 at a base in Thailand. 3/ An F-4 dives toward a target in August 1967. 4/ An F-100F Super Sabre fuels up from a KC-135 in April 1968. 5/ An F-4C Phantom on a mission in June 1967. 6/ Airmen work on an F-100 in Southeast Asia in 1966. 7/ Ground crew work on the tail section of a KC-135 tanker at U Tapao AB, Thailand.

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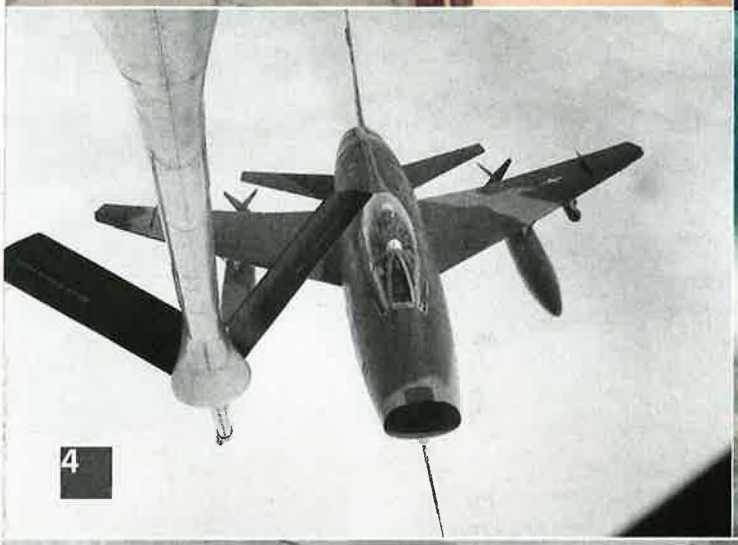
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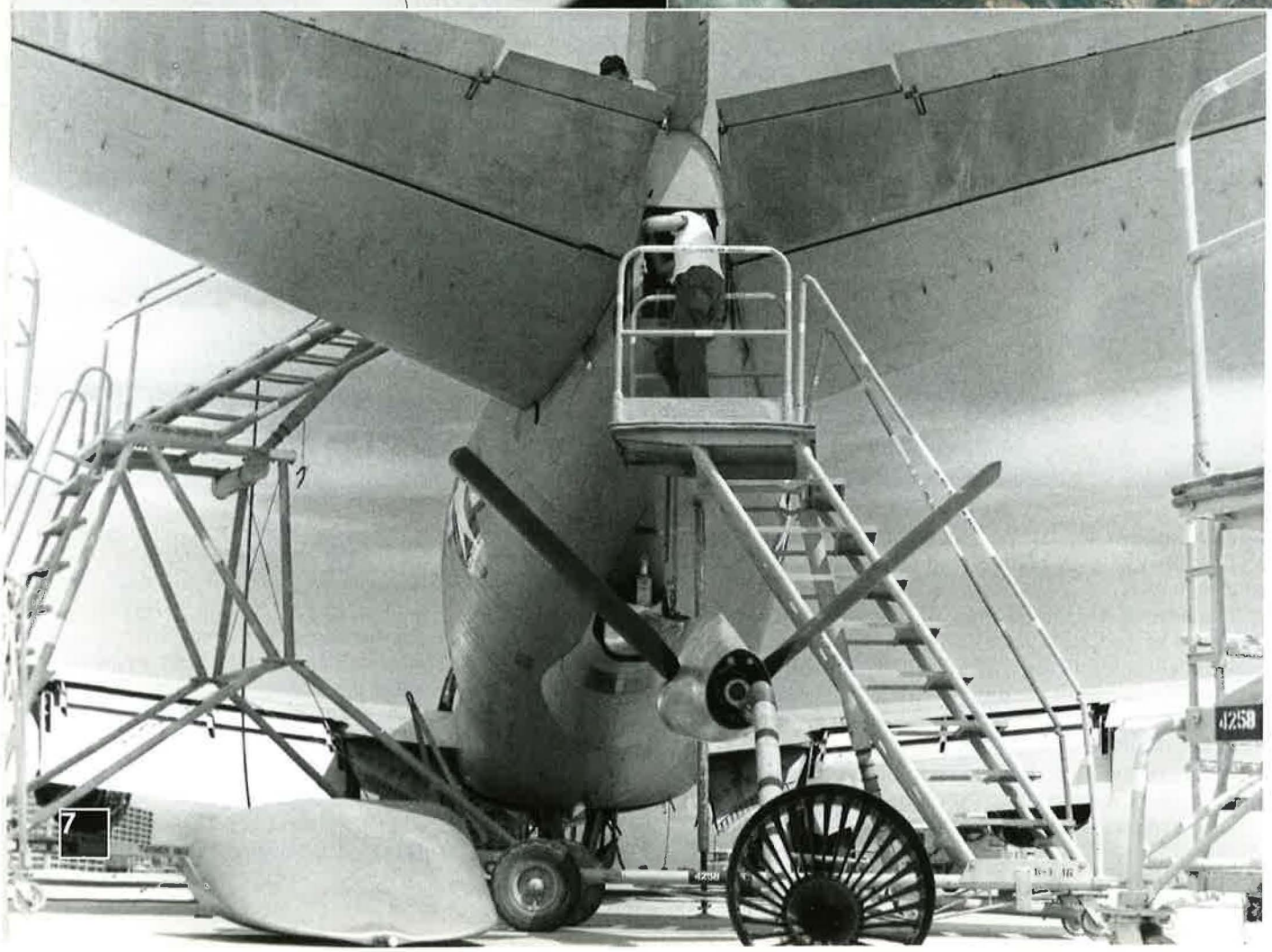
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escalation allowed the North Vietnamese to adjust to the attacks, improve their defenses, and find countermeasures. With difficulty, they managed to absorb the destruction and casualties.

The best effort by a US force of half a million in South Vietnam in cooperation with South Vietnamese forces was not successful either. The southern strategy failed as surely as Rolling Thunder did. Whether victory was possible without a ground invasion of North Vietnam in conjunction with airpower is questionable.

Within that context, Rolling Thunder was the best single chance of knocking North Vietnam out of the war—but the air campaign had not been built to succeed, and it didn't. ✪

Nearly all of the images in this pictorial were provided by the National Archives at College Park, Md. The National Archives opens "Remembering Vietnam: Twelve Critical Episodes in the Vietnam War" on Nov. 10, 2017. The exhibit follows American involvement in Vietnam through six presidential administrations—from its World War II origins to the fall of Saigon in 1975. It will be on display in the Lawrence F. O'Brien Gallery at the National Archives Museum in Washington, D.C.

John T. Correll was editor in chief of *Air Force Magazine* for 18 years and is now a contributor. His most recent article, "Last Tango in Potsdam," appeared in the September issue.

1/ Thuds line up for takeoff before a bombing mission over North Vietnam in 1966. 2/ Col. Daniel "Chappie" James Jr., an F-4C pilot and vice commander of 8th Tactical Fighter Wing, Ubon AB, Thailand. James flew 78 combat missions into North Vietnam and went on to become the four-star commander in chief of NORAD. 3/ A Thud scrambles to dodge an SA-2 missile over North Vietnam. 4/ F-4C fighters in their early gray and white paint scheme in 1965. 5/ Five F-4Cs sporting the jungle camouflage paint scheme over Thailand in November 1967.

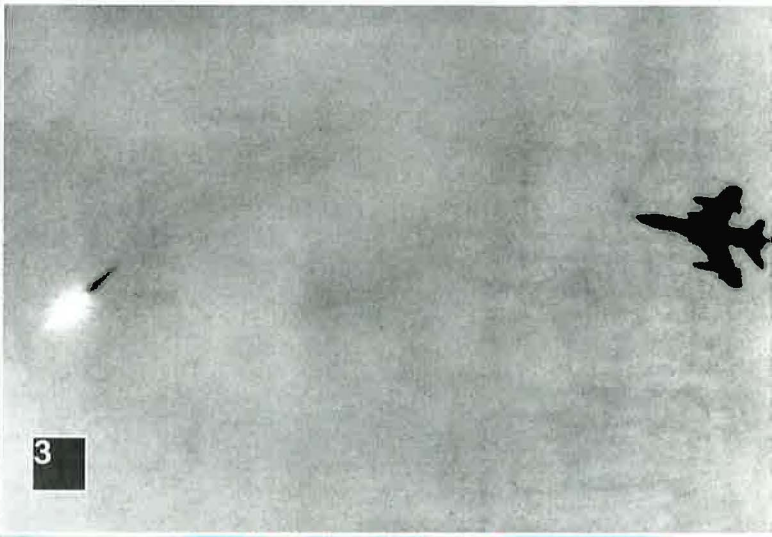

Photo: AFA files (1)

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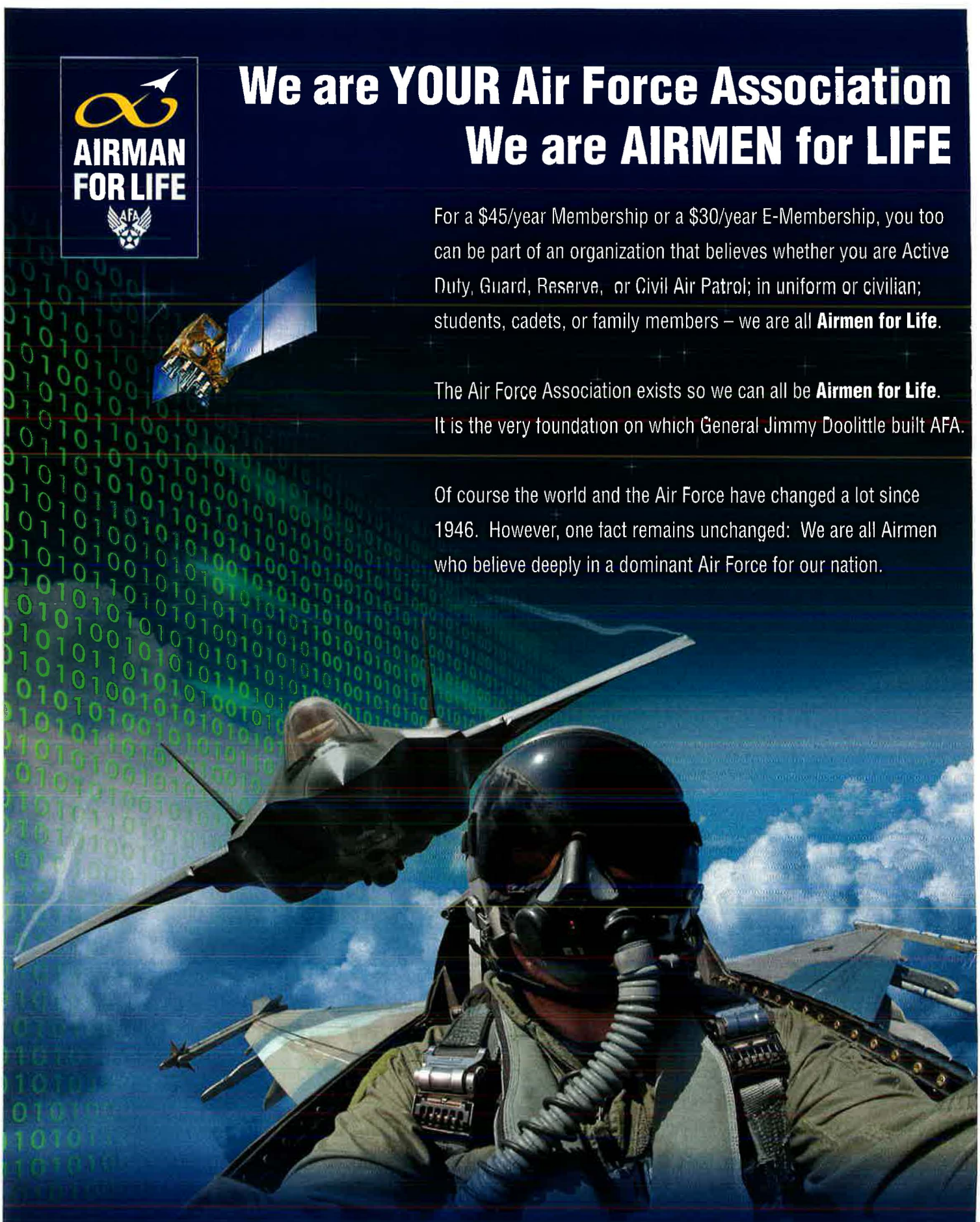

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Col. Larry Lang, commander and conductor of the US Air Force Band, directs the USAF Concert Band and college-student musicians who attended a workshop.

USAF's bands build bridges and boost morale—but are constantly questioned.

Banding Together

By Rebecca Grant

The Airmen of Note trumpet section works with the Bethesda-Chevy Chase (Md.) High School jazz ensemble. This was part of the Air Force Band's outreach program.

Photos: CMSgt. Kevin Burns; USAF

Have you seen the Air Force Marching Band at major ceremonies? Perhaps you attended a concert performance by the Airmen of Note, caught a live rock show at a deployed location, or were serenaded by the Air Force Strings. Air Force bands are everywhere.

"Whether it's a two-and-a-half-minute song or a two-hour concert, we're here to show the uniform to people who might not see it every day," said Lt. Col. R. Michael Mench, chief, Bands Division, Office of the Secretary of the Air Force, Public Affairs.

There is just one main US Air Force Band, but the service has 10 regional bands—seven Stateside and the others in Germany, Japan, and Hawaii.

"Until you see what we do, it's hard to really understand" the effect the music has, SMSgt. Ryan Carson told *The New York Times* in a late 2016 interview.

The US Air Force Band traces its lineage back to the US Army Air Forces bands formed in October 1941. Today the Air Force Band, based at JB Anacostia-Bolling, D.C., has 179 members who form six ensembles: the Concert Band, Singing Sergeants, Airmen of Note, Air Force Strings, Ceremonial Brass, and Max Impact. Add to that an expeditionary US Air Forces Central Command (AFCENT) Band, in operation for more than a decade.

USAF band members are already accomplished musicians when they apply to join the service. For each opening, the Air Force Band may receive 50 applications. Most applicants have a four-year college diploma and many have master's degrees.

The band looks for the best technicians first. Then comes the intangible element: Can the trumpet player mesh with the band or orchestra? Can the vocalist interact with and command an audience?

The band wants to know, "Can they take on that journey?" explained CMSgt. Craig LeDoux, who now serves as career field manager for Air Force bands.

All incoming recruits must go through basic training. "We try to pre-

SSgt. Chris Campbell (foreground) and the USAFE Band perform during a carnival parade in Ramstein, Germany, in 2003. The US Air Forces in Europe Band is one of 10 regional bands.

pare them for the experience," said LeDoux. "It's the first injection of blue."

After that "the Air Force sends you straight to your job," said SrA. Justis McKenzie, a tuba player with the Band of Flight at Wright-Patterson AFB, Ohio. McKenzie earned a master's degree from Rice University, then toured with Broadway shows, including "The Lion King" and "Shrek the Musical," before joining the Air Force in 2015. Musicians don't get much practice time while training to become airmen. "When you get out of basic training you have a lot of rebuilding to do," McKenzie said.

All musicians "have a different story that brings them in," Mench said.

Performing at a reunion at an Austin, Texas, hotel set the tone for him.

"Our intent was to play two marches, the national anthem, and come home," Mench said. The musicians arrived at the hotel and walked past displays for the reunion. Mench soon realized the gathering was for survivors of the Bataan Death March, the 66-mile walk through hell by captured American and Filipino defenders of the Bataan Peninsula after Japan invaded the Philippines in World War II.

"That immediately shifted my focus," said Mench, who realized "I'm here to honor the people whose footsteps I walk in today." It was a moment he never forgot. The band added a few more pieces for the reunion crowd, but the mood changed "from just playing great music to performing to honor, inspire, and connect."

That change also happened for LeDoux, a trombone player who began his USAF career 27 years ago.

"Once you get in, you sense that what we do is bigger than yourself," he said. The terror attacks of Sept. 11, 2001, affected him deeply. After that, "the American public needed to rally and gather in a community space to bring people together."

SMSgt. Richard Baisden, a 19-year veteran guitarist, agreed. He earned a degree from the prestigious Berklee College of Music before joining up. His standout moment came while performing at Bagram AB, Afghanistan, hospital during the early stages of Operation Enduring Freedom. The music gave patients and staff "a taste of home," he said.

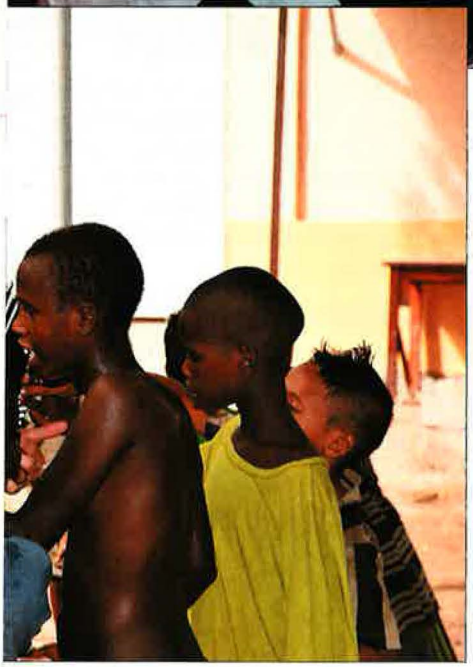
Because the Air Force Band is headquartered in the Washington, D.C., area, it plays venues such as the Smithsonian museums and the White House. Duties include funerals at Arlington National Cemetery.

Band members are pros at just about any type of music. The selection varies according to the occasion, the audience, and the location. A typical US performance includes the national anthem, the Air Force song, and rock favorites that pull from radio Top 40 styles. "Our jazz bands can open that up with rock covers, Broadway tunes, and of course the Glenn Miller heritage. It's never about performing the most

One of the US Air Force Band's six ensembles, the Ceremonial Brass, plays at Rockefeller Plaza in New York City for NBC's "Today Show" in 2016.

AFCENT Band vocalist MSgt. Alyson Jones sings at a concert with the Doha Community Orchestra at the American School of Doha, Qatar, in April.

Capt. Justin Lewis, AFCENT Band's officer in charge, conducts students from 27 countries in an honor band this summer.



Children in Djibouti crowd around TSgt. Ryan Janus to touch an accordion. Janus toured the African country with the AFCENT Band.

technically difficult pieces. It's about being in uniform, with the flags around us," Mench said.

The music mission is a global one. One of the more unusual deployments came in 2010 when Air Force Band members embarked on the Navy amphibious assault ship *Iwo Jima.* The ship was on a four-month humanitarian and civic assistance mission to the Caribbean and Central and South America. The band entertained thousands as they lined up for free medical care clinics.

Touring comes with the job. "Twenty years in the Air Force, and I spend most of my life on a bus," quipped Mench.

The musicians "go out to FOBs [forward operating bases] where the USO can't really go," explained Baisden. "It gives people out there a chance to relax." Musicians among the airmen, soldiers, or coalition partners in the audience are invited to come "up on stage and ... sit in" with the band, he said.

The AFCENT Band at al Udeid, Qatar, has a permanent facility, manned continuously, but it performs around the area of responsibility. Musicians rotate in from Stateside units to meet this expeditionary requirement, just as any other airmen.

The mission broadens from that in the States. "We have different priorities. First is troop morale; we take care of those taking care of the fight, and our priorities are geared more individualistically," Capt. Jason Plosch said in a 2015 AFCENT news release. He was AFCENT Band's officer in charge. "We go out to where the workers are in their offices and the flight line to bring a slice of home to our deployed troops."

The AFCENT Band is almost constantly on tour. One day it's a consulate in Dubai, another it's a karaoke contest in Kabul, Afghanistan. An audience of 30,000 saw the Systems Go rock band in Doha during the Qatar International Food Festival in April.

"We send a unique product to al Udeid," said Mench. It's "light and lean," able to "hop on any aircraft." The goal is to connect with audiences via American pop culture. The AFCENT Band is configured around rock music, with the addition of brass.

"It's mostly Top 40," said McKenzie.

Recently Lewis brought an electric cello for his time with the AFCENT Band. "He sits in with the rock band and brings that nice cello line," said Mench.

The instrument proved a great ambassador on a tour of Afghanistan. During a stop in Kabul in March, the US Embassy invited Afghan students from the National Institute of Music to join in for a concert. The musicians played a mix of traditional and modern songs. Later, strings students met with Lewis for an impromptu class. Among the Afghan students were two female cellists. "Afghan students and American airmen don't always speak the same language, but these three could play Bach minuets together in perfect harmony," posted the AFCENT Band on Facebook.

The bands must be flexible because they never know the kind of stage they'll have or even if power will be available, said Baisden. They have to be ready to do a pure acoustic set and, in place of an electric beat box, use a cajon drum box where the percussionist sits on the box and taps out the rhythm by hand.

BAN THE BANDS?

Despite the bonds they forge with the public and the morale boost they offer to the troops, military bands come in for regular scrutiny, especially when budgets are tightly squeezed.

Instrument purchases often attract publicity. In June 2016, *Time* magazine frothed over a solicitation for an 18th century cello valued at $75,000. But the equipment is important: USAF bands play professional-grade instruments that don't compare to mass-produced pieces.

"We do put limits" on instrument purchases, said LeDoux, and USAF

Photos: Adobe Stock; A1C Desiree Palacios via National Archives; CMSgt. Bob Kamholz; TSgt. Andria Allmond/ANG; SSgt. Michael Battles; AFCENT Band

The Ceremonial Brass and USAF Honor Guard perform at a full-honors funeral at Arlington National Cemetery.

bands are nowhere near buying high-end. Top-of-the-line orchestra cellos can command more than $500,000 per instrument, while multimillion dollar Stradivarii instruments are so rare that many are owned by foundations that lend them to elite musicians.

CMSgt. Jim Queen gets a thumbs up from a listener at the Baltimore Veterans Affairs Medical Center in 2002.

Musicians have to get the right feel with an instrument to achieve top performance, and a USAF band member may keep an instrument for an entire 20-year military career. Craftsmen using quality materials produce instruments with superior mechanisms that are also easier to maintain. Instruments have to hold up through as many as 250 performances a year. "It has to last, and it can't fail," explained LeDoux.

On Capitol Hill, military band funding is a favorite punching bag during lean budget cycles. In 2011, Rep. Betty McCollum (D-Minn.) sponsored a measure to reduce funding, saying, "The Pentagon doesn't need any more band aid."

Last year the House Armed Services Committee requested a detailed accounting of funding for military bands. *The New York Times,* rarely a supporter of military spending, responded that cutting band funding was a drop in the bucket when weighed against Congress' refusal to consider base realignment and closures that could save $2 billion per year. The newspaper reported in 2016 that the Air Force had cut three Active Duty bands and had downsized others.

In the Pentagon, the bands have solid support.

"Military bands are a critical part of operations," Mark Wright, a Defense Department spokesman, said, according to the *Times* article. "They inspire, they build a rapport with our citizens and foreign nations. The types of operations we do may be hard to understand, but everyone understands music."

Last year the USAF band operation and maintenance funding totaled about $9.7 million, not counting the musicians themselves. USAF bands performed 4,600 events in 48 states and 43 countries and were seen by an estimated 10 million live viewers.

The most famous military bandsman in American history, John Philip Sousa, offered perspective on the martial music tradition. He told Congress in 1927, "I do not believe that any nation that would go to war without a band would stand a chance of winning." ✪

Rebecca Grant is president of IRIS Independent Research. Her most recent article for *Air Force Magazine* was "The Autonomy Question" in the April issue.

USAAF band leader Glenn Miller (center) prepares to give a radio broadcast to boost morale in World War II.

Glenn Miller

"We claim Glenn Miller as our own," said Lt. Col. R. Michael Mench, chief of the Bands Division, in Public Affairs, in the Office of the Secretary of the Air Force.

Miller's hits "String of Pearls," "Tuxedo Junction," and "Pennsylvania 6500" remain standards for USAF bands.

The swing and big band sounds of Glenn Miller's Orchestra dominated popular music from the late 1930s onward.

Miller's unique sound came from unusual arrangements of clarinet and tenor saxophone. When Miller enlisted in 1942, he had starred in movies and was earning $20,000 per week. (See "Glenn Miller's Air Force Odyssey," November 2013.)

Miller worked Stateside then formed a 50-piece US Army Air Forces band deployed to England in mid-1944 after the Normandy landings. "Next to a letter from home, Captain Miller, your organization is the greatest morale builder in the European Theater of operations," said Lt. Gen. Jimmy Doolittle, Eighth Air Force commander in England.

BBC broadcasts of Miller and others reached occupied Europe. This distinctive American sound was such radical music that Nazi Germany went so far as to ban jazz. "Swing Tanzen Verboten," read signs in Hitler's Germany. Those caught listening to it risked jail. Yet listen they did. As a result, explained Mench, the Glenn Miller sound still reminds Europeans of the sacrifices made in World War II.

USAF musicians playing in Europe typically start the program with the host nation's national anthem and "The Star-Spangled Banner." Miller's "In the Mood" is the finale. "It brings so many emotions back," said Mench, who conducted the US Air Forces in Europe's band until recently. For listeners in Europe, the song has "the same ... emotional appeal of ["The] Stars and Stripes Forever."

Photos: SMSgt. Kevin Burns; TSgt. Jim Varhegyi via National Archives, Air University History Office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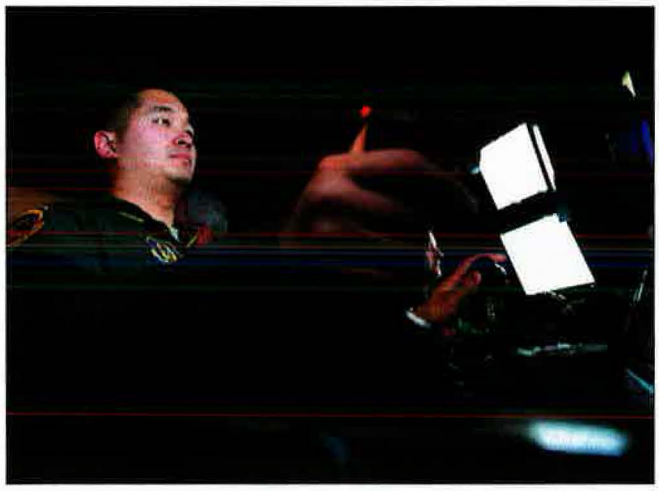
OUTSTANDING AIRMEN of the Year

SMSGT. RAYMOND T. ARTIS JR.

Operations Flight Chief
8th Communications Squadron (Pacific Air Forces)
Kunsan AB, South Korea
Home of Record: East Orange, N.J.

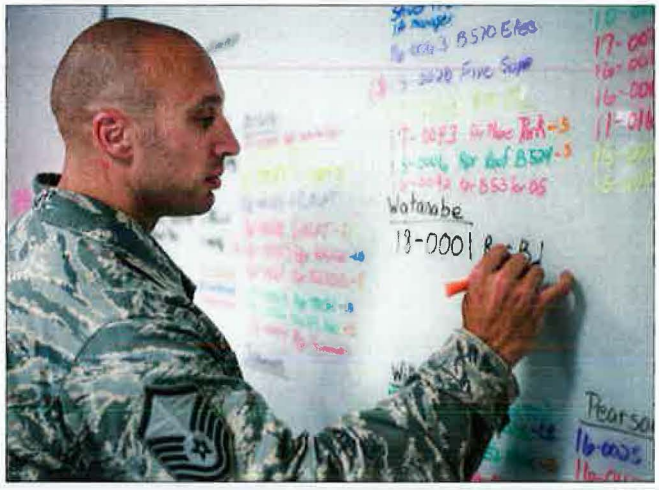
SMSgt. Raymond T. Artis Jr. led a team of 103 cyber professionals who maintained communications support for 22 units and 3,000 combatants, while sustaining command and control capabilities for an aircraft fleet with 6,900 annual sorties. As the operations leader, he oversaw network upgrades for $36.6 million in projects, resolved over 3,800 jobs, and postured war assets against North Korean hostilities. He led the largest peninsula operational readiness exercise support by engineering network and phone capabilities for 1,000 joint and coalition forces, resulting in 737 successful sorties. He steered the Environmental Control System network beddown and delivered heating, ventilation, and air-conditioning management across 34 sites.



MSGT. JOHANN KO

MQ-9 Evaluator Sensor Operator
78th Attack Squadron (Air Force Reserve Command)
Creech AFB, Nev.
Home of Record: Fremont, Calif.

MSgt. Johann Ko flew 952 combat hours supporting National Command Authority objectives that enabled 19 engagements and killed 47 insurgents. He led an 11-person flight and authored wing-, group-, and squadron-level awards packages to secure awards for 11 airmen. As an MQ-9 instructor and evaluator, Ko executed 56 upgrade events, taught over 85 flight hours, and certified 11 members on moving target attack. Additionally, Ko led 20 total force integrated aircrew members as section chief. His team eliminated two Tier 1 high-value targets and was awarded back-to-back 432nd Air Expeditionary Wing Mission Crew of the Quarter awards. Ko graduated from the NCO Academy as a distinguished graduate.



MSGT. JOSHUA D. MALYEMEZIAN

Contingency Support Section Chief
55th Contracting Squadron (Air Combat Command)
Offutt AFB, Neb.
Home of Record: Spring, Texas

MSgt. Joshua D. Malyemezian's innovative efforts to improve the 55th Wing's contracting process secured a $90 million multiple-award construction contract that increased mission capabilities and directly contributed to his unit's selection as the Air Combat Command's large contracting squadron of the year for 2016. Malyemezian partnered with the 55th Medical Group on a 68-personnel contract merger, consolidating 29 contracts to four, reducing the administrative burden by 87 percent and saving $11 million over three years.

THE AIR FORCE OUTSTANDING AIRMAN PROGRAM annually recognizes 12 enlisted members for superior leadership, job performance, community involvement, and personal achievements.

THE PROGRAM DEBUTED at the Air Force Association's 10th annual National Convention in 1956. The Chief Master Sergeant of the Air Force and the command chief master sergeants from each USAF major command comprise the selection board, with the Air Force Chief of Staff reviewing their selections.

MSGT. MICHAEL J. STEVENS

Military Training Flight Chief
USAF School of Aerospace Medicine (Air Force Materiel Command)
Wright-Patterson AFB, Ohio
Home of Record: Brooklyn, N.Y.

MSgt. Michael J. Stevens was instrumental in directing Air Force Materiel Command's sole military training program by ensuring the health, morale, and safety of 486 airmen. He improved a dormitory entry-control program that reduced unauthorized entries to zero. He led the Airman Leadership Program at the 711th Human Performance Wing, mentoring and developing 71 airmen. This resulted in 24 distinguished and honor graduates, the highest rate in three years. He set up an airman development program, leading 80 mentoring sessions that shaped three Airman Quarterly Award winners. Furthermore, he finalized an agreement that saved the Air Force $921,000 in annual basic allowance for housing. Stevens' professionalism and leadership abilities were key to his selection as AFMC's 2015 NCO Military Training Leader of the Year.

MSGT. ASHLEY T. STRONG

Dental Flight Chief
21st Medical Squadron (Air Force Space Command)
Schriever AFB, Colo.
Home of Record: Tallassee, Ala.

MSgt. Ashley T. Strong drove US Air Forces in Europe's largest dental personnel reliability program, supporting 42,000 patient visits, enabling a 99 percent war-ready rate. She undertook Air Force Medical Operations Agency's top priority by initiating two process improvement teams aimed at building a medical records guide to support Veterans Affairs claims. As the 31st Fighter Wing operations security manager, she led two vulnerability town hall meetings that resulted in a 79 percent reduction in security breaches in 16 squadrons. Strong chaired the Aviano AB, Italy, team that enacted policies responsible for slashing alcohol-related incidents by 34 percent. She championed the Green Dot violence-prevention education program by facilitating two early adopter courses, 29 overviews, and key spouse training for the Team Peterson community.

TSGT. JASON D. SELBERG

MQ-1 Sensor Operator
214th Attack Squadron (Air National Guard)
Davis-Monthan AFB, Ariz.
Home of Record: Marana, Ariz.

TSgt. Jason D. Selberg served as an operator on 134 MQ-1 Predator combat support missions. During one mission, he resolved a troops in contact situation by guiding a Hellfire missile, resulting in three enemy combatants killed. He responded to a convoy taking fire and provided overwatch through full-motion video, resulting in the safe recovery of 15 soldiers. Selberg led the charge to improve real-world combat search and rescue techniques by collaborating and sharing capabilities with a pararescue training team, enhancing relationships and broadening the scope of knowledge of remotely piloted aircraft capabilities. He led 18 members of Arizona's US Air Force 50 Summits Hiking Program to the top of a mountain, highlighting resiliency and fitness. He volunteered 27 hours to train with Team Rubicon, a veterans-led disaster-response organization.

OUTSTANDING AIRMEN of the Year

TSGT. KYLE T. WILSON

Airman Leadership School Instructor
86th Force Support Squadron (US Air Forces in Europe)
Ramstein AB, Germany
Home of Record: Starke, Fla.

TSgt. Kyle T. Wilson was instrumental to the success of the Ramstein Airman Leadership School's mission. He educated 1,407 frontline supervisors across 2,800 classroom hours. Then a staff sergeant, he filled in as the ALS commandant and managed the schoolhouse's training program while the school transitioned an unprecedented 10 cadre members in a 12-month period. During this time, his professionalism and commitment culminated in his selection as the Air Force's only staff sergeant certified as a Core Values coach. As a direct result of his mentorship and guidance, Wilson's team was selected as the Air Force's A1 Professional Development Team of the Year.

SSGT. STEPHEN F. LAPOINTE

Combat Controller
24th Special Tactics Squadron (Air Force Special Operations Command)
Pope AAF, N.C.
Home of Record: Fort Walton Beach, Fla.

SSgt. Stephen F. Lapointe was a vital member of a 120-day joint task force rotation, supporting Navy special operation forces as the air-to-ground subject matter expert. He conducted 75 missions and seven strikes, taking out 30 enemy combatants. While conducting a mission ordered by the President, he identified and controlled an austere landing zone and close air support, eliminating a high-value target. Lapointe's attention to detail prevented a catastrophic civilian casualty incident when he made a critical "abort" call during a fire mission, saving crucial political and military relationships. He also served as primary air traffic controller in a high-threat environment, controlling 244 aircraft with zero mishaps. Additionally, Lapointe instructed Navy joint terminal attack controllers, qualifying four Navy personnel.

SSGT. KACPER I. SOVINSKI

Sensors Research and Development Analyst
Geospatial Intelligence Analysis Squadron (Air Force District of Washington)
Wright-Patterson AFB, Ohio
Home of Record: Alexandria, Va.

SSgt. Kacper I. Sovinski led a four-member team across five programs to develop the Air Force's first laser sensor data analysis training program. A senior airman at the time, he executed a two-week study and calibration test to maximize the capabilities of an airborne asset. His technical expertise enabled him to rapidly deploy for Operation Inherent Resolve, performing spectral sensor maintenance and upgrades vital to combatants' daily operations. He led 63 airmen across 22 community outreach, fund-raising, and professional development events, enriching the military perspective of 228 airmen and improving the quality of life for 55 veterans in hospice care. He received the John L. Levitow award while attending Airman Leadership School.

THE 12 SELECTEES ARE AWARDED the Outstanding Airman of the Year ribbon with the bronze service star device and wear the Outstanding Airman badge for one year.

SRA. KAITLYN J. CALLAHAN

Physical Medicine Technician
341st Medical Operations Squadron (Air Force Global Strike Command)
Malmstrom AFB, Mont.
Home of Record: San Antonio

SrA. Kaitlyn J. Callahan served as a physical therapy supervisor for eight months, treated 6,900 patients, and led her flight in winning the wing's 2016 Professional Team of the Third Quarter award. Callahan's oversight of two flight safety programs and 14,000 medical record reviews led to the Accreditation Association for Ambulatory Health Care Survey hailing the group as the "best-seen clinic in 35 years and 480 inspections" and the group's Personnel Reliability Program's "Outstanding" rating during the 2015 Nuclear Surety Inspection. Callahan volunteered 40 hours aiding disabled children and served as an Honor Guard member, completing 24 details. Finally, she won the 2016 US Air Force Physical Medicine Airman of the Year award.

SRA. BRITTANY F. FUENTES

Weapons Analyst
Air Intelligence Squadron (Air Mobility Command)
Scott AFB, Ill.
Home of Record: Albuquerque, N.M.

SrA. Brittany F. Fuentes deployed to Incirlik AB, Turkey, just before the unsuccessful coup attempt and became the lead analyst for the first 48 hours of an eight-day airfield closure. She provided the premission brief for the first C-17 departure from Incirlik, initiating the evacuation of 708 dependents. She then led her team through a 30-day force protection condition increase, providing 28 intelligence briefings that ensured wing preparedness. At home station, Fuentes managed the Weapons and Tactics Team's threat assessment process, analyzing 116 enemy attacks in Iraq, Syria, and Afghanistan. She identified enemy tactics, helping safeguard over 69,000 mobility sorties. In addition, she analyzed the threat to a high-risk Iraqi airfield, allowing 23 C-17 missions to go ahead, providing supplies vital to the Mosul, Iraq, offensive.

SRA. NICOLE A. MOORE

Aerospace Medical Service Technician
59th Medical Operations Squadron (Air Education and Training Command)
JBSA-Lackland, Texas
Home of Record: San Antonio

SrA. Nicole A. Moore had a key role, as a mass casualty first responder, in US Air Forces Central Command's largest transitional care ward. Her innovation and attention to detail led to the care ward extending its life support capability by 400 percent, saving the lives of 14 critically injured soldiers. As an Honor Guard member, she led 70 details across 3,400 miles that cultivated a positive Air Force image and honored over 2,000 families. She mentored her fellow airmen with their college enrollments. Finally, she was highlighted as the representative of a successful Air Force lifestyle in *Futures Magazine*, a DOD publication.

USAF LEADERSHIP

Compiled by Chequita Wood, Media Research Editor

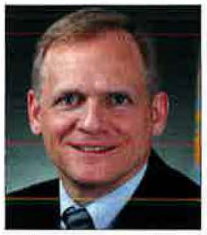
OFFICE OF THE SECRETARY OF THE AIR FORCE

Secretary of the Air Force
Heather A. Wilson

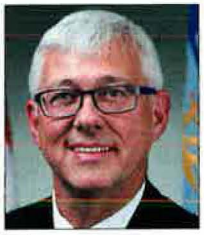
Undersecretary of the Air Force
Matthew P. Donovan

Assistant Secretary of the Air Force (Acquisition)
Darlene Costello (performing duties of)

Assistant Secretary of the Air Force (Financial Management & Comptroller)
Marilyn M. Thomas (acting)



Assistant Secretary of the Air Force (Installations, Environment, & Energy)
Richard K. Hartley (acting)



Assistant Secretary of the Air Force (Manpower & Reserve Affairs)
Daniel R. Sitterly (acting)

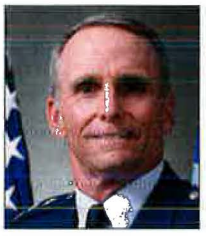
Deputy Undersecretary of the Air Force (International Affairs)
Heidi H. Grant

Deputy Undersecretary of the Air Force (Management)
Richard E. Lombardi

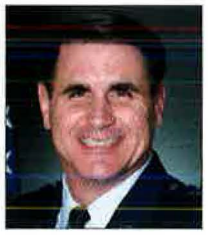
Deputy Undersecretary of the Air Force (Space)
David A. Hardy (acting)

Auditor General
Douglas M. Bennett

General Counsel
Joseph M. McDade Jr. (acting)

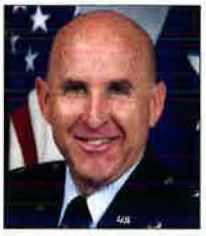


Inspector General
Lt. Gen. Anthony J. Rock



Chief, Information Dominance & Chief Information Officer
Lt. Gen. Bradford J. Shwedo

Director, Legislative Liaison
Maj. Gen. Steven L. Basham



Director, Public Affairs
Brig. Gen. Edward W. Thomas Jr.

Director, Small Business Programs
Valerie L. Muck

Administrative Assistant to the Secretary of the Air Force
Patricia J. Zarodkiewicz

As of Aug. 18, 2017

THE UNITED STATES AIR FORCE AIR STAFF

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Vice Chief of Staff
Gen. Stephen W. Wilson

Assistant Vice Chief of Staff
Lt. Gen. Stayce D. Harris

Chief Master Sergeant of the Air Force
CMSAF Kaleth O. Wright

Air Force Historian
Walter A. Grudzinskas

Judge Advocate General
Lt. Gen. Christopher F. Burne

Surgeon General
Lt. Gen. Mark A. Ediger

Chief of Chaplains
Maj. Gen. Dondi E. Costin

Chief of Safety
Maj. Gen. Andrew M. Mueller

Chief Scientist
Greg L. Zacharias

Chief of Air Force Reserve
Lt. Gen. Maryanne Miller

Director, Air National Guard
Lt. Gen. L. Scott Rice

Director, Test & Evaluation
Devin L. Cate

Director, Air Force Sexual Assault Prevention & Response
Maj. Gen. James C. Johnson

USAF LEADERSHIP

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Brig. Gen. Kathleen A. Cook

Director, Force Development
Russell J. Frasz

Director, Manpower, Organization, & Resources
Brig. Gen. (sel.) Troy E. Dunn

Director, Plans & Integration
Gregory D. Parsons

Director, Civilian Force Management
Vacant

Director, Military Force Management Policy
Vacant

A2 Intelligence, Surveillance, & Reconnaissance

Deputy Chief of Staff
Lt. Gen. Veralinn Jamieson

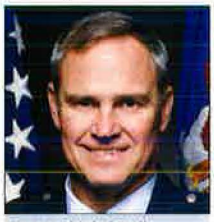
Director, Future Warfare
Brig. Gen. (sel.) Michael L. Downs

Director, ISR Modernization & Infrastructure
James G. Clark

Director, Warfighting Operations Support
Brig. Gen. Aaron M. Prupas

Director, Special Programs
Joseph D. Yount

A3 Operations



Deputy Chief of Staff
Lt. Gen. Mark C. Nowland

Director, Training & Readiness
Maj. Gen. Scott F. Smith

Director, Weather
Ralph O. Stoffler

Director, Current Operations
Brig. Gen. B. Chance Saltzman

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Deputy Chief of Staff
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Maj. Gen. Timothy S. Green

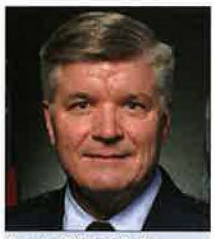
Director, Logistics
Maj. Gen. Donald E. Kirkland

Director, Resource Integration
Lorna B. Estep

Director, Security Forces
Brig. Gen. Andrea D. Tullos

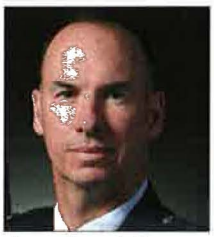
AIR STAFF A5-A10

A5/8 Strategic Plans & Requirements



Deputy Chief of Staff
Lt. Gen. Jerry D. Harris Jr.

Director, Operational Capability Requirements
Maj. Gen. Clinton E. Crosier



Director, Strategic Plans
Maj. Gen. Brian M. Killough

Director, Strategy, Concepts, & Assessments
Brig. Gen. David W. Hicks

A6 Office of Information Dominance & Chief Information Officer

Chief, Information Dominance & Chief Information Officer
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Director, Cyber Capabilities & Compliance
Arthur G. Hatcher Jr.

Director, Cyberspace Strategy & Policy
Maj. Gen. Patrick C. Higby

Director, Cyberspace Operations & Warfighting Integration
Brig. Gen. (sel.) David M. Gaedecke

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Principal Deputy Director
Michael D. Payne

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Lt. Gen. Jack Weinstein

Deputy Assistant Chief of Staff
Michael R. Shoults

Associate Deputy Chief of Staff
Billy W. Mullins

USAF LEADERSHIP

MAJOR COMMANDS

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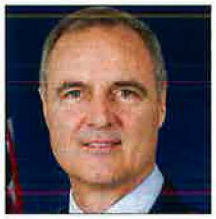
Commander
Gen. James M. Holmes

Deputy Commander
Maj. Gen. John K. McMullen

Command Chief Master Sergeant
CMSgt. Frank H. Batten III



1st Air Force/Air Forces Northern
Lt. Gen. R. Scott Williams
Tyndall AFB, Fla.

9th Air Force
Maj. Gen. Scott J. Zobrist
Shaw AFB, S.C.

12th Air Force/Air Forces Southern
Lt. Gen. Mark D. Kelly
Davis-Monthan AFB, Ariz.

25th Air Force
Maj. Gen. Mary F. O'Brien
JBSA-Lackland, Texas

US Air Forces Central Command
Lt. Gen. Jeffrey L. Harrigian
Southwest Asia

US Air Force Warfare Center
Maj. Gen. Glen D. Vanherck
Nellis AFB, Nev.

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Lt. Gen. Darryl L. Roberson

Deputy Commander
Maj. Gen. Mark Anthony Brown

Command Chief Master Sergeant
CMSgt. David R. Staton

2nd Air Force
Maj. Gen. Robert D. LaBrutta
Keesler AFB, Miss.

19th Air Force
Maj. Gen. Patrick J. Doherty
JBSA-Randolph, Texas

Air Force Recruiting Service
Maj. Gen. Garrett Harencak
JBSA-Randolph, Texas

Air University
Lt. Gen. Steven L. Kwast
Maxwell AFB, Ala.

59th Medical Wing
Maj. Gen. Bart O. Iddins
JBSA-Lackland, Texas

Air Force Global Strike Command Hq. Barksdale AFB, La.

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Gen. Robin Rand

Vice Commander
Maj. Gen. Michael E. Fortney

Command Chief Master Sergeant
CMSgt. Calvin D. Williams

8th Air Force
Maj. Gen. Thomas A. Bussiere
Barksdale AFB, La.

20th Air Force
Maj. Gen. Anthony J. Cotton
F. E. Warren AFB, Wyo.

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Gen. Ellen M. Pawlikowski

Deputy Commander
Maj. Gen. Warren D. Berry

Command Chief Master Sergeant
CMSgt. Jason L. France

Air Force Installation & Mission Support Center
Maj. Gen. Bradley D. Spacy
JBSA-Lackland, Texas

Air Force Life Cycle Management Center
Lt. Gen. Robert D. McMurry Jr.
Wright-Patterson AFB, Ohio

Air Force Nuclear Weapons Center
Maj. Gen. (sel.) Shaun Q. Morris
Kirtland AFB, N.M.

Air Force Research Laboratory
Maj. Gen. William T. Cooley
Wright-Patterson AFB, Ohio

Air Force Sustainment Center
Lt. Gen. Lee K. Levy II
Tinker AFB, Okla.

Air Force Test Center
Maj. Gen. David A. Harris
Edwards AFB, Calif.

National Museum of the US Air Force
John L. Hudson
Wright-Patterson AFB, Ohio

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Commander
Lt. Gen. Maryanne Miller

Vice Commander
Maj. Gen. Richard W. Scobee

Command Chief Master Sergeant
CMSgt. Ericka E. Kelly

4th Air Force
Maj. Gen. Randall A. Ogden
March ARB, Calif.

10th Air Force
Maj. Gen. Ronald B. Miller
NAS Fort Worth JRB, Texas

22nd Air Force
Maj. Gen. John P. Stokes
Dobbins ARB, Ga.

Air Force Space Command Hq. Peterson AFB, Colo.

Commander
Gen. John W. Raymond

Vice Commander
Maj. Gen. David D. Thompson

Command Chief Master Sergeant
CMSgt. Brendan I. Criswell

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Lt. Gen. David J. Buck
Vandenberg AFB, Calif.

24th Air Force/
Air Forces Cyber
Maj. Gen. Christopher P. Weggeman
JBSA-Lackland, Texas

Space & Missile Systems Center
Lt. Gen. John F. Thompson
Los Angeles AFB, Calif.

Air Force Network Integration Center
Col. Douglas S. Dudley
Scott AFB, Ill.

Air Force Spectrum Management Office
Col. David B. Bosko
Ft. Meade, Md.

USAF LEADERSHIP

MAJOR COMMANDS (Cont.)

Air Force Special Operations Command Hq. Hurlburt Field, Fla.

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Lt. Gen. Marshall B. Webb

Deputy Commander
Maj. Gen. Michael T. Plehn

Command Chief Master Sergeant
CMSgt. Gregory A. Smith

1st Special Operations Wing
Col. Thomas B. Palenske
Hurlburt Field, Fla.

24th Special Operations Wing
Col. Michael E. Martin
Hurlburt Field, Fla.

27th Special Operations Wing
Col. Stewart A. Hammons
Cannon AFB, N.M.

352nd Special Operations Wing
Col. Matthew D. Smith
RAF Mildenhall, UK

492nd Special Operations Wing
Col. Nathan Green
Hurlburt Field, Fla.

Air Mobility Command Hq. Scott AFB, Ill.

Commander
Gen. Carlton D. Everhart II

Deputy Commander
Maj. Gen. Thomas J. Sharpy

Command Chief Master Sergeant
CMSgt. Shelina Frey

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Lt. Gen. Giovanni K. Tuck
Scott AFB, Ill.

US Air Force Expeditionary Center
Maj. Gen. Christopher J. Bence
JB McGuire-Dix-Lakehurst, N.J.

Pacific Air Forces Hq. JB Pearl Harbor-Hickam, Hawaii

Commander
Gen. Terrence J. O'Shaughnessy

Deputy Commander
Maj. Gen. Russell L. Mack

Command Chief Master Sergeant
CMSgt. Anthony W. Johnson

5th Air Force
Lt. Gen. Jerry P. Martinez
Yokota AB, Japan

7th Air Force
Lt. Gen. Thomas W. Bergeson
Osan AB, South Korea

11th Air Force
Lt. Gen. Kenneth S. Wilsbach
JB Elmendorf-Richardson, Alaska

United States Air Forces in Europe Hq. Ramstein AB, Germany

Commander
Gen. Tod D. Wolters

Vice Commander
Maj. Gen. Timothy G. Fay

Command Chief Master Sergeant
CMSgt. Phillip L. Easton

3rd Air Force
Lt. Gen. Richard M. Clark
Ramstein AB, Germany

AIR FORCE GENERALS SERVING IN JOINT AND INTERNATIONAL ASSIGNMENTS

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Vice Chairman of the Joint Chiefs of Staff
Gen. Paul J. Selva
Pentagon

Chief of Staff, United States Air Force
Gen. David L. Goldfein
Pentagon

Chief of the National Guard Bureau
Gen. Joseph L. Lengyel
Arlington, Va.

US European Command

Commander, Allied Air Command
Gen. Tod D. Wolters
Ramstein AB, Germany

US Northern Command/NORAD

Commander
Gen. Lori J. Robinson
Peterson AFB, Colo.

US Pacific Command

Air Component Commander
Gen. Terrence J. O'Shaughnessy
JB Pearl Harbor-Hickam, Hawai

US Strategic Command

Commander
Gen. John E. Hyten
Offutt AFB, Neb.

US Transportation Command

Commander
Gen. Darren W. McDew
Scott AFB, Ill.

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Air Force District of Washington

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Maj. Gen. James A. Jacobson
JB Andrews, Md.

Air Force Operational Test & Evaluation Center

Commander
Maj. Gen. Matthew H. Molloy
Kirtland AFB, N.M.

United States Air Force Academy

Superintendent
Lt. Gen. Jay B. Silveria
Colorado Springs, Colo.

AUXILIARY

Civil Air Patrol/USAF

Commander
Col. Michael D. Tyynismaa
Maxwell AFB, Ala.

Civil Air Patrol

National Commander
CAP Maj. Gen. Joseph R. Vazquez
Maxwell AFB, Ala.

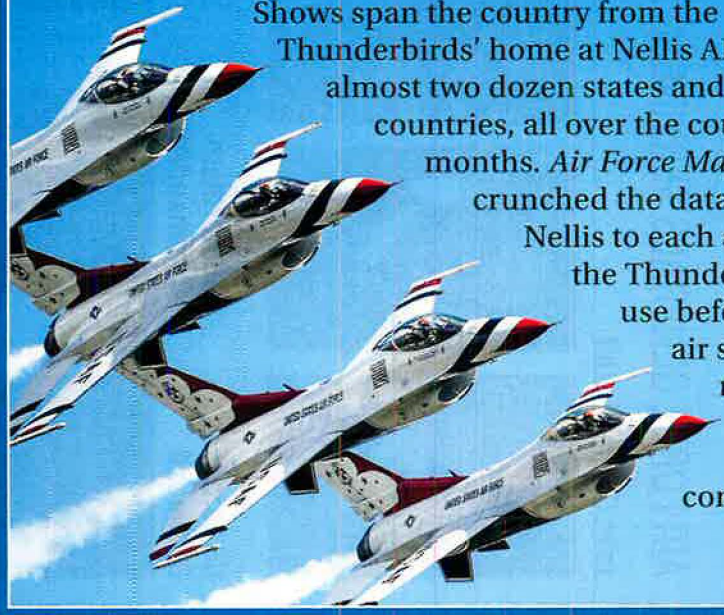
THUNDERBIRDS 2017

Infographic

By **Gideon Grudo,** Digital Platforms Editor

By the time its show season ends in November, the Thunderbirds team will have traveled a distance more than a third of the way to the moon.

Shows span the country from the Thunderbirds' home at Nellis AFB, Nev., to almost two dozen states and two other countries, all over the course of 10 months. *Air Force Magazine* crunched the data from Nellis to each airfield the Thunderbirds use before their air shows and reached a few interesting conclusions.



MILES COVERED

82,082 **Total miles** traveled (that's farther than flying three times around the planet)

4,424 **Farthest trip,** from RAF Fairford, UK, for the Royal International Air Tattoo, to Great Falls, Mont.

53 **Shortest trip,** from Atlantic City Arpt., N.J., to Dover AFB, Del.

3,157 **Average miles** traveled per trip

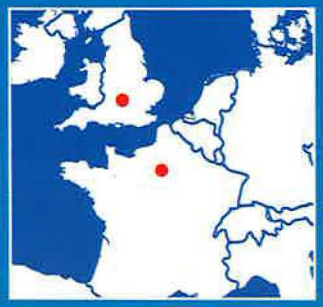
MILES UNCOUNTED

To calculate the distance of the Thunderbirds, *Air Force Magazine* focused on the actual distance between bases and airfields. Some distances that didn't make it into the calculus were miles traveled:

- During shows, which varies depending on weather
- Between airfields and shows, which are usually no more than five miles apart
- During media tours, of which there are about 80 in any given year
- During training sorties

UNITED STATES

EUROPE



26 **Trips** for the 2017 season

22 **States** hit during the show season

4 **Shows** in both Texas and Florida, which tie for highest multiple shows this season

There still are opportunities to see the Thunderbirds this year. Visit afthunderbirds.com.

Source: USAF public affairs

Photos: SSgt. Nieko Carzis, SSgt. Jason Couillard, Adobe Stock images

Turning Point at STALINGRAD

By John T. Correll

It was the biggest, most costly battle in the history of warfare. Hitler lost the strategic initiative there and never regained it.

Germany's ill-considered invasion of the Soviet Union foundered in the intense cold and snow, 10 miles short of Moscow, in December 1941. However, Adolf Hitler—who had assumed personal command of the German armed forces—refused to accept the failure of his winter operation as anything more than a temporary setback.

Hitler still hoped to knock the Soviets out of the war before Britain and the United States could be ready to invade occupied Western Europe. The Germans were deep into Russia, holding a 1,500-mile front running from the Baltic to the Black Sea. They occupied half of European Russia, an area encompassing some 40 percent of the Soviet population.

Soviet dictator Joseph Stalin was braced for another German attempt on Moscow in 1942, but Hitler had a different idea. The summer offensive would be aimed instead at the southern USSR, especially the oil fields in the Caucasus.

The Soviet supply line along the Volga River would be a secondary objective. Stalingrad—situated on the Volga River, 566 miles southeast of Moscow—was a large industrial city but of limited strategic significance. A German general said later that in June 1942, Stalingrad had been "no more than a name on a map."

The summer offensive was barely underway when Hitler changed the plan. In July, convinced that the Red Army was on the verge of collapse and that the Germans could seize the Volga easily, Hitler split his southern army group in two and shifted the priority to the advance on Stalingrad.

There was nothing to suggest that the biggest battle in the history of warfare would be fought there with the highest casualties ever recorded: combined losses of more than two million killed, wounded, or captured.

The battle for Stalingrad would rage on for 163 days, from August 1942 to February 1943, before the German Sixth Army, encircled and besieged, was forced to surrender. It was the turning point of the war on the critical Eastern front of World War II in Europe. The Germans lost the strategic initiative and they never regained it.

HITLER LOOKS SOUTH

Despite the substantial casualties in the Moscow campaign in 1941, German forces on the Eastern front in 1942 had 2.5 million troops, deployed as Army Groups North,

Top: Soviet soldiers fight at Stalingrad.
Inset: Adolf Hitler and Luftwaffe commander Hermann Goering. Hitler accepted Goering's assurances that German airlift could amply supply the troops at Stalingrad. It could not.

THE EASTERN THEATER 1942

Center, and South. The northern wing had Leningrad under siege and the central group was opposite Moscow, facing the main strength of the Red Army.

Casualties mounted through the spring in fighting in the Ukraine and Crimea. With their additional commitments in western Europe and the Mediterranean, the Germans were hard-pressed for reinforcements in the east and had to look to Romanian, Hungarian, and Italian divisions. These forces, less reliable than regular German divisions, were mostly assigned to duties on the flanks and in the rear.

The German summer offensive, designated Operation Blau or "Blue," was to be led by Army Group South with the main drive toward the oil-rich Caucasus. The oil fields at Maikop, Baku, and Grozny produced 80 percent of the Soviet Union's petroleum. Their capture would be a hard blow to Red Army sustainability. It would also solve Germany's own dire need for petroleum.

Less than a month after Operation Blau began, Hitler dismissed the commander of Army Group South, divided it into two smaller groups, and rewrote the orders. Group A would press on toward the Caucasus. Army Group B—now the main effort—would "thrust forward to Stalingrad to smash the enemy forces concentrating there, to occupy the town, and to block the land communications between the Don and the Volga [rivers]."

The cutting edge of Army Group B was the Sixth Army, commanded by Lt. Gen. Friedrich von Paulus, formerly a staff officer of considerable ability who had never before led combat troops in battle. He would be supported by Luftwaffe Air Fleet IV, commanded by Gen. Wolfram von Richthofen, a cousin of the legendary "Red Baron" of World War I.

Farther to the south, Army Group A enjoyed initial success, taking the small oil field at Maikop and on Aug. 21 raising the German flag on Mount Elbrus, the highest peak in the Caucasus. That marked the deepest extent of Germany's penetration of Soviet territory in World War II.

Stalin called upon the USSR's best soldier, Gen. Georgy K. Zhukov, to direct the overall Soviet defense and counteroffensive. Gen. Andrey I. Yeremenko was given command of the newly formed Stalingrad front. The primary defense of the city was assigned to the Sixty-Second Army under Gen. Vasily I. Chuikov.

In the Soviet system of dual authority, political commissars shared in the making of military decisions. Throughout the battle of Stalingrad, Yeremenko and Chuikov had the able support of political commissar Nikita Khrushchev, who went on to become leader of the Soviet Union in the 1950s, after the death of Stalin.

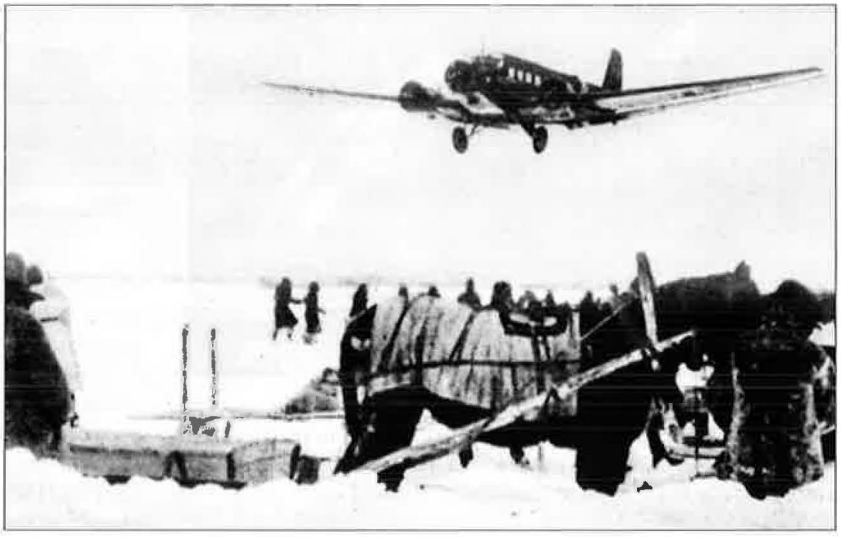
FROM THE DON TO THE VOLGA

The arena for the offensive was the steppes of southern Russia, a vast treeless plain divided by two great rivers, the Don and the Volga, which flowed from north to south.

Photos: RIA Novosti; German Federal Archives; Mike Tsukamoto/Staff illustration

Panzer II armored vehicles race accross the steppe from the Don River to Stalingrad.

German Lt. Gen. Friedrich von Paulus, left, and aides after their surrender to Soviet forces in Stalingrad.



A Ju 52 transport aircraft makes a successful sortie over terrain covered in deep snow. In the battle for Stalingrad, the Germans dropped supplies from the air for their encircled and doomed Sixth Army.

By late July, the Sixth Army was on the upper Don, but advancement was hampered by a shortage of fuel. It was not until Aug. 21 that the Germans pushed forward from their bridgehead on the eastward bulge of the Don. At that point, the rivers reached their closest proximity, separated by about 40 miles.

The panzers led the attack and were on the outskirts of Stalingrad on Aug. 23, which is generally regarded as the beginning of the battle. The Luftwaffe carpet-bombed the city and swept aside the Soviet air force, the Voyenno-Vozdushnye Sily (VVS).

Stalingrad, with 500,000 inhabitants, was on the west bank of the Volga. It had an unusual shape, 30 miles long but only five miles deep. The old town was in the southern part and a modern city section was in the middle. In the north were three huge factories: the Barrikady ordnance works, the Red October steel plant, and the Dzerzhinsky tractor factory, which had been converted to produce T-34 tanks.

There was little development on the eastern bank of the Volga because the river was a mile wide at that point. That provided a measure of security for Chuikov's command post and logistics facilities set up on that side, as well as for the artillery firing from there on the German second echelon.

The city, previously known as Tsaritsyn, was special to Stalin. It was renamed for him in 1925 in recognition of his spirited defense of it against the Cossacks and the White Army in 1918-20 during the Russian Revolution when he was Bolshevik commissar for the vicinity.

Casualty rates on the Eastern front were staggering. Both sides had taken losses in the hundreds of thousands in preliminary engagements through the summer on the steppe and they entered the main battle with reduced strength.

The initial defense of Stalingrad was thin. Zhukov, marshaling his forces for the master stroke to come, used the Sixty-Second Army as live bait to draw the Germans on. He gave Chuikov just enough reinforcements to stave off defeat.

T-34 tanks, so new that they were not yet painted, were driven into battle directly from the assembly line at the Dzerzhinsky plant by the workers who had assembled them. Batteries of 37 mm anti-aircraft guns were operated by young women volunteers who cranked the barrels down to zero elevation to fire at the oncoming panzers.

RATTENKRIEG

Within two weeks, the Germans controlled half of the city, but they were stuck with fighting in a style that favored Chuikov and the Russians. In the confines of Stalingrad, they could not bring their combined arms to bear in their customary blitzkrieg tactics.

The battle degenerated into hundreds of small encounters, building to building, sometimes room to room. The marshalling yards changed hands 14 times in six hours, won finally by the Germans when the last Soviet defender was killed. One sniper shot 224 Germans.

The bombing had turned much of the city into rubble, which worked to the advantage of the outnumbered and outgunned Soviets.

"The close-quarter combat in ruined buildings, bunkers, cellars, and sewers was soon dubbed 'rattenkrieg' ['rat war'] by the German soldiers," said historian Antony J. Beevor.

Most of the civilians were evacuated, but somehow, the city continued to function. The electricity was still on and the factories kept producing tanks and munitions.

By late October, some German battalions were down to 50 men, but the casualties were worse for the Soviets, who had lost the equivalent of seven divisions. Hitler was ebullient. "Where the German soldier sets foot, there he remains," he said. "You may rest assured that nobody will ever drive us away from Stalingrad."

Paulus, ever eager to please, promised Hitler on Oct. 25 that Stalingrad would be taken by Nov. 10. The Sixth Army controlled 90 percent of the city but could not dislodge the Soviets from a few square miles in several strips along the river bank, from which they stubbornly carried on the fight.

Paulus was in more danger than he knew. His force of 22 divisions was in a broad pocket at the tip of a narrow access route stretching back more than 100 miles to supply and support bases beyond the Don. This vulnerable salient was guarded on the flanks by the inept Romanian Third and Fourth armies. Zhukov was ready to spring his trap.

ENCIRCLEMENT

Undetected by German intelligence, Zhukov had been building up forces and stockpiling supplies and munitions. By the middle of November, he had gathered three army groups with a strength of almost a million, along with 1,000 tanks, 1,400 aircraft, and 14,000 guns. His plan was to envelop the Sixth Army in Stalingrad, encircle and destroy the Axis forces on the flanks, and cut off German Army Group A in the Caucasus.

Zhukov struck the northern flank at dawn on Nov. 19 and tore a 50-mile gap in the salient. Next day, he hit the southern flank with similar results. The encirclement was complete Nov. 21, with most of the Romanians in the two field armies dead or captured.

Paulus was penned up in a pocket 30 miles long and 20 miles wide with about 250,000 German troops and remnants of the Romanian divisions. He was 385 miles from his main supply base at Millerovo and 100 miles from the nearest German forces.

Army Group Don was formed Nov. 27 under Field Marshal Erich von Manstein as the Germans sought to salvage what they could from the situation and relieve the siege.

Nikita Khrushchev (left) and other Soviet Communist Party and military members—Gen. Alexi Kirichenko, Alexi Chuyanov, and Gen. Andrei Yeryomenko—study a map.

If Paulus had started promptly, he probably could have broken out of the pocket to link up with Manstein, but Hitler would not hear of it. "Sixth Army will stay where it is," he declared. "It is the garrison of a fortress, and the duty of fortress troops is to withstand sieges. If necessary they will hold out all winter, and I shall relieve them by a spring offensive."

Accounts vary—some of them written after the war when participants were protecting their reputations—but Manstein claimed that he had given orders for an attempted breakout. Paulus was obedient to Hitler and refused to make the effort.

In any case, Hitler and his inner circle believed that until the encirclement could be broken, the forces in the pocket could be sustained by the Luftwaffe with an airlift.

AIRLIFT

At his mountain retreat at Berchtesgaden Nov. 20, Hitler reacted to news of Zhukov's attack the previous day. Luftwaffe commander Hermann Goering was not there so Hitler asked Gen. Hans Jeschonnek, the Luftwaffe chief of staff, whether Stalingrad could be supplied by air. Jeschonnek replied without thinking it through. He told Hitler that airlift could do the job, provided both transport planes and bombers were used.

Jeschonnek soon realized that he had misspoken. Luftwaffe commanders in the field were unanimous in their judgment that what he promised was impossible. However, when Goering arrived, he assured Hitler that an airlift would indeed work, and thereafter Hitler refused to believe anything different. Goering did not involve himself in the details. After his boastful assurance to Hitler, he departed on his luxurious command train for a shopping spree in Paris.

Sixth Army's requirement was for 500 tons of supplies a day. The absolute minimum was 300 tons, which called for 150 fully laden Ju 52s landing in the pocket. Because of weather, the aircraft would not always be able to fly, so to keep up the average, the Luftwaffe would have to deliver at least about 500 tons on each good-weather day.

The entire Luftwaffe had only some 700 Ju 52s, and more than half of them were committed elsewhere. A landing in Tunisia between November 1942 and January 1943 siphoned off 250 of them. Transport aircraft, with a repair and refit priority below that of combat units, had an operational readiness rate between 20 percent and 40 percent. The Luftwaffe did not have nearly enough Ju 52s to meet the Sixth Army's needs.

Photos: German Federal Archives; German Federal Archives; Australian War Memorial; RIA Novosti

A Soviet soldier waves the Red Banner over the central plaza of Stalingrad in 1943.

A wounded German prisoner of war, left, is taken at the Battle of Stalingrad.

The Luftwaffe stripped the training program of aircraft and pilots and converted long-range transports and medium bombers, notably He 111s, for transport duty, but the combination could not meet the 500-ton requirement, or even 300.

During the seven weeks of the airlift, the Luftwaffe delivered an average of 117.6 tons of rations, fuel, and ammunition per day, and substantially less than that at the end, when some of the supplies were airdropped rather than landed.

The main base for the Ju 52s was at Tatsinskaya, about 160 miles west of Stalingrad, and the He 111s flew from Morozovskaya, which was a little closer. Inside the pocket, they used half a dozen landing fields, of which only one was equipped to handle large operations. During the airlift, 266 Ju 52s and 165 He 111s were lost to Soviet fighters and flak, others to accidents on the cratered and snow-clogged airstrips.

SURRENDER

Zhukov poured more troops into the battle and steadily tightened his pressure on the pocket. Radio Moscow broadcast the message that "every seven seconds, a German soldier dies in Russia."

In December, Manstein's Army Group Don drew within 30 miles of the perimeter, but Paulus would not move. Manstein was driven back by Zhukov's counterattack on Dec. 22. As the Soviets advanced, the Luftwaffe abandoned Tatsinskaya and Morozovskaya. The Ju 52s fell back to Salsk.

The airstrips in the pocket were overrun, one by one, in January, and the Sixth Army was left short of everything, including food. Hitler vehemently rejected any notion of surrender.

The Soviets split the Sixth Army into two parts on Jan. 26. Paulus, with the southern part, set up headquarters in a basement beneath a department store on Red Square in Stalingrad. On Jan. 31, Hitler promoted Paulus to field marshal. No German field marshal had ever surrendered. Hitler expected that Paulus would commit suicide rather than give up, thereby preserving German honor as Hitler understood it.

To Hitler's fury, Paulus surrendered the same day, although in a roundabout way. His chief of staff negotiated the arrangements with a Russian officer while Paulus remained in an adjoining room. Marched away into captivity, Paulus claimed that he had not surrendered; he had been taken prisoner. Gen. Karl Strecker surrendered the northern half of Sixth Army Feb. 2.

Of the 249,000 Germans and Axis allies inside the pocket in December, 42,000 sick and wounded—along with specialists the Germans could not afford to lose—had been flown out. Some 85,000 others were killed, and many had been captured individually or in groups. Of the 91,000 who surrendered at the end of the battle in February, most died in forced marches across Russia or in prison camps. Only some 5,000 ever returned to Germany, and that was years later.

Paulus, denounced by Hitler as a traitor, was a strange case. In August 1944, he signed an appeal for Germans on the Eastern front to surrender. In 1946, he was brought to the Nuremberg trials to testify against the Nazi leaders. He was held in Russia until his release in 1953, after which he lived in Dresden in communist East Germany. He died in 1957, still trying to explain himself to anyone who would listen.

THE HERO CITY

No one knows for sure what the total casualties were for the Stalingrad campaign. The numbers in official reports of killed, wounded, and captured are unreliable and in conflict with each other. It is not always clear what is being counted and some claims are transparently spurious.

Estimates range from a low of about two million—850,000 Axis and 1,130,000 Soviet—to a high of four million—1.5 million for Germany and its allies and 2.5 million for the Soviets. There is no record of how many civilians were killed and injured.

The effort to take the oil fields failed. Army Group A barely managed to escape from the Caucasus with the Red Army fast closing in behind. The strategic initiative passed to the Soviets and the Germans began their long retreat, leading up to the fall of Berlin in 1945.

"Stalingrad was the turning point in the war on the Eastern front and the Eastern front was the main front of the Second World War," said historian Geoffrey Roberts. "More than 80 percent of all combat during the Second World War took place on the Eastern front."

Medals were awarded to all 707,000 surviving Russians who had taken part in the battle. In 1945, Stalingrad was designated a "hero city" of the Soviet Union.

In 1961, during Khrushchev's de-Stalinization program, Stalingrad was renamed Volgograd, but in 2004, President Vladimir Putin had the hero city plaque in the Kremlin modified to again read "Stalingrad."

In 2013, the Volgograd city council voted to use the name "Stalingrad" on six commemorative days, including Feb. 2, when the last Germans in the pocket surrendered in 1943, and May 9, on which Russians observe the victory in Europe in 1945. ✪

John T. Correll was editor in chief of *Air Force Magazine* for 18 years and is now a contributor. His most recent article, "Last Tango in Potsdam," appeared in the September issue.

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We are YOUR Air Force Association
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F-100 pilot Lt. Harris Kirk races for the cockpit during an alert exercise at a USAFE base in West Germany.

The One-Way Nuclear Mission

During the Cold War, some Air Force fighter pilots had more firepower than range.

By John Lowery

President Dwight D. Eisenhower, upon taking office in 1953, officially recognized the tremendous threat to America's European allies by the Soviet Union's massive conventional military forces. NATO faced possible invasion by 175 active Soviet divisions, with another 125 reserve divisions deployable within a month. Neither the US nor the war-weary NATO countries could afford to rebuild armies that could match the Soviet numbers.

Eisenhower decided that the only reasonable counter was to equip Air Force jet fighters based in Europe with "tactical" nuclear bombs. These could be targeted at the massed Soviet forces and infrastructure, offering either a deterrent or, failing that, a way to effectively fight a third world war.

The advantage of this approach was that the US already had a significant inventory of atomic bombs, while Russia, which had detonated its first atomic bomb in 1949, did not (yet).

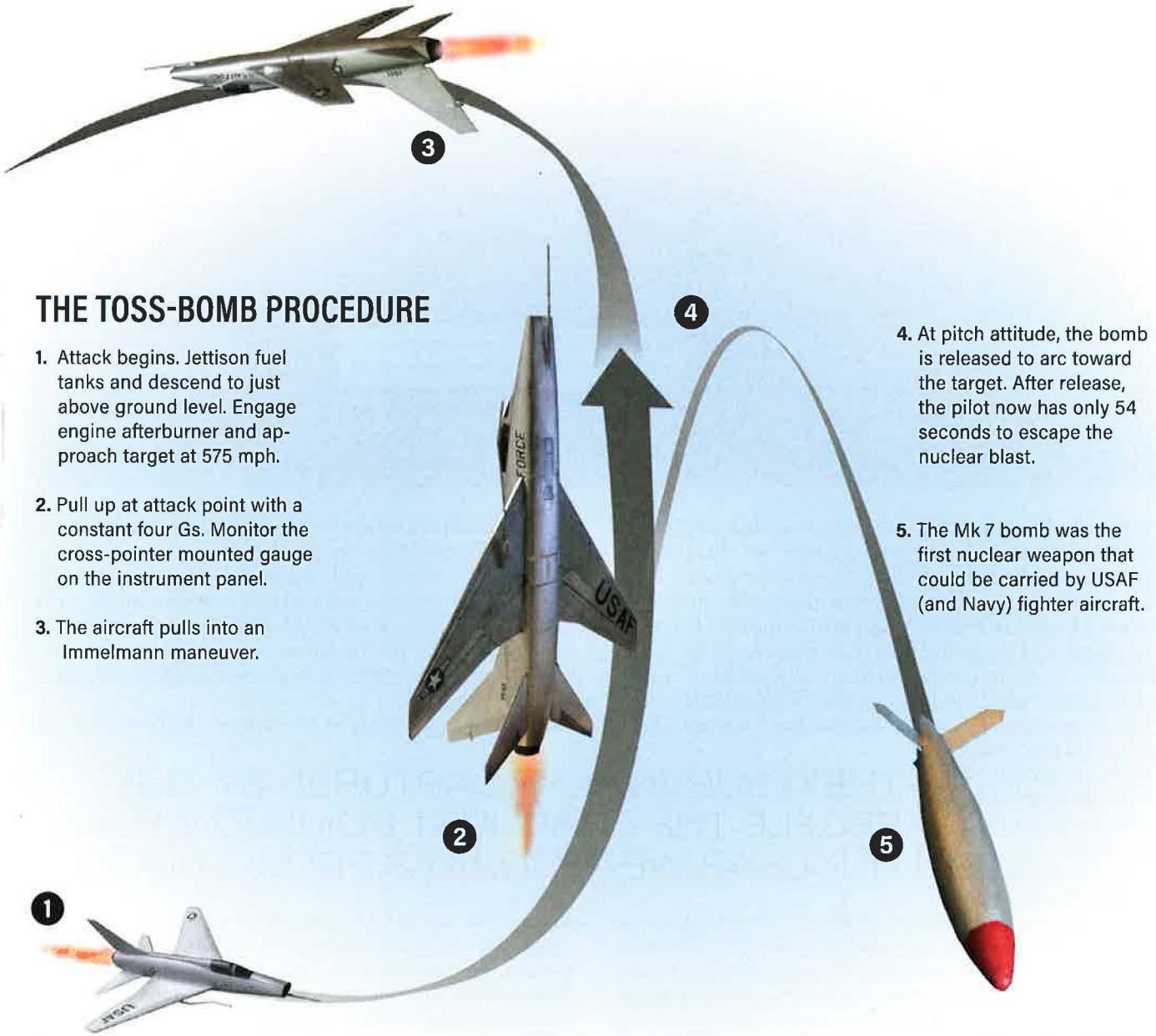
A principal target was the "Fulda Gap," a logical geographical highway for massive Soviet armored formations to pour into West Germany. A bottleneck there could buy valuable time for NATO to respond to an invasion.

The North Atlantic Council had previously approved this strategy for NATO in September 1950, with tactical nuclear weapons deemed essential. The Air Force responded by forming a Quick Reaction Alert, later termed Victor Alert, that paired jet fighters with nuclear weapons. (See "Victor Alert," March 2011.)

The mission fell first to American fighter pilots, later joined by those in allied air forces, who planned and prepared for predominantly one-way nuclear strikes against massed Soviet forces. A few targets were close enough to NATO bases that a return trip was feasible. But for most, the limited range of the fighters meant they would only have enough fuel to escape the nuclear blast, bail out, then escape and evade back to friendly territory.

LARGELY UNSEASONED

Soon after Eisenhower's decision, the new F-100C Super Sabre began replacing F-84G fighter-bombers and F-86 interceptors throughout Europe. It was larger, faster, and had longer range than the jets it replaced. The "Hun" was delivered to fighter wings in England, West Germany, Spain, Italy, and



THE TOSS-BOMB PROCEDURE

1. Attack begins. Jettison fuel tanks and descend to just above ground level. Engage engine afterburner and approach target at 575 mph.

2. Pull up at attack point with a constant four Gs. Monitor the cross-pointer mounted gauge on the instrument panel.

3. The aircraft pulls into an Immelmann maneuver.

4. At pitch attitude, the bomb is released to arc toward the target. After release, the pilot now has only 54 seconds to escape the nuclear blast.

5. The Mk 7 bomb was the first nuclear weapon that could be carried by USAF (and Navy) fighter aircraft.

Turkey. There was also a training group at Sidi Slimane AB, Morocco, and there was an F-100C-equipped air defense squadron in the Netherlands.

The European-based fighter wings were tasked to carry the new Mk 7 nuclear bomb. Their targets were airfields, railroad yards, radar sites, even major bridges—anything that would help slow or stop the Soviet juggernaut lined up against NATO's forces.

During the late 1950s to early 1960s, the cadre of F-100C fighter pilots was largely unseasoned. Predominantly, they were 23-year-old, recent graduates of flight school who had received minimal type training in the F-100. With about 250 to 300 flying hours, flying an airplane with demanding aerodynamic characteristics—particularly when configured for nuclear war—they suffered a very high accident rate.

In the nuclear mission configuration the specially modified F-100Cs were programmed to carry the Mk 7 weapon on the left intermediate pylon station, a 200-gallon fuel tank on the left outboard wing station, a similar fuel tank on the right inboard wing station, and a larger 275-gallon tank on the right intermediate station. Still, despite all the extra fuel, the Super Sabre's combat radius was limited.

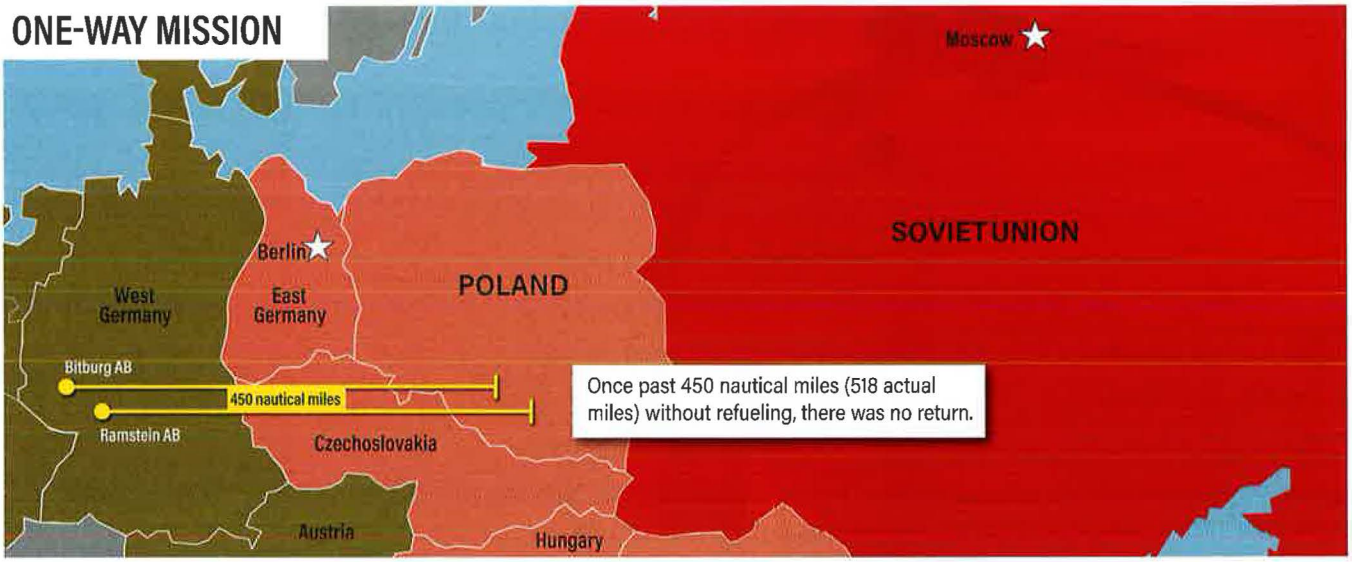
Targets closer than 450 nautical miles (518 miles) from home base did offer a potential round-trip mission. These short-range targets also allowed up to 20 minutes of loiter time in the target vicinity, while the National Command Center awaited a presidential order declaring H hour, (weapon delivery time). Still, a delay in declaring H hour while the fighters were en route meant a one-way mission. Yet, the pilots accepted this as part of the job.

Some targets were more than 1,000 miles away. One of the more distant targets was a Soviet air defense center located about 60 miles southwest of Kiev, Ukraine. Part of the attack route was to be flown at high altitude to Vienna; once inbound to the target the pilot was to turn at a large Danube River bridge and descend to 50 feet for a low-level dash to deliver the weapon.

While weapons and delivery methods evolved over time, a primary technique for the F-100C was the Low Altitude Bombing System (LABS) over-the-shoulder, toss-bomb pro-

Photo: USAF. Staff illustration: Mike Tsukamoto and Betsy Moore

SOME TARGETS WERE MORE THAN 1,000 MILES AWAY.



cedure. As he approached the target, the pilot would have already jettisoned his empty wing fuel tanks, and at a designated point he descended to 50 feet above ground level. Then, with the engine's afterburner engaged for maximum thrust, he raced toward the target at 575 mph (500 knots). At the proper point he pulled up with a constant four Gs into an Immelmann maneuver (a half loop). Meanwhile, he monitored the aircraft's track to the target and his applied G force with a cross-pointer gauge mounted on the Hun's instrument panel. At a pitch attitude approaching vertical the LABS released the bomb and it would arc toward the target.

Once the weapon released the pilot had just 54 seconds (about 10 miles at maximum speed) to get clear of the nuclear blast. As the bomb fell through 1,500 feet, it would radar-detonate, to maximize its destructive shock wave. Meanwhile, the pilot faced the threat of the intensely bright flash from the nuclear explosion, which could potentially blind him. To mitigate this, pilots were issued eye patches to cover one eye, to have one functional if the other was blinded by the flash.

At this point in the nuclear mission, pilots had little fuel left, and there was a good chance their home base would have already been destroyed in a retaliatory Soviet strike. Then too, there were bound to be other American-launched nuclear strikes in the area, delivered by other fighters or from a USAF TM-61A Matador missile with a W5 nuclear warhead (replaced in 1962 by the TM-76B Mace surface-to-surface missile). These so-called "pilotless bombers" were to be launched from bases in West Germany by USAF's 701st Tactical Missile Wing.

Though there were some nearby areas designated as friendly for evading pilots, the (optimistic) escape and survival plan devised by the young pilots called for turning north toward neutral Sweden or Finland and continuing until their fuel ran out. If they didn't reach neutral territory, their survival, if captured by the people they had just bombed with a nuclear weapon, was problematic.

BLUE BOY

Training for nuclear warfare began with Air Force-wide classroom instructions for fighter pilots on how the Mk 7 bomb was constructed, armed, and detonated. This included training in weapon delivery techniques and use of the instrument panel-mounted cross-pointer gauge.

A special concern with Super Sabres during nuclear training flights was the jet's heavy gross weight takeoffs. The external configuration consisted of the three wing pylon fuel tanks, plus a "Blue Boy" practice nuclear weapon, referred to as a "shape." It was identical in size and weight to the actual Mk 7 nuclear bomb.

Great care was required for training flights without the shape, since the aircraft retained the three asymmetrically wing-mounted pylon fuel tanks. Known as the 1-E3 configuration, the extra fuel in the pylon tanks provided increased flight training time for the pilots, while the empty weapons station remained available for immediate loading in case of a sudden nuclear alert.

> THEIR SURVIVAL, IF CAPTURED BY THE PEOPLE THEY HAD JUST BOMBED WITH A NUCLEAR WEAPON, WAS PROBLEMATIC.

In Europe, a typical nuclear training mission involved flying a practice low-level mission that mimicked the route to a real target. Each fighter squadron maintained a series of mission training folders with such mock routes. These missions were flown at 415 mph (360 knots) and at 500 feet above ground level or lower—considered legalized "buzzing" by the pilots.

With the typical poor European flying weather, however, these low-level training missions led to many accidents and near-accidents. In 1957, the 53rd Tactical Fighter Squadron based at Ramstein AB, West Germany, lost two pilots in a single year. In 1959, the 36th TFW based at Bitburg AB, West Germany, lost a dozen of its F-100Cs in the last six months of the year.

Accidents or close calls included narrowly avoiding a church steeple suddenly emerging from the mist, or flying into hilltop trees. Pilots who managed to eject were often killed anyway. In one incident, a pilot hit trees on a hill near Luxembourg and severely damaged the aircraft. He managed to land the jet, but it was so extensively damaged it had to be scrapped.

Another problem occurred during intense maneuvering with the 1-E3 configuration. During an attempted hard left break, the unevenly arranged pylon tanks induced yaw that

An airman with a working dog guards a Matador nuclear missile launching site in West Germany on May 8, 1959.

could cause a sudden snap out of control to the right. Consequently, mock dogfights with the three-tank configuration were prohibited. Still, the young pilots often did it anyway—with predictable results.

There were maintenance problems, too. When training flights included the Blue Boy—which like the Mk 7, weighed 1,680 pounds—the shape's weight, coupled with that of the jet fuel in the left wing pylon tank, placed heavy stress on the left landing gear tire. As a result, tires often failed on takeoff, causing numerous major accidents. Although foreign object tire damage from nuts, bolts, and screws on the ramp or runway was sometimes involved, often the primary culprit was the crew chief's failure—during predawn, preflight inspections—to increase tire inflation for a heavy configuration.

GREEN LIGHT MEANS ARMED

On their alert duty day, four pilots from each of the various fighter squadrons began Victor Alert at midnight. At Ramstein Air Base, the pilots of the 53rd TFS often arrived at their assigned aircraft directly from a late evening happy hour at the Officer's Club, since none of them actually thought they'd ever be launched. Pilots and crew chiefs alike drove their personal cars to the revetments where their nuclear-armed aircraft were parked. While there was an armed guard nearby, he was likely a teenaged airman, kept alert investigating the noises of deer and wild boar in the forest behind the squadron revetments.

The alert pilots would start the engine and put the core of the nuclear weapon into position, verified in the cockpit by a green "armed" indicator light. The procedure was then reversed, the indicator showing a red "disarmed" light. After this procedure, the aircraft's engine would be shut down, and after securing the aircraft, pilots would drive their automobiles to the alert crew trailer, don their G-suits and sidearms, and lie down on cots or a sofa and go to sleep.

Gary Barnhill, then a pilot and a lieutenant, related that these relaxed nuclear alert procedures were changed sometime in 1959, after he overheard a visiting general ask an alert pilot if he thought he could start the aircraft without a crew chief, taxi out, and take off on his own. After thinking about it, the pilot replied that he could, indeed—and conceivably start World War III on his own.

Shortly thereafter, a very detailed "two-person concept" was mandated. This procedure required the presence of armed guards equipped with dogs at the alert aircraft. They were to have eight-by-10 headshot photos of the alert duty pilot and the crew chief.

When approaching or working around a nuclear weapon, only the pilot on duty was allowed access to the aircraft's cockpit. He had to know the daily password and be accompanied by the ship's crew chief or armament technician. The procedure of the pilot arming and then disarming the Mk 7 bomb also was discontinued.

Supreme Headquarters Allied Power, Europe, Commander Gen. Lauris Norstad personally visited Ramstein to verify implementation of these more stringent security procedures.

The service of the F-100Cs in Europe was relatively brief, replaced at first by the improved F-100D. Newer nuclear weapons also were acquired, such as the more streamlined Mk 28 and Mk 43 thermonuclear (hydrogen) bombs. Then, in May 1961 the electronically sophisticated F-105D Thunderchief, designed specifically for the tactical nuclear mission, began replacing the Super Sabres. The Thunderchief provided its pilots an all-weather capability, but for some targets, a still-iffy round-trip mission capability. The weapons typically carried were the Mk 28 or Mk 43, mounted in the F-105's internal bomb bay.

The Air Force's fighter-delivered nuclear mission has never fully gone away in Europe, rising and falling in emphasis with the ebb and flow of the Soviet, and later Russian, threat. Today, "dual capable" USAF F-16 and F-15E fighters are able to deliver tactical nuclear weapons if called on. An updated version of the B61 nuclear bomb is under development, and when ready, it will be certified for carriage on the F-35A Lightning II.

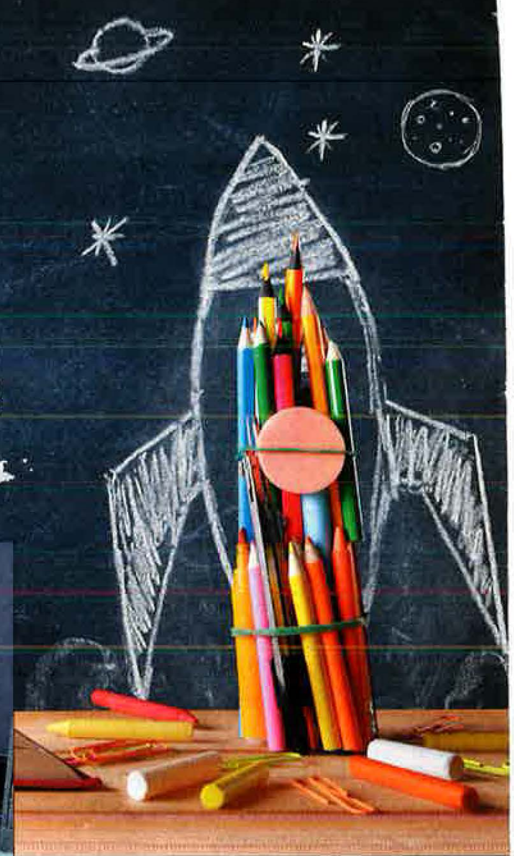
Testing of the F-35 with a nuclear shape has been underway since 2016, and Air Force plans call for the F-35 to be capable of fulfilling the nuclear mission in Europe soon after the type beds down at RAF Lakenheath, UK, probably in the early 2020s. ✪

John Lowery is a veteran Air Force fighter pilot and freelance writer. He is author of five books on aircraft performance and aviation safety. His most recent article for *Air Force Magazine*, "Survival and Tragedy in Alaska," appeared in October 2014.

Staff illustration: Mike Tsukamoto and Betsy Moore. Photo: USAF

TOP TEACHER

Ben Barkey is AFA's National Teacher of the Year.



Ben Barkey guides a CyberPatriot team at Washington STEM Academy, Warsaw, Ind., in 2015. The Lawrence D. Bell Museum Chapter in Indiana nominated him as AFA's National Teacher of the Year.

By Greg Ennis

Teacher. Coach. Leader. All of these words describe the Air Force Association's National Teacher of the Year for 2017, Benjamin R. Barkey.

At the time of his nomination this spring, he was the assistant principal at Warsaw Community High School in Indiana, leading development of its science, technology, engineering, and math (STEM) programs.

He had already been a middle school teacher for science, math, and robotics; a STEM instructional coach (teaching teachers to teach STEM, as he describes it); and a coach for school activities ranging from golf to LEGO robotics.

More reasons for his selection as AFA's No. 1 teacher? How about these:

#1 ACHIEVEMENT

Through a yearlong process, Barkey led Washington Elementary School to become one of the first certified STEM schools in Indiana. He considers this his top achievement. As he wrote in his Teacher of the Year essay for AFA, "STEM is no longer just content to our school community; it is an educational style, a delivery method, a way students want to learn. ... It's our present day world."

With a STEM friendly environment, his school—now called Washington STEM Academy—was able to keep students engaged and to move beyond just preparing for standardized testing.

#1 TEACHING TACTIC

Barkey said his best STEM teaching tactic has been to make connections with the community. "This tactic is vital in connecting teachers and students with STEM education," he wrote in an email.

Warsaw is known for its orthopedic industry, he said, and a lot of his students' parents work in that sector. "We intentionally created STEM units that focused on orthopedics. Warsaw is also blessed with a lot of lakes and streams, so we also created a lot of units focusing on that topic."

#1 TEACHING MOMENT

Asked to name a standout moment from 15 years as a STEM advocate, Barkey answered:

CyberPatriot, 2015.

His first group of teams that year was a challenge. "At the time, I knew very little about CyberPatriot and how to teach students computer IT skills," he explained. Barkey wasn't so sure his five teams—only "moderately prepared"—would be up to the task and figured they would quit rather than finish the six-hour competition.

"I underestimated those students," he admitted. "In education, we are worried about students being fatigued after a short time. CyberPatriot blew that theory out of the water."

Greg Ennis was AFA's 2016 National Teacher of the Year and is a Tennessee Valley Chapter, Ala., member. This school year, **Benjamin Barkey** became principal of Madison Elementary School in Warsaw, Ind. His goal is to guide it toward becoming a STEM certified school.

Randy Heinemann/Adobe Stock

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By June L. Kim, Associate Editor

AFA CHAPTER NEWS

TENNESSEE VALLEY CHAPTER

In Alabama, the **Tennessee Valley Chapter** helped create an "aviation field trip" for 19 students from Boaz Intermediate School, reported South Central Region President Russell V. Lewey. The chapter banded together with a number of other organizations to send them to the Huntsville Airport where students "experienced first-hand the joy that aviation can bring," he said.

2017 Chapter Teacher of the Year Angie Graves and Lynn Kohler, a previous chapter and state teacher of the year, made the arrangements with FlyQuest, a Community Partner, to plan the trip, said Lewey.

Mike Holmes, a Hurricane Hunter with NOAA, describes the team's mission to students from Boaz Intermediate School during a field trip to Huntsville Arpt., Ala.

The kids on the trip were part of a Civil Air Patrol Aerospace Connections in Education program.

The chapter gave $300 to help cover expenses, and five members from the chapter—Daryl Carpenter, Timothy Davis, Lewey, John Phillip, and Lee Pugh—volunteered their time.

Students visited the control tower, planned a flight, and flew in a simulator, said Lewey. They also got to hear from Hurricane Hunters of the National Oceanic and Atmospheric Administration.

"The team was in town conducting storm and tornado research [and] the students heard what it is like to fly into a hurricane and then see NOAA's P-3 aircraft," said Lewey.

SOUTH CENTRAL REGION

Three students from AFA's South Central Region had the opportunity to attend Space Camp at the US Space and Rocket Center in Huntsville, Ala., this summer, said Region President Russell V. Lewey.

Sarah Israel, Jamie Schultz, and Cooper Browning were recipients of scholarships that were offered to the children of enlisted airmen.

Israel was the winner of the South Central Region scholarship, while the **Maj. Gen. Dan F. Callahan Chapter** and the **Gen. Bruce K. Holloway Chapter** (both in Tennessee) sponsored Schultz, and the **Montgomery Chapter** in Alabama sponsored Browning. The scholarship covers registration and tuition.

This is the second year AFA's South Central Region sent students to Space Camp, said Lewey.

FAIRBANKS MIDNIGHT SUN CHAPTER

Members of the **Fairbanks Midnight Sun Chapter** (Alaska) recently attended a Chamber of Commerce meeting in downtown Fairbanks where Chapter President Luke Hopkins gave a presentation about AFA. The head of 11th Air Force, Lt. Gen. Kenneth S. Wilsbach, was guest speaker and he spoke on updates about his command and the Northern Edge Exercise, which is a large, joint military training exercise that Alaskan Command (ALCOM) hosts annually and concluded in the spring.

More than 30 percent of Alaska's economy comes from the military, so the COC annually invites the commander of ALCOM for a military update, said Steven R. Lundgren, AFA's National Treasurer and chapter member. The Fairbanks Midnight Sun Chapter also sponsors the annual Fairbanks Chamber of Commerce Military Appreciation Banquet, he said.

RICHARD I. BONG CHAPTER

A team of student engineers from the University of Minnesota Duluth raked in $100,000 for its engineering program by winning a national development contest, said Lt. Col. Bryan L. Graddy, president of the **Richard I. Bong Chapter** in Minnesota.

The Air Force Research Laboratory hosted the contest, and students from the Air Force Academy, West Point, and Johns Hopkins University, as well as University of Minnesota Duluth participated. The purpose of the competition was to develop an unmanned vehicle that would support USAF combat controllers and pararescuemen, according to Graddy.

Photo: John Phillip

Graddy is the AFROTC commander at the university and had contact with some of the student engineers. "The student team gave us a briefing and demonstrated their machine," he said.

The chapter hopes to support next year's team with some local AFA sponsorship, he said.

CHUCK YEAGER CHAPTER

The **Chuck Yeager Chapter** (W.Va.) hosted its annual drill competition at Parkersburg South High School, in Parkersburg, W.Va. The top champions hailed from Knox County Career Center, Mount Vernon, Ohio; Pine-Richland High School, Gibsonia, Pa.; and Cathedral Preparatory School, Erie, Pa.

Students from West Virginia came from Parkersburg, South Charleston High School, and Nitro High School.

LT. COL. B. D. "BUZZ" WAGNER CHAPTER

Two artists paid tribute to famed WWII hero Lt. Col. Boyd D. Wagner in Pennsylvania, bringing it to the attention of *The Tribune-Democrat.* The namesake of the **Lt. Col. B. D. "Buzz" Wagner Chapter** was honored during a June chapter meeting by Thomas Bichko and Marcene Glover.

Bichko created two bronze busts, based on photographs of Wagner, and donated them to the chapter.

Glover, commissioned by AFA member Conway Jones, named her oil painting "Flight of Glory" and depicted Wagner and a P-40 Warhawk. Jones arranged for the painting to be hung in the Office of the Secretary of the Air Force in the Pentagon.

"How cool is that?" asked chapter member Douglas Lengenfelder, according to the newspaper. "That is quite an honor."

DONALD L. PETERSON (1944-2017)

Retired Lt. Gen. Donald L. Peterson, head of the Air Force Association from 2002 to 2007, died July 3, at the age of 76, after a long illness.

Peterson concluded his 35-year Air Force career in 2001, as deputy chief of staff for personnel, having previously been the assistant deputy chief for air and space operations, director of NORAD, and commander of the Cheyenne Mountain Operations Center.

A 1966 graduate of Texas A&M, he received his commission through ROTC and completed pilot training in 1967. His flight experience was highly varied,

Peterson

having logged over 4,000 hours in trainers, tankers, intelligence platforms, fighters, and strike aircraft. He flew the F-4E in Southeast Asia during the Vietnam War, amassing 597 combat hours. He was awarded the Distinguished Flying Cross for action in 1972-73 as an F-4E flight lead, and he was an F-15 pilot in West Germany during the height of the Cold War. He commanded a tactical fighter squadron, tactical fighter wing, and flying training wing.

Peterson became executive director of AFA in August 2002; four years later, that position's title was changed to President-CEO. Peterson directed AFA's professional staff and managed the operations of AFA and its then-affiliate, the Aerospace Education Foundation. As AFA President-CEO, he was also publisher of *Air Force Magazine.*

Retired Gen. Larry O. Spencer, current AFA President, said, "To many in AFA, he was both a friend and mentor. He will be sorely missed by the AFA family he served so well." —John A. Tirpak

BARKSDALE

This Life, This Death

He was a true Southern man, born and reared in Goshen Springs, Miss., a tiny hamlet in the center of the state. He had one brother and three sisters and was part of a family whose tradition of arms, it was said, dated back to the Revolutionary War.

Throughout his life, everyone called him "Hoy." What rings out in the Air Force today, however, is his last name—Barksdale.

In 1914, Eugene Hoy Barksdale left the family farm to enter Mississippi State College (now University). The Great War in Europe had just begun. When the US entered in April 1917, Hoy was only a junior, but he packed his bags and left, never to return.

First stop was an Army officer training camp in Arkansas. He was about to receive a commission but instead took a life-changing gamble. He forsook officer status, volunteered for aviation, and enlisted—as a private—in the Army Signal Corps.

At the Army School of Military Aeronautics in Austin, Texas, he completed ground school. On Sept. 18, 1917, he and other pilots-in-the-making embarked for England. There, Barksdale received flight training from Royal Flying Corps pilots, the world's most experienced combat fliers. Barely a year after he enlisted, he was commissioned as a second lieutenant on May 26, 1918. He was placed on Active Duty and assigned to RFC No. 41 Squadron, a pursuit unit at Alquines, France.

Barksdale participated in the Somme and Amiens offensives of August 1918 and was wounded on Sept. 2, 1918, during the Cambrai Offensive. The RFC credited him with downing three German aircraft in air combat. He helped destroy five more on the ground.

Barksdale left the RFC on Oct. 15, 1918, for the new US 25th Aero Squadron. The move effectively ended Barksdale's war, however. The 25th did not go into action until Nov. 10—the day before the armistice. Within six months, he was back in the US.

Barksdale had impressed many. One was Lt. Ira C. Eaker, a friend from basic training who, based on Barksdale's exploits, signed up to be an Army pilot. Another was Lt. Jimmy Doolittle, a close friend with whom Barksdale worked after the war.

Barksdale did not leave the Army at war's end. He became a noted test pilot and set several flight records. In March 1924, he and his navigator flew a DH-4B Liberty 400, instruments only, from McCook Field, Ohio, to Mitchel Field, N.Y.—a record distance.

Barksdale was killed on Aug. 11, 1926, while he was testing a Douglas O-2 observation aircraft over McCook. He tried to bail out when the O-2 entered an uncontrolled spin, but his parachute lines were severed by the wings and he fell to his death. He was buried with full military honors in Arlington National Cemetery.

The Air Corps in 1933 honored the famous Mississippi flier by bestowing his name on its newest base—Barksdale Field, La., renamed Barksdale Air Force Base in 1948. Today, it is the home of Air Force Global Strike Command and headquarters of Eighth Air Force—"the Mighty Eighth"—and the B-52s of 2nd Bomb Wing. It has been in continuous operation for more than 80 years.

1/ Lt. Eugene Hoy Barksdale. 2/ B-52s take off from Barksdale AFB, La., for a SAC readiness exercise in 1986.

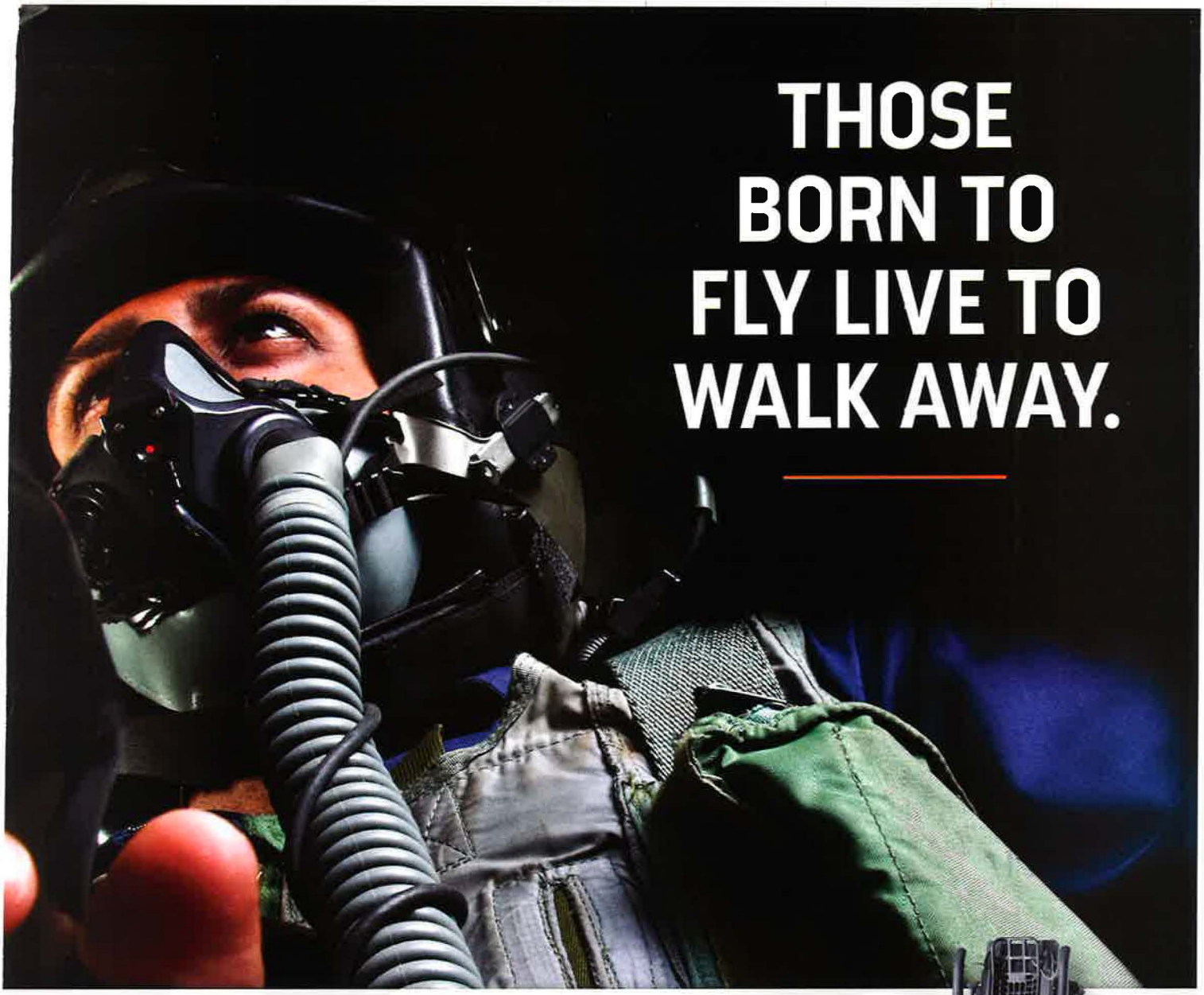
EUGENE HOY BARKSDALE

Born: Sept. 5, 1896, Goshen Springs, Miss.
Died: Aug. 11, 1926 (flying accident), Dayton, Ohio
College: Mississippi State College (now Mississippi State University)
Service: Army Signal Corps (Aviation), Army Air Service, Air Corps
Occupation: US Military Officer
Assigned: Royal Flying Corps, 1917-18
Main Era: World War I
Years Active: 1917-26
Combat: Western Front
Final Grade: First Lieutenant
Honors: Purple Heart
Famous Friends: Jimmy Doolittle, Ira C. Eaker

BARKSDALE AIR FORCE BASE

State: Louisiana
Nearest City: Bossier City
Area of Main Base: 34.4 sq mi/22,000 acres
Status: Open, operational
Opened: (as Barksdale Field) Feb. 2, 1933
Renamed: (Barksdale Air Force Base) Jan. 13, 1948
Former Owners: Strategic Air Command, Air Combat Command
Current Owner: Air Force Global Strike Command

Photos: San Diego Air & Space Museum; SSgt. Phil Schmitten



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