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Journal of the Air Force Association

AIR FORCE MAGAZINE

75th Anniversary Pearl Harbor

Maj. Troy Gilbert

Maintainer Misery

Keeping Peace in Korea

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The 2017 Statement of Policy

The future holds uncertainty, the potential for aggression, and in too many spots around the globe, conflict and war. To protect American interests, the Air Force must be technologically advanced, lethal, and with the capacity to meet challenges anywhere in the world. Current adventurism by both Russia and China is evidence of the diminishing currency of credible American deterrence.

The core functions of the Air Force have remained constant. Air Force capabilities are the enabling foundation of modern joint and coalition force operations. The Air Force is an indispensable partner in the entire spectrum of joint operations.

However, the Air Force is at a critical turning point. Adapting to the rapidly changing and insatiable demand for ISR, USAF built a 35,000-person ISR enterprise over the last 10 years, while simultaneously cutting the Air Force by 50,000 people—essentially an 85,000-person cut to other critical Air Force mission areas. Moving people from one mission area to fill another critical area is no longer possible. The Air Force will be short 700 fighter pilots by the end of 2016 and the number is expected to increase to a thousand a few years later. Currently, pilots receive only half the flight time and operational exercises they would have received decades ago. This is a readiness and morale issue that is not acceptable.

At the same time, America's potential adversaries are growing bolder and rapidly closing the technological superiority gap the Air Force has enjoyed for generations. Adversary integrated air defense systems (IADS) have created regions where older fourth generation airborne systems, like the F-15 and F-16, are limited. Adversary aircraft, air-to-air missiles, and airborne electronic attack and electronic protection systems are advancing.

The Air Force must be able to deter future aggression, and if deterrence fails, prevail in the combat environments of tomorrow. Recapitalizing our aging fleet with fifth generation aircraft is therefore crucial. America simply cannot accept the inherent risk of maintaining declining numbers of older weapon systems while adversaries roll out competitive systems. Fifth generation airborne systems provide a wider variety of options for a given warfighting challenge, preserve the technological advantage of the United States over near-peer threats, and serve as a force multiplier by increasing situational awareness and combat effectiveness of legacy airborne systems. A steadfast commitment to recapitalizing fighter; bomber; tanker; trainer; combat search and rescue; intelligence, surveillance, and reconnaissance; and command and control aircraft is essential to fulfilling the Air Force role in the National Defense Strategy and America's leadership on the world stage.

We must also invest in the infrastructure that produces operational capability such as: training ranges; test, simulation, and ground infrastructure; and nuclear maintenance and storage facilities. We must invest in our base infrastructure that houses and supports our Airmen and their families. We must divest excess infrastructure in order to nearly match footprint with our actual force structure.

The Statement of Policy was adopted by the delegates to the AFA National Convention Sept. 18, 2016.

Our nuclear forces must be recapitalized to ensure the vitality of the nuclear deterrence mission—to maintain both Air Force bomber and missile components of the nuclear triad. If we are to maintain nuclear deterrence, we must invest in infrastructure, personnel development, weapons development, storage, and safety to ensure each remains viable.

Space capabilities remain indispensable to America's ability to deter aggression and to execute the entire range of military operations around the world. However, our space capabilities are facing growing competition from Russia, China, and other countries. It is imperative to invest smartly to sustain space domain mission assurance, including resilience, self-protection, and rapid reconstitution of space systems.

We must also establish and maintain a robust capability in the cyber domain. Without doing so we expose our networks to cyberattack and will lose our ability to attack and exploit the networks of our adversaries when necessary.

Our essential technological edge is strongly connected to advancements in science and technology. Targeted but critical investments must be made in emerging technologies like hypersonic propulsion, additive manufacturing, and advanced materials to preserve the technological edge that USAF has enjoyed for over six decades.

Finally, the effectiveness of today's Air Force hinges more than ever on the quality, training, and dedication of its Airmen. Through 25 continuous years of combat operations, our Airmen and their families have steadfastly served our nation. We must honor our commitments to them and to all veterans and retirees who served honorably. Our Air Force people continue to be an unparalleled, distinctive advantage over all our potential adversaries. We must ensure they remain the best educated and trained and give them the opportunities and tools needed for successful careers.

The Air Force Association unequivocally declares that America requires a dominant United States Air Force as the critical component of a strong national defense. The service in most need of repair is the Air Force.

We are operating a geriatric Air Force that is becoming more so every day. Bombers and tankers over 50 years of age, trainers over 40, fighters and helicopters over 30. At current purchase rates it will take over 100 years to recapitalize our force when the Air Force is smaller than it has ever been.

It is time to raise the topline of the Air Force budget to meet the needs of the National Security Strategy—not let arbitrary budget caps drive the strategy. The Air Force must return to the strategy-based force America needs, not the weakened Air Force that results from arbitrary budget reductions.

We stand for and respect our Airmen, their families, our veterans, and our Air Force heritage. We pledge that we will do all that we can to guarantee that the Air Force provides for what the Constitution of the United States declares is the reason we have a government: "to provide for the common defense."

This editorial is extracted from the Air Force Association's full 2017 Statement of Policy," which is available in its entirety at www.afa.org/publications/statementofpolicy.

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Letters

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Life Savers

Enjoyed reading "A Rolling Bomb at Bagram" [September, p. 80]. I was very proud of these four airman and of their bravery. I was disappointed that for saving the two crew members and aircraft they were just awarded the AFCM. Seems to me that it should have warranted a much higher medal.

CMSgt. Ronnie Barham,
USAF (Ret.)
Burleson, Texas

Stink Bombs Away

Enjoyed your posting on the VA-25 Skyraider "toilet bomb" story ["Flashback: Stink Bomb," September, p. 94]. The CO, Cmdr. [Clarence Stoddard Jr.], the pilot on that mission, was shot down by a SAM and lost his life about a year later. There's an interesting video available somewhere which shows the release of the toilet and its descent into a thick forest.

Capt. Zip Rausa,
USN (Ret.)
Vienna, Va.

What's the Buzz?

That was a fine article on Buzz Aldrin ["Buzz," September, p. 87], but I'd make two additions.

The good news is that his Gemini space walk was a textbook demonstration of how to work outside in 0G and put the program back on track.

The bad news is that (as he confessed in the film "In the Shadow of the Moon"), to be ready in the event of an abort, he turned on the rendezvous radar during the Apollo 11 descent, overloaded the computer (it only had about 92K of memory), which alarmed, and came close to causing an abort.

Don Schmick
Johns Creek, Ga.

To Russia With Love, U-2

I found the article in *Air Force Magazine,* September, p. 102, on the Soviet airfield of Ramenskoye by Mr. Jeffery T. Richelson to be very interesting ["Target: Ramenskoye"]. During my 28 years in the Air Force, I spent most of my time analyzing photography from all of the resources that he mentioned. The U-2 was a very versatile aircraft, but prior to the loss of the U-2 aircraft with Gary Powers, [work had already started on] the world's fastest and most reliable aircraft, the SR-71 Blackbird. This aircraft provided USAF with exceptional photography of most of the Soviet Union and China for nearly 20 years. To talk about the photographic coverage of the area mentioned has to include the spectacular aerial coverage that this aircraft provided for USAF and the nation. The pre-nomenclature "SR" stood for Strategic Reconnaissance. No aircraft or missile had the capability to intercept this aircraft on its mission. Thanks again for the article.

CMSgt. Ron Weaver
USAF (Ret.)
Marysville, Calif.

Feeling Hot

I was a member of the Tactical Air Command Composite Air Strike Force (CASF) that participated in the Lebanon Crisis of 1958. My military duties were POL flight line aircraft refueling. July 1958, two squadrons of F-100s from the 354th Tactical Fighter Wing along with C-130s departed from Myrtle Beach AFB—destination, Incirlik AB, Turkey. We set up a "non-air-conditioned" 30-man tent with the assist of our next door neighbors, Marine Corps fighter pilots. We got the refueling job done, did not lose any aircraft, and the mission was successful. I'm truly disappointed with Secretary James' comments that the biggest recent hardship at Incirlik was the lack of AC that forced airmen to sleep on cots in their air-conditioned work places *["Forward Deployed: Anti-ISIS Operations From Turkey," September, p. 14].* If this the biggest hardship airmen face today—no AC—then we should all regroup and get our USAF priorities in order.

David Ribbe
Nanuet, N.Y.

Flipped Miles

I noticed that the *["Infographic: The Mystery of the Raiders' Range"]* on p. 30 of the September issue primarily uses estimates by the Army Air Forces, historians, etc. Of all of the ranges shown, I believe that Admiral Nimitz's After-Action Report (AAR) statement is probably the most accurate, as he had access to the navigation and captain's logs of the USS *Hornet* and USS

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. (Email: 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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Enterprise. His distance would be in nautical miles, so if his AAR listed the distance as 650 nm, then the statute mile distance would be 748 miles. If the distance was 650 statute miles the the nautical mile distance would be 565 nautical miles. (BTW, your conversion of nautical and statute miles in paragraph 5 is backwards: 1 nautical mile = 1.15 statute miles so 700 nautical miles is the same as 805.5 statute miles, not vice versa as you have it.)

If General Arnold's 768 miles are statute miles, then Admiral Nimitz's 650 nautical miles converted to 748 statute miles makes both within a three percent margin of error. Remember the USS *Hornet* was still moving and it took an hour to launch all 16 aircraft. Since her top speed was around 30 nm/hour (knots or kn) or 37.4 mph, she could easily travel 20 statute miles in that time.

Actually, I would say both Admiral Nimitz and General Arnold are the closest with the former using nautical miles and the latter his preferred statute miles.

MSgt. Dennis B. Swaney, USAF (Ret.)
Oroville, Calif.

Senior Staff Changes

RETIREMENTS: Brig. Gen. James E. **McClain,** Brig. Gen. Mark M. **McLeod.**

CONFIRMATIONS: To be General: John W. **Raymond.**
To be Lieutenant General: Mark D. **Kelly,** Jerry P. **Martinez,** Robert D. **McMurry Jr.**
To be Major General: Jon T. **Thomas.**
To be Brigadier General: Kenneth P. **Ekman.**
NOMINATIONS: To be Brigadier General: Brian E. **Hastings.**

CHANGES: Gen. John E. **Hyten,** from Cmdr., AFSPC, Peterson AFB, Colo., to Cmdr., STRATCOM, Offutt AFB, Neb. ... Lt. Gen. Robert D. **McMurry Jr.,** from Cmdr., AFRL, AFMC, Wright-Patterson AFB, Ohio, to Cmdr., AFLCMC, AFMC, Wright-Patterson AFB. ... Brig. Gen. Charles L. **Plummer,** from Dir., Professional Dev., USAF, Pentagon, to Cmdr., AF Legal Ops. Agency, JB Anacostia-Bolling, D.C. ... Lt. Gen. John F. **Thompson,** from Cmdr., AFLCMC, Wright-Patterson AFB, Ohio, to Cmdr., SMC, AFSPC, Los Angeles AFB, Calif. ✪

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Our mission is to promote a dominant United States Air Force and a strong national defense and to honor airmen and our Air Force heritage. To accomplish this, we:

Educate the public on the critical need for unmatched aerospace power and a technically superior workforce to ensure US national security.

Advocate for aerospace power and STEM education.

Support the Total Air Force family and promote aerospace education.

By Megan Scully

Election Year Turbulence

Control of the Senate is up for grabs as Election Day nears, with two influential Armed Services Committee leaders among the GOP senators fighting for their political lives in an election year that appears to be strongly favoring Democrats.

SASC Chairman John McCain of Arizona, perhaps the most influential hawk on Capitol Hill, and Kelly Ayotte of New Hampshire, one of his top deputies, may very well lose their seats on Nov. 8. If they both lose, it could be as part of the Democrats seizing the majority in the Senate and sharply changing the tone and tenor of the Armed Services Committee, including the panel's handling of Air Force oversight.

McCain and Ayotte have teamed up repeatedly to advocate for more money for the Defense Department, often criticizing the Obama Administration for making sharp cuts to military programs despite mandated spending caps. But the two have not been always supportive of USAF's leadership or service priorities.

Caught in the crosshairs have been a number of cost-cutting proposals—perhaps most notably the Air Force's efforts to retire the A-10 attack aircraft, though the Warthog is far from the only issue these two lawmakers have left their imprint on. Ayotte, who chairs the readiness subcommittee, has been one of the fiercest opponents of the Administration's plans for another round of base closures, which the Air Force says it desperately needs to rid itself of excess capacity.

Ayotte, who is running against popular New Hampshire Gov. Maggie Hassan, has also been among those most critical of the Administration's plans to close the Guantanamo Bay, Cuba, detention facility, and has worked to try to strengthen restrictions on transfers or construction of a new facility in the United States. Ayotte's efforts have helped keep Guantanamo's possible closure a key source of debate during annual defense authorization bill negotiations.

McCain, meanwhile, is the dean of the defense hawks on Capitol Hill. His policy reach stretches from Pentagon acquisition reform to the intractable Syrian civil war. He can easily pivot from trying to shut down the F-35 joint program office or the department's acquisition shop (as he did in this year's authorization measure) to grilling Administration officials on arming Syrian rebels.

A loss to Democratic Rep. Ann Kirkpatrick would change not only the Armed Services Committee, but also potentially Republican hawks' power, already marginalized with the rise of the Tea Party in recent years.

For hawks, losing McCain would almost certainly weaken their hand in negotiations on the size of the Pentagon budget, regardless of who the next Commander in Chief is. And that, in turn, could force the services to make many more difficult and politically unpalatable decisions, like the Air Force did on the A-10.

USAF officials have argued that sending the Warthogs to the boneyard would save $4.2 billion over the next several years, money that could then be invested in other priorities, including the F-35 strike fighter. Other fighters and bombers in the Air Force's inventory already perform many aspects of the A-10's primary close air support mission. This would eventually become the job of the multirole F-35.

Keeping the A-10s flying now, the Air Force has argued, would mean sacrificing some other priorities down the road as the service tries to squeeze its budget into the preordained spending limits.

But the Air Force's plan never got off the ground. McCain and Ayotte promptly shot down those proposals several years in a row, and the service ultimately shelved the effort in its Fiscal 2017 budget request, proposing putting off retirements until 2018. McCain and Ayotte's arguments only intensified with the aircraft's heavy recent use in the fight against ISIS.

For McCain, the A-10 is a home-state issue, with 83 of the attack jets stationed at Arizona's Davis-Monthan AFB. Both he and Republican Rep. Martha McSally, an Air Force veteran and former A-10 fighter pilot whose district includes Davis-Monthan, have fought vigorously to block the Warthog's retirement. (The House Armed Services Committee, on which McSally serves, probably won't see a changeover in leadership. The HASC has been far more receptive to the Air Force's proposal on the Warthog, potentially paving the way to the ultimate retirement of the aircraft.)

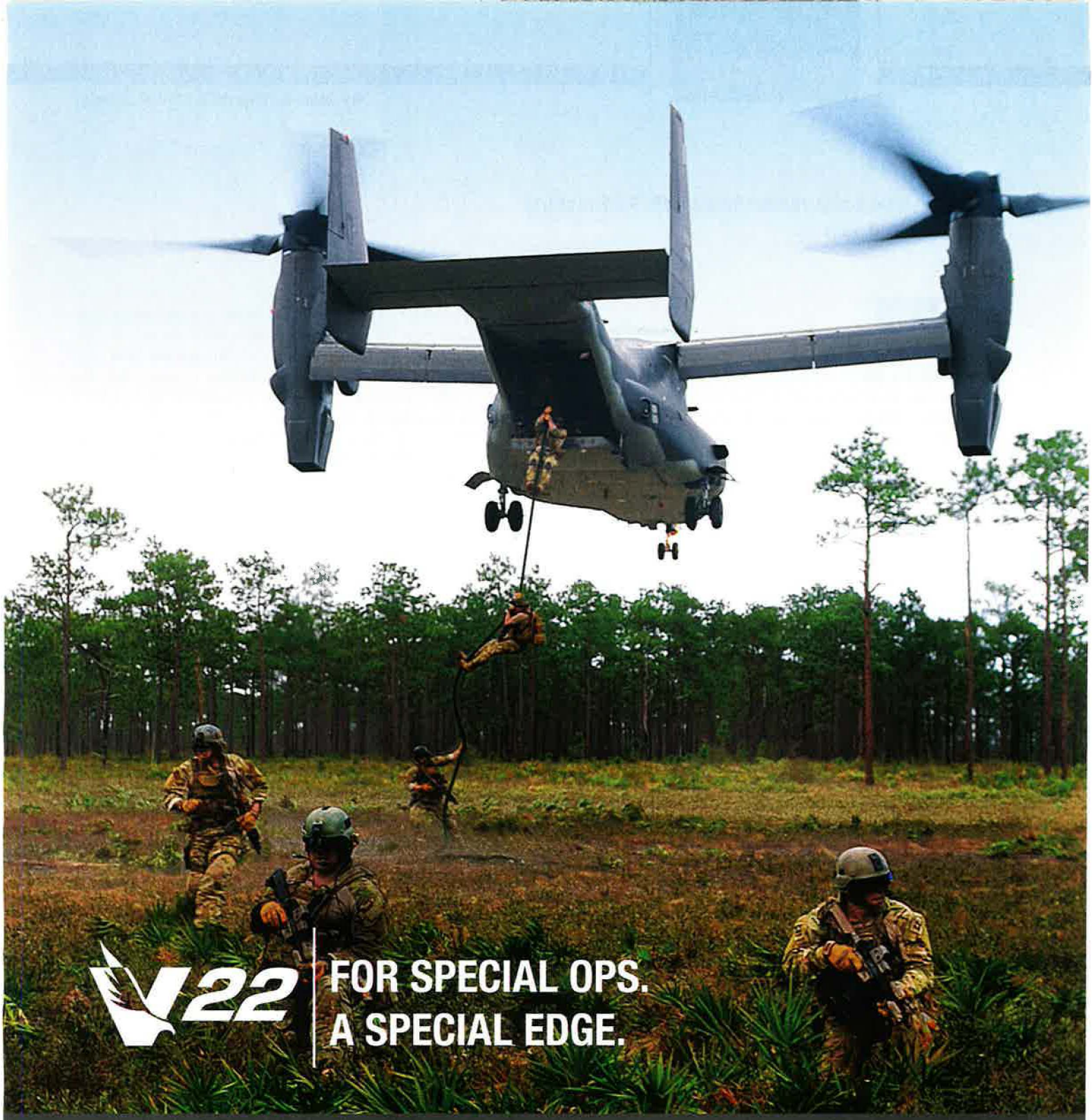
For Ayotte, the A-10's status is also a personal issue. Her husband flew A-10 missions over Iraq, and she has worked closely with a vocal group of retired joint terminal attack controllers, who have pushed to keep the Warthog flying.

If neither Senator returns to Capitol Hill next year, A-10 supporters will have lost their two most influential advocates. ✪

Megan Scully is a reporter for CQ Roll Call.

An A-10 at Davis-Monthan AFB, Ariz. The Warthog has vociferous Arizona advocates on the hill.

USAF photo by A1C Ashley N. Steffan



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Aperture

By John A. Tirpak, Editorial Director

Riding the bow wave; Tanker futures; No F-22 restart; Buy in bulk and save ....

SURF'S UP

Despite the Air Force's struggle in recent years to create a workable plan for the massive modernization task it faces, an unexpectedly high bill for ICBM recapitalization and space system modernization threatens to create a "bow wave" of bills even more formidable than thought. The situation might compel the service to put some projects on hold while possibly speeding others up.

USAF had three well-sequenced five-year blocks of modernization planned, Lt. Gen. James M. "Mike" Holmes, USAF's strategic planner, said at AFA's Air, Space & Cyber Conference in September. But the price of the Ground Based Strategic Deterrent came in more than $20 billion higher than planned, and some must-do space and combat aircraft programs have swelled "the second and third" of those blocks past the breaking point, said Holmes.

Holmes has been nominated for a fourth star to take over Air Combat Command next spring.

Without being specific, Holmes said some programs may have to move to before the bow wave, and "we may pick out some for after." He couldn't give details because the next budget is under construction and close-hold, but suggested one affected project could be the new helicopter planned for Air Force Global Strike Command missile field support. Though Holmes said USAF will continue to try to protect the F-35, KC-46, and B-21 bomber—sacrificing other programs to keep the three crown jewels intact—Air Force Secretary Deborah Lee James said all three will be affected by Congress's inability to pass a defense appropriations bill. Lawmakers instead provided only a continuing resolution. It holds spending at last year's levels and blocks any new starts. She warned that the Budget Control Act could come roaring back and impose sequestration yet again in 2018.

A hint as to what else might slip due to the bow wave was offered by Air Education and Training Command chief Lt. Gen. Darryl L. Roberson, who said full operational capability for the new T-X trainer will probably be delayed at least two years, to 2034. He said this in turn would drive yet another service life extension program on some T-38s, including rewinging. However, he said the T-X might be sped up, and "if we can buy more T-Xs more quickly," the T-38 SLEP might not be necessary.

The strategic environment also plays in the evolution of USAF's modernization plans. AFGSC Commander Gen. Robin Rand said USAF is in the midst of an analysis, or "vector," to figure out what the right number of B-21s should be in the 2030-50 time frame, when the non-stealthy B-1 and B-52 will be considered too vulnerable to perform any but standoff missions, well outside enemy air defenses. Even so, at an employable fleet of about 100 bombers today—all of them "gainfully employed" constantly in the Middle East war, as a show of force in the Pacific, or deterring Russia—Rand said AFGSC will not be able to do its job with "one less bomber." Aircrews are "pedaling really fast" just to keep up with today's operating tempo, he said, but the B-52 and B-1 fleets will still likely be reduced as the B-21 delivers in numbers.

Holmes, speaking on the bomber panel with Rand, insisted that USAF needs the Long-Range Standoff missile (LRSO) to replace the Air Launched Cruise Missile built in the 1980s. The ALCM was supposed to serve only 10 years. The LRSO will figure in the bomber vector that will also look for "what's the most cost-effective" way to perform strategic missions. But the LRSO is needed to give future presidents options and ensure USAF can "prosecute and hold any target at risk" on the globe. Rand said he "can't imagine the B-21 without the LRSO on it" for attacks against the most heavily defended targets.

Rand said he's "not comfortable" with remotely piloted aircraft overflying some sensitive areas—he hinted at missile sites—and that he's working with US Strategic Command about possible anti-RPA defenses of these areas—something else not currently in the budget.

X, Y, AND Z

An acquisition wild card was played at the conference by Air Mobility Command chief Gen. Carlton D. Everhart II, who said the long-standing plan to replace the existing KC-135 and KC-10 tanker fleets in three competitive blocks—KC-X, KC-Y, and KC-Z—might be overtaken by events. Everhart said he thinks the KC-46—the KC-X competition winner—will also likely be the KC-Y, albeit with some improvements to make it more of a communications node and more survivable. The KC-Z, though, he thinks will have to be something radically different—possibly stealthy and perhaps much smaller and unmanned. Tankers will have to evolve to be able to penetrate heavily defended airspace, he said.

Air Force acquisition chief Darlene Costello told reporters there would "have to be quite a bit of discussion" about changing the KC-Y and KC–Z acquisition plans, although she allowed that if the KC-46 performs as expected, "we may want to buy more." The program of record is for 179 KC-46s; designating it the KC-Y as well could boost that number to over 350 aircraft.

Everhart said that while a SLEP for the C-17 is not presently in the cards, he will move to standardize the fleet, hoping to add extended-range fuel tanks to the aircraft that don't already have them and make all AMC aircraft compliant with new air traffic management equipment regulations. He said the C-17 may benefit from a re-engining in about 10 years, taking advantage of new power plants that offer greater efficiency with less maintenance.

Costello said the only thing holding up the JSTARS recapitalization effort is Congress, which enacted ambiguous language about how the project could proceed. As soon as USAF understands whether Congress insists on fixed-price contracting for the whole program—a recapitalization of USAF's ground-mapping radar and battle management airplane—or just the production phase, it can release the final request for proposals, she said.

Another surprise came from ACC chief Gen. Herbert J. "Hawk" Carlisle. Having previously said recapitalization of the Rivet Joint intelligence plane and Compass Call electronic warfare aircraft would have to wait until the late 2020s, Carlisle said ACC is looking at a much earlier program because of difficulty maintaining the aircraft. Two Compass Call airplanes are to have their electronic innards removed and ported to a new platform, as ACC considers a competition for a new system. Carlisle said the RC-135 Rivet Joints are getting hard to maintain because of "vanishing vendors" of parts on the 1970s-era aircraft.

Carlisle attempted to lay to rest the recurring suggestion that USAF put the F-22 back into production. He acknowledged that demand for the fleet perpetually far exceeds the supply—the program was terminated in 2011 at half the planned inventory—but he couldn't bear to give up the programs "we wouldn't be able to do" if money was redirected to an F-22 restart. These include a faster ramping up of F-35 production or even moving to "what's next in a penetrating, counterair capability." In fact, asked his priorities, he said of the F-35: "buy rate, buy rate, buy rate." Having F-35 capacity will go a long way toward offsetting the missing F-22s, he asserted. His greatest concern is that he lacks the numbers to send combat aircraft everywhere they're needed overseas. USAF needs fifth generation fighters, in numbers, and fast, he said.

Carlisle told reporters it's become increasingly clear the F-16 and F-15 are "going to be around a long time," and hopes for a quicker buy of F-35s have been dashed, making it necessary to SLEP the two older fighters. He said F-15s would need certain major structural replacements, such as new longerons and probably "a rewinging," as well as a host of new mission equipment, including "fifth generation weapons" to complement fifth generation fighters like the F-22 and F-35.

Boeing officials told reporters they are offering the Air Force an F-15 SLEP and upgrade package called F-15 2040C. The menu of improvements includes fitting an infrared search and track (IRST) system to provide sensor capability against stealthy adversaries, a new active electronically scanned array (AESA) radar and the Eagle Passive Active Warning Survivability System (EPAWSS), called out by Carlisle specifically as a critical improvement to keep the Eagles viable. The Eagle upgrade would also increase missile loadout to 16 or even 24 weapons, answering Carlisle's previous calls for "more shots" available in an air-to-air fight. The F-22 is limited to six internally mounted radar guided missiles; the F-35 can carry up to four internally.

BUY THE ECONOMY PACK

F-35 partners and customers will be able to save $2 billion collectively in Lots 12, 13, and 14 by adopting the "block buy" approach, program director Lt. Gen. Christopher C. Bogdan told reporters at the conference. By committing to certain numbers of jets ahead of time, the buyers can save on long-lead items, material, and labor, Bogdan said, much in the way that the US reduces cost using "multiyear" buys.

The three years add up to about 450 aircraft, but the Air Force can't get in on the first year because of legal stipulations that must be met before Congress will give a go-ahead, he said. Even so, everyone else that could buy jets on Lot 12 "is onboard" with the approach, he added. Bogdan reiterated that the F-35A will be priced at around $85 million a copy—including engine—by 2018.

Though F-35 uniformed leadership jobs were initially conceived as switching back and forth between the Navy-Marine Corps and Air Force every two years—with service acquisition authority and deputies also interleaved, to ensure a truly joint program—Bogdan has been in the position since 2012. He declined to say when he might leave the job, saying only that he serves at the pleasure of the President and Secretary of Defense. USAF officials, however, said that Congress is pleased with his management of the massive project, and members have urged the Secretary to extend Bogdan in the post accordingly.

Bogdan said Canada is doing "due diligence" in evaluating its next steps in fighter recapitalization and could still buy the F-35, even though the administration of Canadian Prime Minister Justin Trudeau has been negative on the program.

Worldwide partners say they "want more Air Force," James said in her keynote speech at the conference, and since there isn't enough USAF to go around, she said she has "challenged" the foreign military sales system to speed things up so partners can buy Air Force-compatible assets for themselves at a quicker pace. She's directed that the acquisition workforce pipeline add more to the foreign security co-operation office to quicken the pace of FMS.

Costello said the Air Force will conduct an evaluation of off-the-shelf light aircraft to perform close air support in "permissive"—that is, relatively undefended—airspace. The evaluation will not necessarily lead to an acquisition program, but is to gauge "what is out there" so USAF can potentially adapt to the mission, she said. ✪

Forward Deployed

By Jennifer Hlad

Volunteers to Bulgaria; Concerns about Russia; More Troops to Iraq ....

Airmen from the 144th Fighter Wing based in Fresno, Calif., in September completed the first-ever joint NATO air policing mission in Bulgaria, as part of their unit's European Theater security package deployment.

As the 194th Expeditionary Fighter Squadron, the unit sent more than 75 airmen to Bulgaria for the roughly two-week mission in response to a request by Bulgarian leaders. The deployment was part of NATO's "enhanced air policing measures" for eastern European countries.

Lt. Col. Robert Swertfager, commander of the 194th EFS, told *Air Force Magazine* he had no problem finding airmen to participate—there were actually far more volunteers than available spots.

"Everybody was extremely excited, especially with the new emphasis on reassuring our eastern European allies," Swertfager said, noting that air sovereignty is important for all NATO allies, "especially on the eastern European edge right now."

During the deployment, the airmen worked with Estonians, Romanians, and Bulgarians, he said.

"It's great, because we're able to learn some of their techniques and tactics, and we're able to share some of ours with them as well, and at the end, we're all just a lot more capable of performing that mission," Swertfager said. "I think, to a person, each one of our members that got down to Bulgaria really enjoyed the mission."

The unit only learned about the deployment a month in advance, but Swertfager said air sovereignty of the West Coast is the 144th Fighter Wing's primary mission at home, so Bulgaria air policing "was a mission that was easy for us to pick up and execute."

While in Bulgaria, US airmen flew "every single day" for the NATO mission, Swertfager said, and two of the four F-15s were on alert at any given time.

Though nothing ever is going to be perfect, Swertfager said, it went well.

"Honestly, the flying part's the easy part," he said. "It is developing the relationships and coordination to ensure that every step of a scramble or an intercept goes flawlessly—that's where we do all of our homework and spend a majority of our time."

Swertfager described his Bulgarian counterparts as "very easy to work with, [with a] very capable air force flying very capable airplanes."

To see MiG-29s and F-15s on the same ramp is "pretty amazing, and it really inspires you to go the extra mile to get the mission done and to work together," Swertfager said.

The "benchmark takeaway" from this mission was Total Force integration and interoperability, he said. The team of airmen sent to Bulgaria was a mix of Air National Guard and Active Duty members.

The seamless integration "just validates all the training and time that we're putting into doing what we do," he said. "When you tear down the borders of these paradigms, you really harness the ability to accomplish greater things."

The unit's deployment was the latest in a series of European TSPs that began in February 2015 and came as the Department of Defense continues to make the case to quadruple funding for the European Reassurance Initiative.

In late July, Air Force Secretary Deborah Lee James said American allies close to Russia are becoming increasingly concerned about Russian mobilization exercises to test military readiness, and hope the US will make funding for joint operations permanent.

Also in July, Air Force Maj. Gen. David W. Allvin, director of strategy and policy for US European Command, told a House committee that increasing ERI funding will mean the US can change from a focus on assurance to a focus on deterrence.

"We are planning and executing activities designed to serve as a stronger deterrent to Russian aggression," Allvin said.

Meanwhile, to counter ISIS in Iraq, Secretary of Defense Ashton B. Carter announced that the US military would send 615 additional troops to Iraq for airpower purposes. Part of their mission will be to help build up the Qayyarah West and al Asad airfields and make al Asad a 24-hour air base.

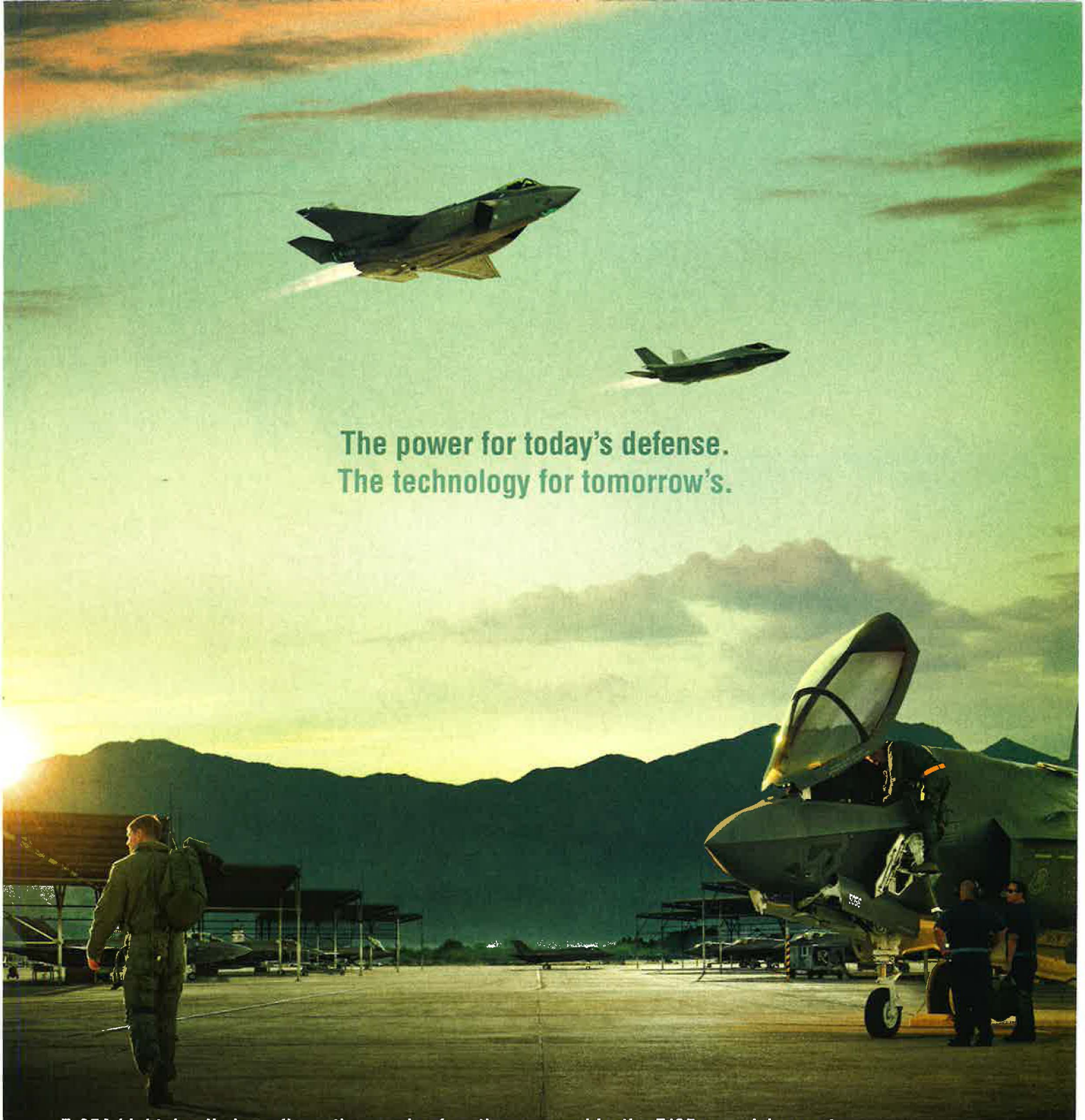
Air Force Col. John L. Dorrian, spokesman for Combined Joint Task Force-Operation Inherent Resolve, told reporters the US flies remotely piloted aircraft from al Asad, and the Iraqis are already flying their own fighter and attack aircraft from the base, allowing the coalition to "get better intelligence insight into what the enemy is doing."

That's something "we want to be able to do 24/7, 365, not just in daylight hours," he said. ✪

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

An F-15 from the California ANG lands at Graf Ignatievo AB, Bulgaria, as part of a theater security package to defend the Bulgarian skies.

USAF photo by SSgt Joe W. McFadden



F-35A Lightning IIs have flown thousands of sorties powered by the F135 propulsion system, developed from the highly successful fifth-generation engine for the F-22 Raptor. Pratt & Whitney partners with customers around the world to provide sustainment solutions that keep the F-35 Lightning II dependable and affordable. We are proud to power today's most advanced fighter aircraft. Now we are advancing engine technology to provide the next generation of fighter engines for tomorrow's defense needs. Learn more at **www.pw.utc.com**.

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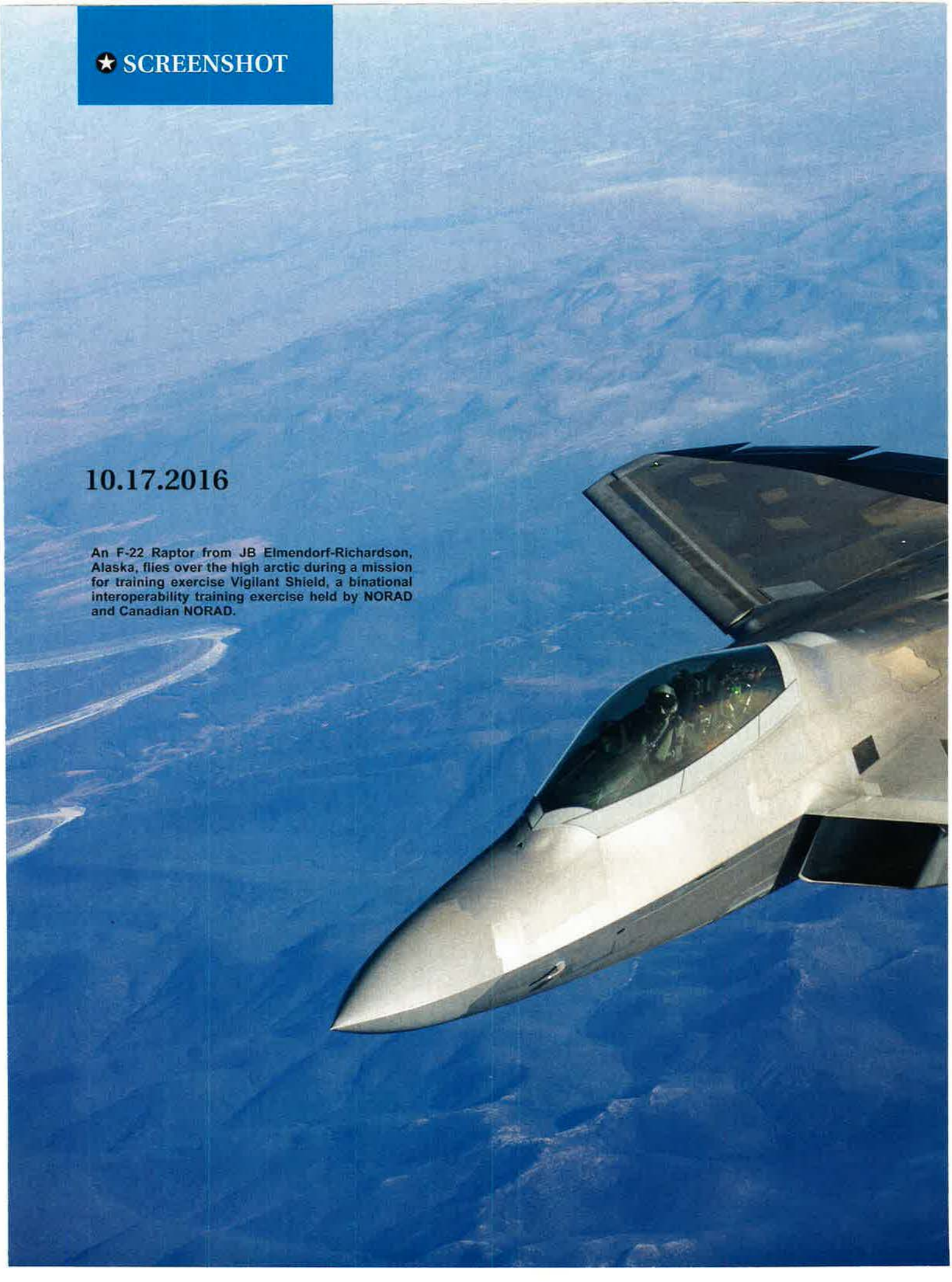

An F-22 Raptor from JB Elmendorf-Richardson, Alaska, flies over the high arctic during a mission for training exercise Vigilant Shield, a binational interoperability training exercise held by NORAD and Canadian NORAD.

USAF photo by TSgt. Gregory Brook

Beale U-2 Pilot Killed in Crash

Lt. Col. Ira S. Eadie, from the 1st Reconnaissance Squadron at Beale AFB, Calif., was killed Sept. 20 when his TU-2S crashed in the Sacramento Valley shortly after takeoff. Another pilot ejected and sustained non-life-threatening injuries.

Beale temporarily stopped flying training missions after the fatal crash. However, flights resumed on Sept. 23 when a Dragon Lady took off from the base at precisely 9:01 a.m.—a time representative of the 9th Reconnaissance Wing, 1st Reconnaissance Squadron, that Eadie was assigned to.

Eadie was originally commissioned in the Navy and served as a naval aviator for 13 years before transitioning to the Air Force to fly the U-2. He is survived by his wife, six children, and one granddaughter.

The cause of the crash was still under investigation at press time.

Boeing Unveils Twin-Tail T-X

Boeing and its partner Saab are entering a twin-tailed, high-wing jet with an afterburning GE F404 engine in the Air Force's T-X competition to replace the 50-plus-year-old T-38.

Revealing the aircraft at Boeing's St. Louis facility on Sept. 13, Darryl W. Davis, head of Boeing's Phantom Works advanced products division, said the airplane will take advantage of new manufacturing techniques—such as additive, or 3-D, printing and advanced adhesives instead of fasteners in places—and extensive reuse of proven components to hold down costs. For example, it uses the landing gear of an F-16 fighter.

The twin tails will best prepare pilots for the twin-tailed F-22 and F-35 and aid stability in practicing aerial refueling, Davis explained. The cockpit is "all glass," has a sidestick controller, and a layout similar to that of the F-35 and F-22. An aerial refueling port was plumbed for the center dorsal fuselage. The twin tails allow the airplane to be shorter, reducing weight and cost, Davis said. The canopy is side-opening.

Hyten Confirmed to Lead STRATCOM

The Senate confirmed Gen. John E. Hyten to lead US Strategic Command on Sept. 28. Hyten, who has commanded Air Force Space Command since August 2014, will replace Adm. Cecil D. Haney, who has held the position since November 2013.

Lt. Gen. John W. "Jay" Raymond was confirmed to receive a fourth star and take over AFSPC from Hyten. The Senate also confirmed the nominations of Lt. Gen. John F. Thompson to lead the Space and Missile Systems Center at Los Angeles AFB, Calif., and Maj. Gen. Robert D. McMurry Jr. for his third star and assignment as commander of the Air Force Life Cycle Management Center at Wright-Patterson AFB, Ohio.

The Cyber Sandbox

Cybersecurity education is "not just about code" but about a "problem-solving approach," said Lt. Gen. Michelle D. Johnson, superintendent of the Air Force Academy, in September at AFA's Air, Space & Cyber conference. The academy is shifting toward a model of cybersecurity education that borrows lessons from schools like that of Stanford University, an interdisciplinary approach more suited to "the modern profession of arms," according to Johnson.

Practice Makes Perfect: Col. David Mineau, commander of the 354th Fighter Wing, prepares to take off in an F-16 from the runway at Eielson AFB, Alaska, during Red Flag-Alaska 17-1. Red Flag exercises are designed to closely simulate combat sorties so that pilots are prepared for what they will face during the initial surge of a conflict.

USAF photo by SSgt. Shawn Nickel

By Wilson Brissett, Senior Editor

Gimme Shelter: F-22s from JB Langley-Eustis, Va., on the ramp at Rickenbacker ANGB in Ohio on Oct. 7. The Raptors were relocated to get them out of the path of Hurricane Matthew, which hit the Atlantic Coast as a Category 1 storm. Virginia was not hit, but more than 1,000 people were killed in the Caribbean as it moved up the western Atlantic Ocean and severe flooding in Florida and South Carolina caused serious damage and at least three deaths.

"We understand the difference between training and education," she said. Meeting the particular challenges of cybersecur ty requires "experiential learning" with a focus on "understanding risk" wherever it may be found, not just in the detai s of technical knowledge.

Finding the Reapers New Homes

The Air Force on Sept. 8 released the list of candidate bases for two new MQ-9 Reaper operating locations.

Potential hosts for a full wing of 24 aircraft, a launch and recovery element, a mission support element, a maintenance group, and operations support airmen include: Eglin AFB, Fla.; Tyndall AFB, Fla.; Vandenberg AFB, Calif., and Shaw AFB, S.C., according to a news release.

The Air Force also selected Davis-Monthan AFB, Ariz.; Moody AFB, Ga; Mountain Home AFB, Idaho; Offutt AFB, Neb.; and Shaw AFB, S.C., as potential locations for an operations group with mission control elements but no aircraft. These locations already house an Active Duty flying wing, a group that performs at least one core remotely piloted aircraft mission, or is co-located with an Active Duty distributed ground system, states the release. Air Combat Command will perform site surveys at the eight bases before final decisions are made as early as this winter.

USAF Begins Search for New Air Force One

The Air Force released a request for proposal from Boeing for the engineering and manufacturing development phase of the presidential aircraft replacement program Sept. 12.

The request calls for fielding two modified 747-8 aircraft anticipated to replace the current Air Force One fleet in 2024. The service is still considering buying a third production representative aircraft, according to a press release detailing the RFP.

Boeing has already been awarded more than $150 million to carry out risk-reduction activities for the program to replace the VC-25 fleet.

Third Philippine Contingent Underway

Two USAF C-130s and airmen from the 374th Airlift Wing at Yokota AB, Japan, deployed to the Mactan-Benito Ebuen AB in the Philippines Sept. 25 as part of the third rotational air contingent to the country.

The 36th Contingency Response Group from Andersen AFB, Guam, and approximately 120 aircrew and support personnel from various units across Pacific Air Forces were also part of the deployment that included training missions and subject matter expert exchanges.

USAF A-10s were in the first contingent that deployed to Clark AB in the spring. A detachment of Navy EA-18G Growlers from the Electronic Attack Squadron 138, NAS Whidbey Island, Wash., deployed in June.

USAF photo by SSgt. Paul Labbe

Call On Me: A1C James Raynor pitches a box of supplies during an aid mission Oct. 14 near Anse-d'Hainault, Haiti. Airmen and other military members arrived in Haiti on Oct. 5, the day after Hurricane Matthew hit, to bring aid to the residents of the devastated island nation.

QF-16 Reaches IOC

Air Combat Command boss Gen. Herbert J. "Hawk" Carlisle approved the QF-16 Full-Scale Aerial Target for initial operational capability on Sept. 23.

The QF-16 replaces the QF-4 and is the first fourth generation unmanned target aircraft. The last QF-4 was shot down in August at Holloman AFB, N.M., and the remnants of the Phantom flying target fleet will officially retire in December.

The Air Force has 15 operational QF-16s, all assigned to the 82nd Aerial Target Squadron at Tyndall AFB, Fla.

One If By Land: An airman practices signaling with a mirror during survival, evasion, resistance, and escape training at Rosecrans ANGB, Mo. SERE training teaches airmen how to cope with worst-case scenarios such as being shot down in enemy territory during a combat mission.

Investigation Finds SBIRS Launch Delay

Investigators have identified a hardware problem that has been delaying the launch of the third Space Based Infrared System (SBIRS) geosynchronous satellite.

The problem is not with the SBIRS early missile warning satellite, but with other systems using a liquid apogee engine similar to that used by SBIRS to raise the satellite into orbit after detachment from the launch vehicle, according to a press release.

The launch of SBIRS GEO-3 from Cape Canaveral AFS, Fla., had been scheduled for Oct. 3, but was delayed because of engine anomalies found in two other satellites. The investigation team has studied the similarities of design between the anomalous systems and SBIRS. The rescheduled launch is not expected before January.

Ghost Rider Returns to Minot

A once-retired B-52H Stratofortress known as *Ghost Rider,* tail No. 61-007, returned to Minot AFB, N.D., on Sept. 27 after more than seven years in the "Boneyard" at Davis-Monthan AFB, Ariz.

The aircraft has been undergoing rehab work to make it the first B-52H regenerated back into the fleet. The process began when a cockpit fire damaged another operational BUFF in 2014.

SpaceX's Monster Mars Rocket

SpaceX rocket entrepreneur Elon Musk announced on Sept. 27 he is developing a giant new launch vehicle intended to provide

The War on Terrorism

US Central Command Operations: Freedom's Sentinel and Inherent Resolve

Casualties

As of Oct. 18, a total of 26 Americans had died in Operation Freedom's Sentinel, and 26 Americans had died in Operation Inherent Resolve.

The total includes 50 troops and two Department of Defense civilians. Of these deaths, 17 were killed in action with the enemy while 35 died in noncombat incidents.

There have been 126 troops wounded in action during OFS and 16 troops in OIR.

More Than 600 Additional Troops Headed to Iraq

The US military announced on Sept. 28 the deployment of more than 600 troops to help Iraqi forces retake Mosul, shoring up the logistics and continuing the buildup of a remote airfield for the fight. Defense Secretary Ashton B. Carter said the troops are headed to locations across Iraq, including Qayyarah West and al Asad airfields, to act as "enablers" for Iraqi security forces to retake Mosul and assist in holding territory they take.

The new approved ceiling for the number of troops deployed to Iraq is 5,262, a senior defense official said. The exact number of new troops heading to Iraq is 615, the official said.

The additional troops were approved by President Barack Obama at the recommendation of Carter and Marine Corps Gen. Joseph F. Dunford Jr., Chairman of the Joint Chiefs of Staff.

US Strike Destroys ISIS Chemical Weapons Plant

US Air Force and Marine Corps aircraft conducted a massive air strike on an ISIS chemical weapons facility, dropping dozens of weapons at the same time to wipe out a facility used to create chlorine gas.

The Sept. 12 strike included 12 aircraft—Air Force F-15Es, F-16s, A-10s, and B-52s and Marine Corps F/A-18Ds—that hit more than 50 "points of interest" at an ISIS weapons storage facility and headquarters building near Mosul, US Air Forces Central Command boss Lt. Gen. Jeffrey L. Harrigian said.

Tough Summer for ISIS in Afghanistan

Afghan special forces enabled by US counterterrorism forces have reduced the number of ISIS fighters in Afghanistan by 25 percent since late July, according to Army Gen. John W. Nicholson Jr., commander of the Resolute Support mission and US Forces Afghanistan.

Twelve top leaders, including emir Hafiz Saeed Khan, have been killed during that same period. Between 1,200 and 1,300 fighters are believed to still make up the group. It is concentrated in the Nangarhar province in eastern Afghanistan and has direct links—advisory and financial—to the parent group in Iraq and Syria, Nicholson said.

US Aircraft Pound ISIS in Libya in Busiest Day

US aircraft on Oct. 2 had the busiest day in the fight against ISIS in Libya, conducting 20 air strikes on dozens of enemy positions around Sirte. The strikes hit 71 ISIS fighting positions, along with vehicle-borne improvised explosive device facilities and a supply location, US Africa Command announced. The barrage brings to 201 the number of strikes conducted since Operation Odyssey Lightning began on Aug. 1.

US forces, including US Marine Corps Harriers and Air Force remotely piloted aircraft, have been supporting Libyan Government of National Accord troops in their attempt to clear the city of ISIS fighters.

Iraqi Assault on Mosul Begins

Iraqi government and Peshmerga troops launched the long-awaited battle against ISIS in Mosul on Oct. 17, sending armored convoys into the city with support of US and coalition aircraft, including air controllers on the ground. The operation against Mosul is expected to take weeks, if not longer, and is mainly the responsibility of coalition-trained Iraqi soldiers.

"Iraq is supported by a wide range of coalition capabilities, including air support, artillery, intelligence, advisors, and forward air controllers," Combined Joint Task Force Operation Inherent Resolve Commander Lt. Gen. Stephen J. Townsend said in a statement. "But to be clear, the thousands of combat forces who will liberate Mosul are all Iraqis." ISIS captured the city more than two years ago, and Iraqi and coalition officials have said they are dug in for a fierce battle. About 30,000 Iraqi and Kurdish troops began the march on Mosul,after Iraqi Prime Minister Haider al Abadi announced the offensive saying, "The Iraqi flag will be raised in the middle of Mosul and in each village and corner very soon," according to *The New York Times*.

routine trips to Mars. The vehicle would have more than three times the thrust of the Saturn V rocket that took astronauts to the moon, would be 122 meters (400 feet) tall and have a diameter of 12 meters (39 feet).

It would be propelled by 42 engines and the launch stage would be reusable, landing back at the launch site allowing it to be quickly refueled and relaunched.

SpaceX is developing what it calls its Raptor booster engine in a two-to-one funding program with the Air Force, which has put up $33.6 million for an upper-stage variant of the Raptor, while SpaceX has funded the other $67.3 million.

By the Numbers

3,994

The number of close air support sorties flown in 2016 for Operation Freedom's Sentinel and NATO's Operation Resolute Support, according to statistics released by US Air Forces Central Command as of Sept. 30.

Besides supporting Mars flights, the rocket would be able to loft heavy cargo to the International Space Station. The vehicle could also support heavy-lift commercial and Air Force missions to geosynchronous orbit.

Musk said the new vehicle is "really a scaled-up version of the Falcon 9 booster." The Raptor engine will be in test through 2019, full booster testing through 2021, and orbital testing by 2023, when Musk plans to start routine Mars flights at every launch window, about 26 months apart. The first manned missions are expected near the end of the 2020s.

A SpaceX Falcon 9 rocket and its payload were destroyed on Sept. 1 when an oxygen tank exploded during a prelaunch fire test at Cape Canaveral AFS, Fla.

It was the second Falcon 9 to explode in a year. A SpaceX rocket carrying supplies to the International Space Station exploded after lifting off in June 2015.

Four JSTARS Grounded

The Air Force grounded four of its E-8 JSTARS aircraft in mid-September for inspections at Robins AFB, Ga., after they were delivered from a Northrop Grumman depot believed to be associated with a trend of mishaps.

The aircraft were "inspected for possible safety of flight issues," spokeswoman Ann Stefanek said in a statement. Air Force Materiel Command "is concerned about a trend of mishaps, mostly minor but at least one significant, that appear associated with" the Northrop Grumman Lake Charles Maintenance and Modification Center in Louisiana, an AFMC spokesman Charles Paone told *Air Force Magazine* in an email.

The significant mishap consisted of water being found where it should not have been, resulting in damage. AFMC Chief Gen. Ellen M. Pawlikowski directed the Air Force Life Cycle Management Center to develop the inspection criteria Sept. 16, Paone said.

By Sept. 23 the four aircraft had been returned to operational status. The inspections "did reveal some concerns that warranted noting and/or correction before returning to flight," Paone said. The concerns were immediately remedied at Robins, he said.

Northrop Grumman JSTARS Program Director Bryan Lima said the company "is committed to quality and safety" and is "working with the Air Force to ensure that the Joint STARS aircraft are mission-ready."

In September, the Air Force issued a draft request for proposal to industry for the next generation JSTARS, saying the full RFP "is in final coordination." The Air Force's E-8 JSTARS fleet completed one million hours of flight time on Sept. 6 while deployed to the Middle East.

15 F-35As Grounded

The Air Force grounded 15 F-35As, including 10 operational jets at Hill AFB, Utah, due to a problem in the avionics cooling lines caused by a subcontractor. Two of the grounded aircraft were training jets at Luke AFB, Ariz. One was a test unit at Nellis AFB, Nev., Air Force spokeswoman Ann Stefanek said.

The issue was first identified in early September, about one month after the service declared its F-35A fleet operational, and also impacts 42 aircraft on the production line. The problem was discovered during depot maintenance at the Ogden Air Logistics Center and stems from a subcontractor incorrectly installing avionics cooling lines in the wings of the jets, according to manufacturer Lockheed Martin.

About a week after the avionics issue was detected, a USAF F-35A assigned to the 56th Fighter Wing at Luke AFB, Ariz., caught fire while preparing to take off during an exercise at Mountain Home AFB, Idaho. The pilot shut down the engine and performed an emergency egress, 56th FW spokesman Lt. Col. Matt Hasson said.

The fire, in the aft section of the aircraft, was extinguished quickly. Seven airmen and the pilot were taken to the base medical center for evaluation, but were unharmed. The cause of the fire remains under investigation.

Seven F-35s from Luke deployed to Mountain Home on Sept. 10 for two weeks of training. The other six aircraft returned to Luke the day after the incident and are continuing to fly, Hasson said.

Reader's Note

Dear Readers,

With this issue, *Air Force Magazine* begins rolling out changes that will take effect over the next year.

First, you will notice that this issue bears the cover date "November/December."

Here's why: In 2017 we expect the magazine to go on sale at selected commercial newsstands. This issue is akin to a "change step" while marching, and brings us in line with other retail-sale magazines—which typically carry a date one month later than their publication. Your next issue of the magazine, arriving on the regular schedule in December, will be dated January 2017. Going forward, *Air Force Magazine* covers will always show the month after the magazine arrives.

The main noticeable difference is that (for example), when you receive the annual USAF Almanac in May—same as in previous years—the cover will say June.

Second, we are changing to 10 print issues and two digital-only issues per year. In March you will receive your April/May 2017 issue, which will be followed the next month by an online-only special edition covering all the news from the Air Force Association's annual Air Warfare Symposium.

Similarly, in September, *Air Force Magazine* will publish a combined October/November issue, which will be followed the next month by a digital-only special edition with the news from AFA's annual Air, Space & Cyber conference.

These digital-only editions will allow us to provide you with comprehensive coverage from AFA's premier events weeks sooner. These marquee events are attended by all the top Air Force leadership and always produce a large amount of important news.

In conclusion, AFA members will still receive 12 issues of *Air Force Magazine* per year. Ten of them (including the June USAF Almanac and our October/November double issue) will be in print. Two issues, delivered electronically in April and October, will be digital only.

We welcome your feedback and suggestions for the future as we work to make *Air Force Magazine* ever more timely, comprehensive, and responsive. As always, you can reach the editors at afmag@afa.org.

Thank you,
Adam J. Hebert
Editor in Chief

CORPORATE MEMBER SPOTLIGHT

The AFA Corporate Membership Program recognizes companies that support the Air Force Association's mission, people, and events. These businesses play a vital role in making AFA the most powerful advocate for every member of the Air Force family. This month we highlight the following corporate member companies.

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www.defensenews.com — Vienna, VA
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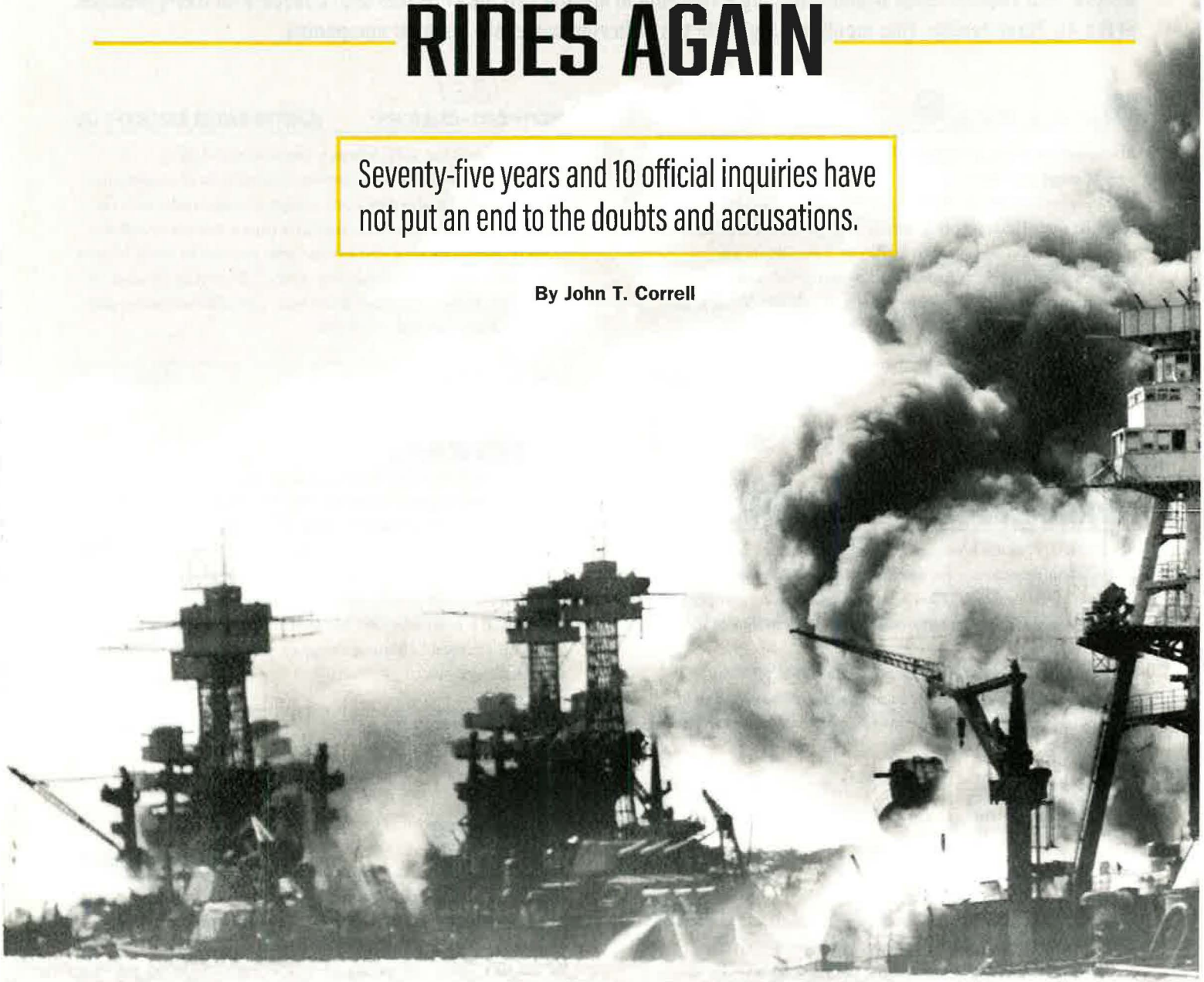
For more information on the Corporate Membership Program please visit www.AFA.org/CM or contact Jennifer Jordan-Harrell at JJordan-Harrell@afa.org

PEARL HARBOR RIDES AGAIN

Seventy-five years and 10 official inquiries have not put an end to the doubts and accusations.

By John T. Correll

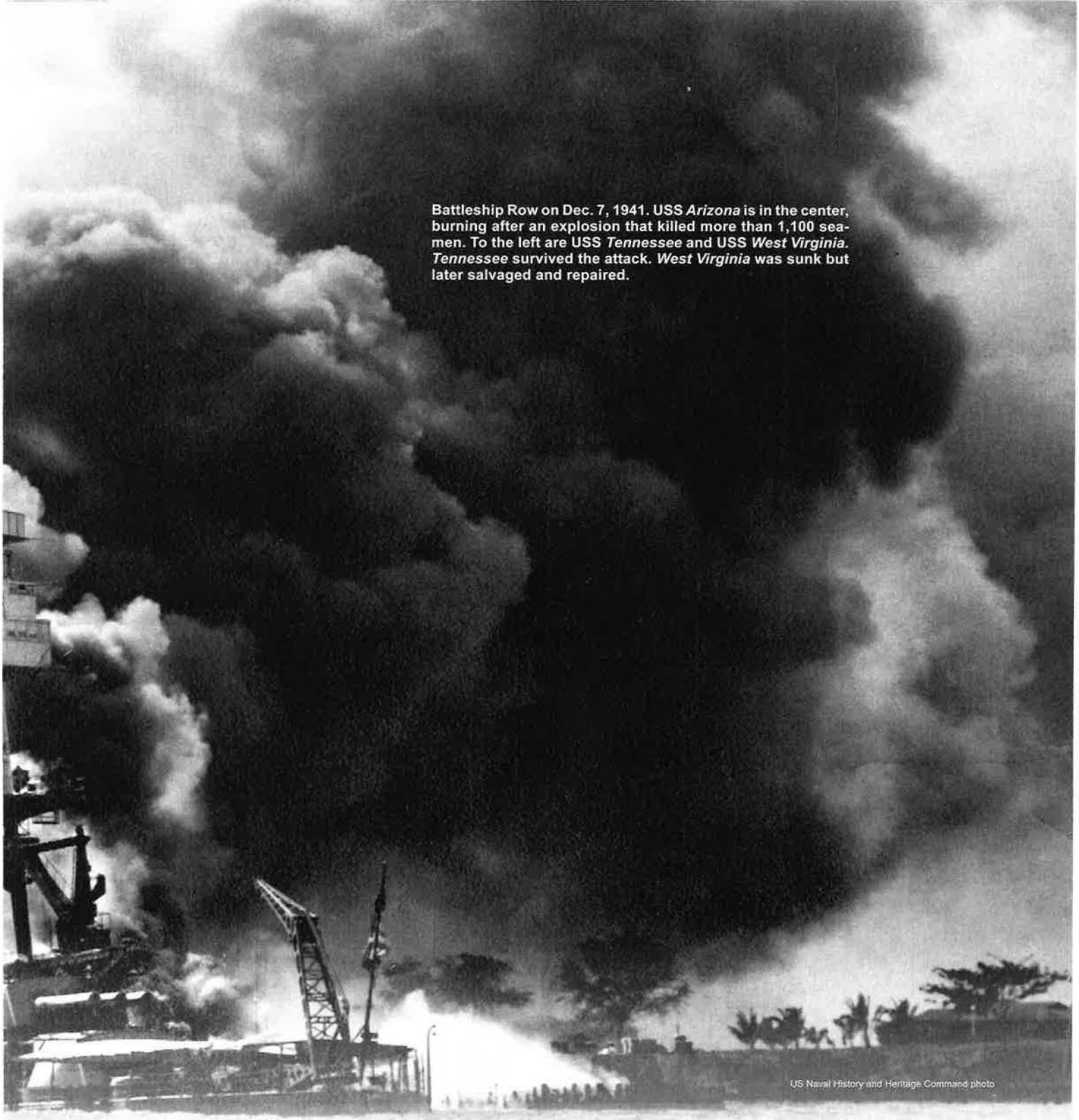


THE smoke had barely cleared along Battleship Row following the attack on Pearl Harbor when the questions began. Why were the US Navy and Army caught by surprise and almost totally unprepared on Dec. 7, 1941? Who was to blame? The next day, Secretary of the Navy Frank Knox flew in from Washington to find out what had gone wrong.

His report to President Franklin D. Roosevelt faulted Adm. Husband E. Kimmel, commander of the US Pacific Fleet, and Lt. Gen. Walter C. Short, commander of the Army's Hawaiian Department, for lack of readiness to meet the attack. Kimmel and Short were relieved from command Dec. 16 and reverted to their permanent two-star ranks.

A second investigation within the month, headed by Supreme Court Justice Owen Roberts, accused Kimmel and Short of dereliction of duty. Both of them were shuffled off into retirement in their reduced grades—Short on Feb 28, 1942, and Kimmel on March 1.

"Remember Pearl Harbor!" became an instant rallying cry for the nation. It was the most enduring slogan of



Battleship Row on Dec. 7, 1941. USS *Arizona* is in the center, burning after an explosion that killed more than 1,100 seamen. To the left are USS *Tennessee* and USS *West Virginia*. *Tennessee* survived the attack. *West Virginia* was sunk but later salvaged and repaired.

US Naval History and Heritage Command photo

World War II and a fixture in the popular culture for many years. However, not everybody would remember Pearl Harbor the same way.

The basic facts are well known. A Japanese task force with six aircraft carriers arrived undetected 220 miles north of Oahu. When the attack began at 7:55 a.m. on Sunday morning Dec. 7, the US Navy and Army in the Hawaiian islands were on a relaxed weekend schedule.

The Japanese aircraft struck Pearl Harbor and Hickam and Wheeler Fields in two waves. Eight battleships and 10 other ships were sunk, capsized, or severely damaged. Seventy-six US aircraft were destroyed. The casualty total was 2,403 killed, missing, or died of wounds and 1,178 wounded.

Fourteen US pilots, acting on their own, got their P-40 and P-36 fighters into the air and shot down 10 of the Japanese attackers.

Losses would have been worse except that the US carriers were at sea. Nine hours later, US forces were surprised again in the Philippines, where the Air Force was caught on the ground and flat-footed. About 100 aircraft

US Naval History and Heritage Command photo

US Army photo

Above: Adm. Husband Kimmel (l) commanded the US Fleet and Pacific Fleet during the attack on Pearl Harbor. Lt. Gen. Walter Short (r) commanded the US Army Hawaiian Department. Both were roundly blamed for lack of preparation and were forced to retire. Below: A B-17 at Hickam Airfield that arrived during the Japanese attack on Pearl Harbor, seen smoking in the background. This aircraft was probably piloted by 1st Lt. Karl Barthelmess, who would later receive a Silver Star for gallantry during his service in the Mediterranean Theater.

were destroyed or damaged, with 225 casualties sustained. (No action was ever taken to hold commanders in the Philippines accountable.)

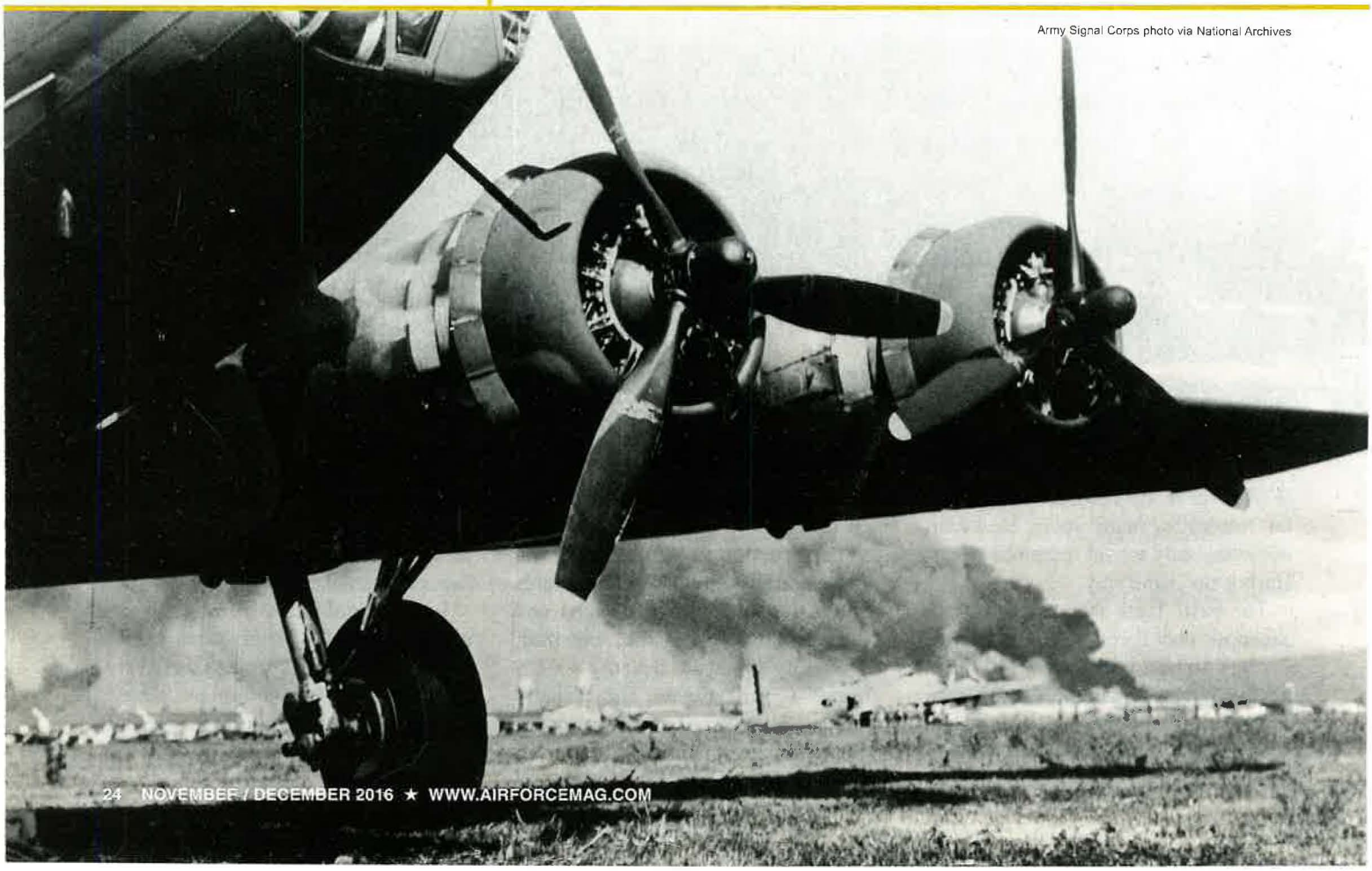
Roosevelt released the report of the Roberts inquiry to the newspapers in January 1942 and many of them printed it in full. Later on, it would be generally agreed that the finding of "dereliction of duty" was too harsh, but because of wartime secrecy, Kimmel and Short had no opportunity for rebuttal until 1945.

In the interim, the Navy and the Army conducted six more investigations and inquiries, citing mistakes and failures on a broad front but with each service placing the larger share of the blame on the other.

Accusations first arose during the 1944 election campaign that secret information, withheld for political purposes, would prove that responsibility for Pearl Harbor "extended into high places in Washington." This was mostly the doing of minor partisan players and Thomas E. Dewey, the Republican presidential candidate, would have nothing to do with it.

Nevertheless, the clamor for further explanation led to a massive investigation by a joint congressional committee with hearings that lasted from November 1945 to May 1946. The mountain of data and testimony accumulated by this committee still remains the fundamental source for most of what is known and said about the Pearl Harbor attack.

The joint committee said that "the errors made by the Hawaiian commands were errors of judgment and not dereliction of duty." It also acknowledged that the Army and Navy in Washington



Army Signal Corps photo via National Archives

could have and should have provided more information.

That did not let Kimmel and Short off the hook. The inquiry found that they had failed "to discharge their responsibilities in light of the warnings received from Washington, other information possessed by them, and the principle of command by mutual cooperation."

The committee report faulted the Hawaiian commands for failure to integrate their efforts and work together, conduct effective reconnaissance "within the limits of their equipment," maintain a "state of readiness," and use their resources to repel the Japanese raiders or reduce the effects of the successful attack.

Kimmel and Short continued their efforts to salvage their reputations. Short died in 1949, Kimmel in 1968, but their families—especially the Kimmel family—have kept up the campaign. The government has periodically considered whether Kimmel and Short should be advanced on the retired list to their highest wartime ranks, but nine times between 1957 and 2015 decided against doing so.

In the postwar period, a "revisionist" movement emerged, contending that Roosevelt knew in advance about the attack but let it happen to serve his objective of carrying the United States into the war. At the extreme were the conspiracy theorists who accused Roosevelt of deliberately provoking the attack.

Historian Gordon W. Prange studied the Pearl Harbor attack for almost 40 years. The gist of his work, published posthumously as *At Dawn We Slept* in 1982, is basically consistent with the findings of the joint congressional committee in 1946. Prange's research is widely regarded as definitive.

Arguments about Pearl Harbor mainly follow two broad tracks: what information officials in Washington and Hawaii had before the attack, and what actions they took as a result of that knowledge.

PORTENTS AND WARNINGS

In one sense the Japanese strike on Dec. 7 was a surprise. In another sense it was not. Air attack on Pearl Harbor had been a standard scenario in annual US fleet exercises since 1928, and Japan's aggression on the Pacific rim and its hostility toward the United States were widespread knowledge.

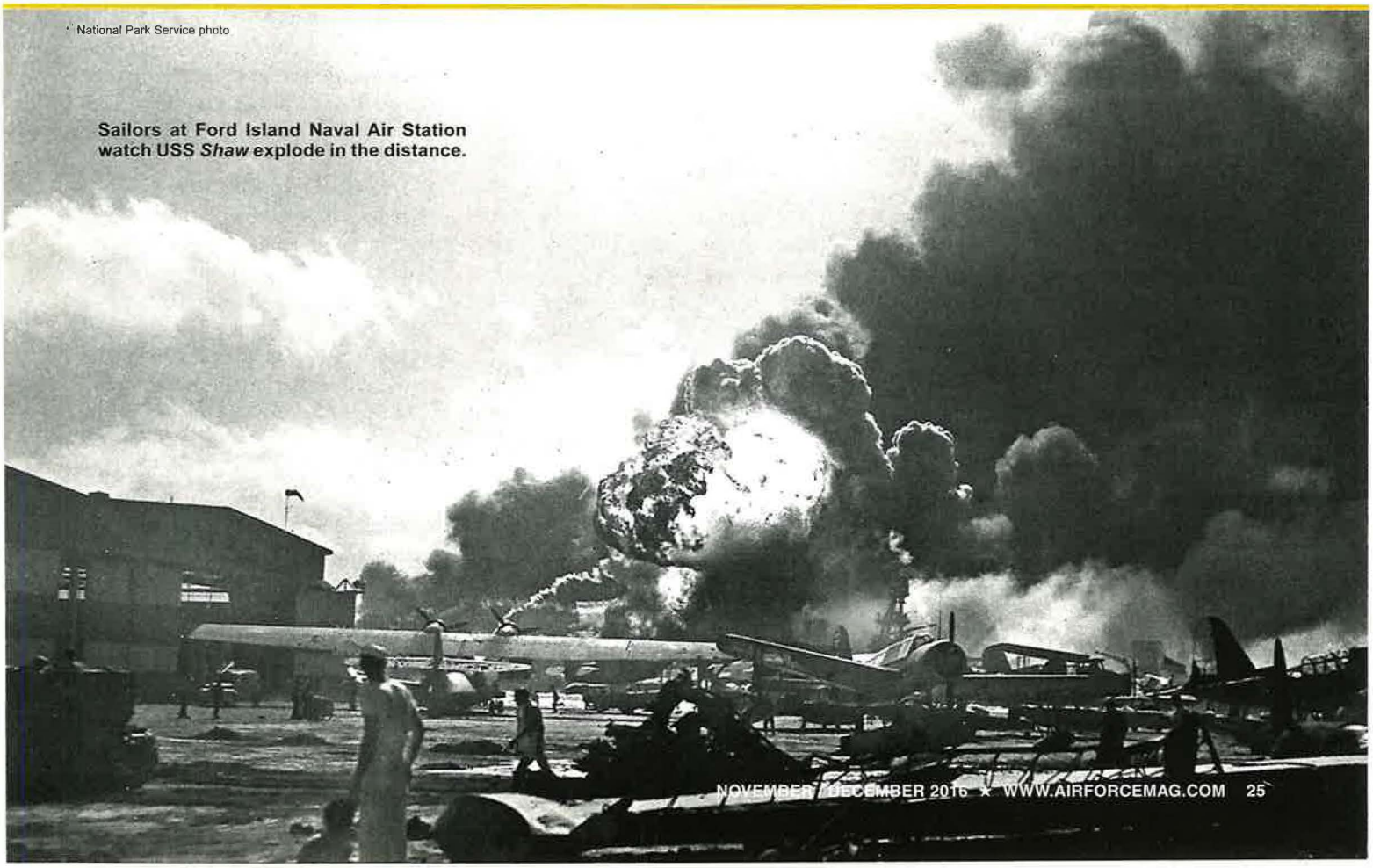
"General Short Sees Danger of Oahu Air Raid," said an Aug. 14, 1941 headline in the *Honolulu Advertiser*. Follow-up headlines took a more urgent tone: on Nov. 30, "Japanese May Strike Over Weekend," and on Dec. 5, "Pacific Zero Hour Near."

In 1940, the US had broken the Japanese diplomatic code, designated "Purple" by the Americans. The decoded Purple code intercepts were called "Magic."

The diplomatic messages revealed a great deal about Japan's strategic intentions but they did not contain much real military information. Still, the Army and Navy intelligence shops in Washington guarded their secrets jealously. Kimmel and Short were not on distribution for Magic intercepts.

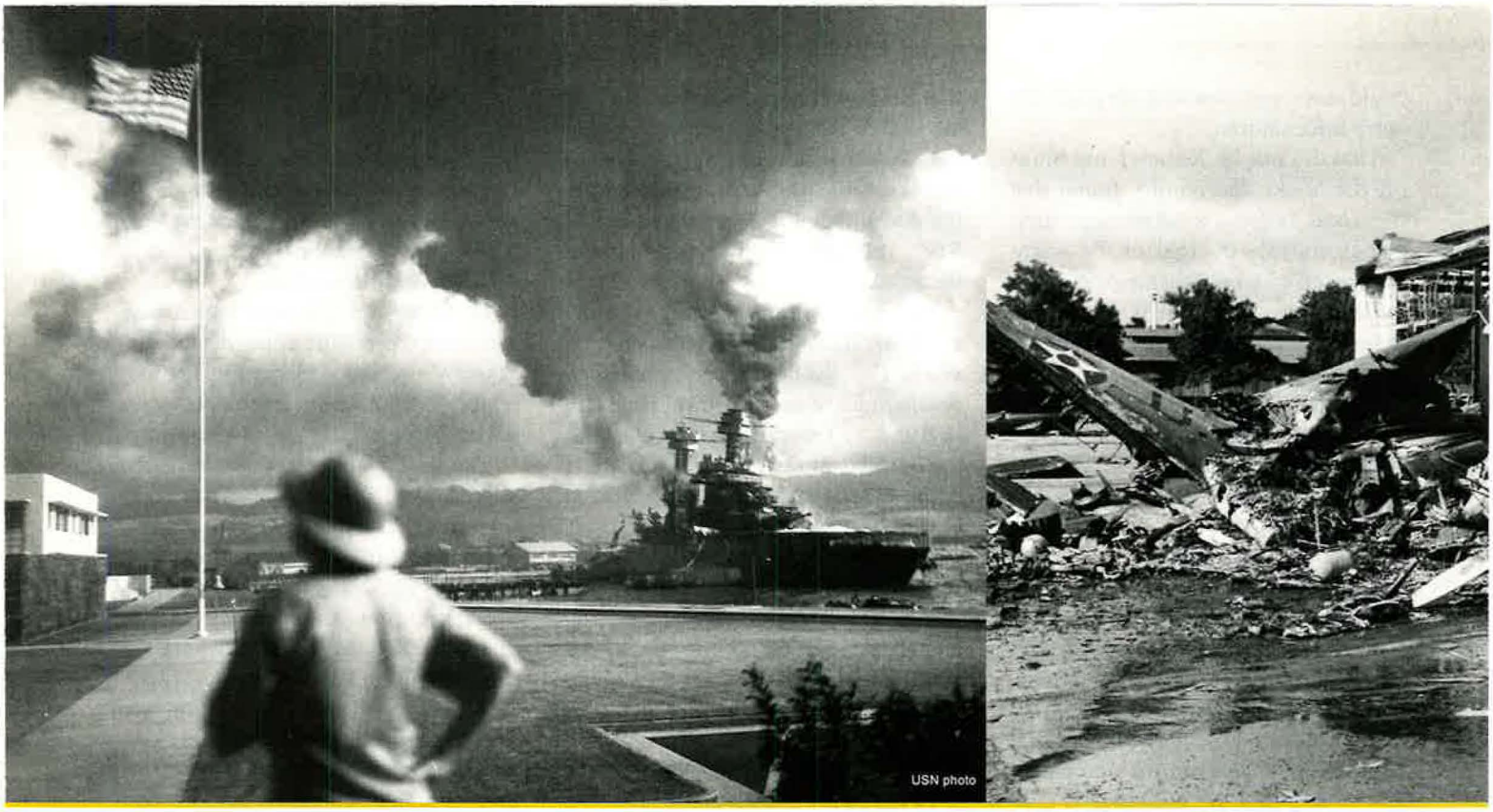
All of the advance information was ambiguous. At no point did any US officials have definite knowledge of the coming attack. Kimmel and Short—especially Kimmel, as senior commander in the Pacific—had almost as much of the directly relevant information extracted from the intercepts as Washington did.

Both of them were aware that Japanese embassies and consulates had



National Park Service photo

Sailors at Ford Island Naval Air Station watch USS *Shaw* explode in the distance.



been instructed to destroy most of their codes and ciphers and burn their secret papers. Both knew that the main Japanese carrier force had left home waters in November.

In addition, Kimmel was told that there had been no radio traffic from the carriers in several weeks and that Japanese navy forces afloat had changed their call signs twice within a month. He did not share that knowledge with Short.

On Nov. 27, Kimmel and Short got specific "war warning" messages. "Negotiations with Japan appear to be terminated," said the message from Gen. George C. Marshall, the Army Chief of Staff, to Short. "Hostile action possible at any moment,"

"This dispatch is to be considered a war warning," the Chief of Naval Operations, Adm. Harold R. Stark, advised Kimmel. "An aggressive move by Japan is expected within the next few days."

Kimmel said later that the term "war warning" had no standing in official Navy usage and that he did not know exactly what to make of it.

Neither Kimmel nor Short knew of the intercepted Purple code message from Tokyo to Washington, transmitted in 14 segments Dec. 6-7, with the final piece sent Sunday morning. The embassy was told to destroy its code machine and deliver the message to the Americans at 1 p.m. Eastern Time (7:30 a.m. in Hawaii, half an hour before the attack was supposed to begin).

The message did not disclose anything about the planned attack on Pearl Harbor, nor did it declare war or sever diplomatic relations. What it did was break off negotiations since "it is impossible to reach an agreement."

Despite that, it was alarming enough for Marshall to send another war warning to Army commands in the Pacific, including Hawaii. Short did not get his copy until after the attack, but it would have told him little more than he already knew about Japanese plans.

The most important information not given to Kimmel and Short was the so-called "bomb plot" message decoded in early October. The Japanese consulate in Honolulu was instructed to report the exact position of ships in specific locations in Pearl Harbor, essentially creating a grid of individual ships at their anchorages.

Kimmel had a point when he later complained that this message was a strong implication of a planned air attack. He had not been told because the chief of naval war plans in Washington stubbornly insisted on holding the intelligence report within his own domain.

MYSTERIOUS INTERCEPTS

The revisionists gained in credibility when John Toland joined their ranks with the publication in 1982 of *Infamy: Pearl Harbor and Its Aftermath.* Toland, who had won a Pulitzer prize for previous work, signed up to the theory that Roosevelt knew several days ahead of time that a Japanese fleet was headed for Hawaii.

"Toland has responded to criticism by conceding that as much as 50 percent of the new information in his book, released last April, may be proven false," a UPI wire dispatch said in December 1982. "But the evidence that Washington knew of the approaching fleet is too overwhelming to ignore, he said."

He relied heavily on the word of a former seaman first class, identified only as "Z" in the book, who was persuaded to talk to Toland by Kimmel's son. In December 1941, Seaman Z was a 20-year-old electronics technician at the Twelfth Naval District in San Francisco. On Dec. 2, commercial cable companies reported detection of radio signals they could not identify. Seaman Z made cross bearings of these and calculated the likely point of origin.

Above l-r: USS *California* burns in the harbor. The Tennessee-class battleship was sunk, but salvaged and repaired. / An almost unrecognizable pile of aircraft wreckage at Wheeler Airfield. The wreckage includes at least one P-40 and a twin-engine amphibious aircraft. / A B-17 that arrived from California during the attack was destroyed by a blistering strafing attack after landing. Pictured below is a heavily damaged P-40 at Bellows Field. Fourteen pilots were able to get their P-40 and P-36 fighters into the air and shoot down 10 of the Japanese attackers.

According to Toland, Seaman Z speculated to his boss that the signals might be from the missing Japanese carrier force. It was "common knowledge," Toland said, that Z's boss was a "personal friend" of Roosevelt's and had direct access to the White House. The supposition was that Roosevelt had been "promptly informed" of the signals.

The *New York Times* and others soon located Seaman Z, whose name was Robert D. Ogg. He said that the tie to the Japanese carriers was pure guesswork. He had no idea of how such signals were tracked or identified.

For all that Ogg and his colleagues knew, "the signals could have emanated from a Liberian freighter, a commercial fishing fleet, or an off-course Lebanese taxi cab," an analysis by the National Security Agency said. Ogg's boss was dead by then, but no record could be found of any report from him to Roosevelt.

Seaman Z's story was one of several supposedly proving that the carrier strike force had been detected. In fact, the Japanese fleet had maintained absolute radio silence since its departure Nov. 26 from its assembly point in the Kuril Islands.

The ships communicated by signal flags during the day and by blinkers at night. Radio transmitters were disabled and no one was allowed near them. According to Minoru Genda, the officer who planned the attack, the pilots had agreed not to use their radios even if their lives depended on it.

WINDS EXECUTE

Toland also revived the "Winds Execute" issue, which had been debunked by the joint congressional committee in 1946.

In November 1941, US intelligence learned from intercepts that Japan had created a "Winds" notification system that would kick in should regular diplomatic communications be disrupted. Coded warnings and instructions would then be broadcast by regular short wave radio.

The words "East wind rain," for example, would mean impending trouble with the United States. "North wind cloudy" meant the Soviet Union. "West wind clear" would be Great Britain. To avoid mistakes, Winds messages would be distinctively formatted with prescribed forms and repetitions.

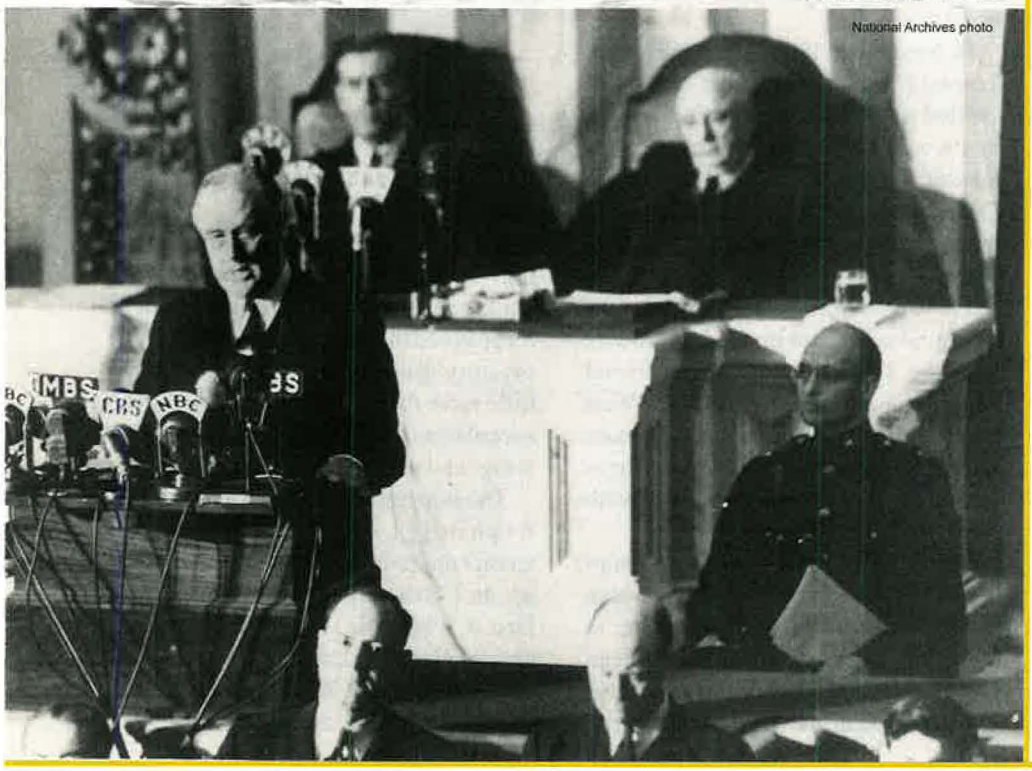
The ensuing furor was about a supposed "Winds Execute" message, which would have activated the procedure. In the 1940s, a naval intelligence officer, Capt. Laurance F. Safford, claimed that a Winds Execute message containing all three code phrases was decoded Dec. 4, 1941, a clue that the war was about to begin.

Questioned in the congressional hearings, he was unable to substantiate his claim. A National Security Agency recap noted that Safford "kept changing his story. His evidence was revealed as little more than a farrago of fabrication, speculation, poor memory, rumor gathering, and plain error-filled opinion."

The story returned in the 1970s, when Ralph Briggs, a former Navy Morse intercept operator, said that he had picked up an "East wind rain" message on Dec. 4, 1941. His account was weak in several places and he could not produce any evidence, but Toland cited him as a credible source anyway.

Below: USS *Arizona* sinks in the harbor. There is now a memorial placed over the hull of the sunken ship. Bottom: President Roosevelt delivers his "Day of Infamy" speech to a joint session of Congress on Dec. 8, 1941. Behind him are Vice President Henry Wallace and Speaker of the House Sam Rayburn. To Roosevelt's left is his eldest son, James, who would receive a Navy Cross for heroism as a marine during the war.

USN photo via National Archives



National Archives photo

There was in fact a Winds Execute message. It was broadcast Dec. 7 at 7:02 p.m. Washington time, more than six hours after the Pearl Harbor attack and the code phrase was "West wind clear," meaning Japanese relations with Great Britain were in danger. It was not about Pearl Harbor or the United States.

Nevertheless, the Winds Execute prediction of war—like the intercepted radio signals and Roosevelt's secret schemes—lived on in revisionist lore.

AT DAWN THEY SLEPT

Defense of the Hawaiian islands was primarily Short's job, and a corollary mission for Kimmel, as they shared responsibility for reconnaissance and patrol. Kimmel and Short said they would have taken stronger action if they had been better informed or if they had more resources.

On the other hand, they had plenty of general warning and commanders at their levels were expected to maintain a proper alert and defense without detailed instructions from Washington. Also, they did not make full use of the resources they had.

Kimmel and Short protested long and loud that they did not have enough aircraft for a 360-degree reconnaissance around Hawaii. Kimmel's PBY Catalina seaplanes could cover only about a third of that area. His main interest for reconnaissance was to the south, where his carriers were. The fleet was geared to meet and defeat an enemy at sea, not to defending Pearl Harbor.

Short pointed out that he had only a few long-range B-17s and said that the operating radius of his B-18s was 300 miles. In fact, without a bomb load, the B-18s had an operating radius of more than 500 miles.

Unable to mount a complete patrol, Kimmel and Short elected to do almost nothing, especially toward the northwest, the most likely direction for a hostile approach. Japanese intelligence reported Nov. 22 that, "United States air patrols are very good in the area south and southwest of Oahu, but generally inadequate to the north of the island."

Short had been told repeatedly that protection of the Pacific Fleet was his primary and overriding mission, but he resisted the idea. "In his heart, Short regarded the presence of the Pacific Fleet as protection for his Hawaiian Department rather than vice versa," Prange said.

Furthermore, Short saw the main danger as sabotage, not an enemy attack. He pulled enlisted technicians of the Hawaiian Air Force away from

their regular duties, cross-trained them as infantry, and put them on guard at airfields and at other locations.

He had airplanes removed from their protective revetments and placed them close together in the middle of the field for easier guarding. Ammunition from the aircraft was boxed and stored. On Dec. 7, the airplanes were parked wingtip to wingtip, easy targets for the Japanese, who also scored a direct hit on the hangar where the ammunition was kept.

Radar had been key to the defeat of the Luftwaffe in the Battle of Britain the previous year, but that apparently made little impression on the Hawaii commanders. The Army had six mobile radars at Opana Point on the north shore of Oahu, but on Short's orders, they were active only from 4 a.m. to 7 a.m.

On Dec. 7, the radar operator wanted to get in some extra practice and thus, at 7:02 a.m., picked up the first wave of Japanese bombers 136 miles to the north. The information center at Fort Shafter was minimally manned and ignored the radar operator's report, figuring that it was a mistake.

It did not make that much difference, since the pursuit wing at Wheeler Field had been given the weekend off. Naval personnel were likewise on routine liberty ashore after a week of hard training and the anti-aircraft guns on ships in the harbor were not on effective alert.

THE TENTH REVIEW

A considerable number of senior officers believe that Kimmel and Short did all they could under the circumstances and have been unfairly singled out for blame. Among their supporters have been World War II Adm. William F. Halsey, former Chief of Naval Operations Adm. James L. Holloway, and former Chairman of the Joint Chiefs of Staff Adm. Thomas H. Moorer.

In 1995, Sen. Strom Thurmond (R-S.C.), chairman of the Senate Armed Services committee—acting at the request of the Kimmel family in his state—demanded that the Department of Defense reopen the case. The inquiry, the 10th since 1941, was led by Edward L. Dorn, undersecretary of defense for personnel and readiness.

The Dorn report in December 1995 was not what Thurmond wanted. Although it recognized that responsibility for the disaster should not fall solely on Kimmel and Short, it said that they could not be absolved of accountability.

"The intelligence available to Admiral Kimmel and General Short was sufficient to justify a higher level of vigilance than they chose to maintain," the report said. "Different choices might not have discovered the carrier armada and might not have prevented the attack, but different choices—a different allocation of resources—could have reduced the magnitude of the disaster."

The Dorn report concluded that Kimmel and Short had not been victims of unfair official actions and it did not recommend their promotion on the retired list. No change was made in their status.

In 1999, Senators William V. Roth Jr. (R-Del.) and Joseph Biden (D-Del.), responding to Kimmel supporters in their constituency, sponsored a nonbinding resolution to exonerate Kimmel and Short. It passed the Senate, 52-47, but the Department of Defense declined to act on it. In 2015, the Navy turned down yet another appeal on behalf of Kimmel and Short.

THE MEMORY EVOLVES

With the passage of time, the number of people with personal memory of Pearl Harbor and the reaction to it has dwindled. The sense of it is more distant and less intense.

Books and articles continue to appear. The traditional interpretation prevails but conspiracy theorists have found a new forum ideal for their purposes on the Internet.

A poll of college students at the University of New Hampshire in 2014 found limited interest and knowledge about Pearl Harbor among millennials. To them, the 9/11 attacks were of far greater significance.

In 1994, Congress declared Dec. 7 to be National Pearl Harbor Remembrance Day. The custom is to fly the flag at half-staff, but it is not an official holiday. Government offices, schools, and businesses do not close.

The National Park Service visitor center at Pearl Harbor draws 1.5 million visitors a year. Observance of the anniversary at the historic site each December still centers on the attack and the loss of American lives, but the tone of the remembrance has evolved.

The theme for the upcoming 75th anniversary commemoration at Pearl Harbor will be the same as last year, "Pathway to Reconciliation: From Engagement to Peace," which the Park Service explains is "focused on the rebuilding and solidification of the friendship between the United States and Japan." ✪

Who Knew What?

		Washington	Kimmel	Short
Oct. 9	"Bomb Plot" message	♦		
Nov. 26-28	"Winds" message	♦	♦	
Nov. 27	"War Warning" messages	♦	♦	♦
Dec. 1	Carrier call sign change	♦	♦	
Dec. 2	"Lost carriers"	♦	♦	
Dec. 3-6	Code destruction	♦	♦	♦
Dec. 6-7	14-part message	♦		

Dates for Japanese messages are when the decoded information was available to US officials.

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

USAF photo by SrA. Aaron J. Jenne

By Will Skowronski, Senior Editor

Troy Gilbert's ODYSSEY

A decade after his heroic death in Iraq, the remains of a beloved airman were finally brought home.

Photo courtesy of the Gilbert family

Though he recovered at only 200 feet above ground after the first, successful strafing run, Maj. Troy L. Gilbert kept his eye on the second enemy truck. He returned for a second, even-lower attack despite ground-collision warnings.

Ten years ago, on Nov. 27, 2006, Gilbert saved the lives of US Special Forces troops who were under fire in Iraq, but lost his own life in the process. His F-16 crashed after it passed below a recoverable altitude during the second strafing run.

Despite using a Predator remotely piloted aircraft to try and protect the crash site until US forces could fight their way to it, Gilbert's body was taken away by enemy fighters.

The Gilbert family's efforts to bring his body home would take a decade, but on Oct. 3, 2016, the final remains of Troy Gilbert were brought back to the United States and his family.

Gilbert's widow, Ginger Gilbert Ravella, said she was speechless when Gilbert's former commander and friend, Gen. Robin Rand, called to tell her Troy's remains had been found.

"You know, one of the greatest tragedies would have been if Troy was forgotten," she said, "and to know that he certainly wasn't [forgotten] at all, I think that's probably one of the most amazing things."

Ravella and Gilbert met while students at Angelo State University in San Angelo, Texas. He grew up in an Air Force family and was in the ROTC program there.

"I think he just had a different perspective on life that maybe small-town Texas people like me didn't have," Ravella said.

They both transferred to Texas Tech, and Gilbert quit ROTC. Shortly after graduating in 1993, however, he realized he missed the Air Force and got into Officer Training School at Maxwell AFB, Ala. A building there is now named after him.

After completing OTS, Gilbert received a personnel slot and became the chief of protocol for the 48th Fighter Wing at RAF Lakenheath, UK, in January 1995.

Top: Airmen carry a flag-draped coffin with the remains of Maj. Troy Gilbert at Dover AFB, Del., in October. Inset: Gilbert on the cockpit ladder of an F-16 at Luke AFB, Ariz. He was deployed to Balad AB, Iraq, from Luke when he crashed and died.

Col. Patrick Ryder, now chief of Air Force media operations, was stationed there at the same time, and the two became friends. Ryder said Gilbert's selflessness was on display even then. When Ryder was promoted to captain, Gilbert put together a ceremony though they barely knew one another. And after Ryder's team won an award, Gilbert had signs made and posted around the building.

"He was always just thinking of other folks and always seemed to have time for other people," Ryder said.

Gilbert also constantly thought about flying and obtained a private pilot license while at Lakenheath.

Just after he and Ravella moved to Colorado so he could serve as a protocol officer for Air Force Academy Superintendent Lt. Gen. Tad J. Oelstrom, Gilbert received word he had been accepted for pilot training. Though Oelstrom offered to change his orders so he could begin right away, Gilbert deferred for a year since he felt he owed his brand-new boss, Ravella said.

Gilbert went on to graduate near the top of the 80th Flying Training Wing's Euro-NATO Joint Jet Pilot Training program at Sheppard AFB, Texas, in 2000. He chose to fly the F-16.

"That was the plane he wanted to fly—doing both high and low missions," Ravella said. "He just wanted that."

After completing F-16 training at Luke AFB, Ariz., where there is now a memorial bridge named after him, Gilbert was assigned to the 555th Fighter Squadron at Aviano AB, Italy, in May 2001.

That's where he picked up his call sign, Trojan—a play on his first name.

Gilbert returned to Luke in 2004 as an instructor. Col. Michael V. LoForti, now a division chief at Air Force Reserve Command headquarters, got to know Gilbert during this Luke assignment. He said Gilbert managed a lot of students and other instructors as a flight commander but still "took a lot of time with his students, more so than normal, and that really impressed me."

He also took on the additional duty of being an advance agent for President George W. Bush's presidential aircraft and an executive officer for Rand who commanded the 56th Fighter Wing at Luke.

Ravella said he was busy, but always left time for family. "I definitely wouldn't have had five children with someone who wasn't a great dad," she said.

In 2006, Gilbert, assigned to the 309th Fighter Squadron at Luke, volunteered to deploy to Iraq with Rand and serve under his command in the 332nd Air Expeditionary Wing at Balad AB.

He left Sept. 3, 2006, after giving his children—Boston (eight), Greyson (six), Isabella (three), and six-month-old twins Aspen and Annalise—F-16 pins.

"I guess I thought that four-and-a-half months was probably going to be the hardest of our life, and I had no idea, thank goodness, what the future held," Ravella said.

While in Iraq, Gilbert racked up more than 100 combat hours and also volunteered at the base hospital—sweeping blood off the floor, handing doctors instruments, and sometimes just holding patients' hands. Ravella said she believes Gilbert's time as a personnel officer influenced his understanding of the service and made him realize it was built on a cumulative effort.

Ravella said there was "no job too menial," and she thinks his hospital work shaped his understanding of the sanctity of life and, in turn, his actions on Nov. 27, 2006.

On that day, a ground force came under attack while moving to secure a downed Army helicopter. Gilbert and his wingman were already in the air and were retasked to provide support.

Gilbert (r) and Robin Rand, now head of Air Force Global Strike Command, with the F-16 Gilbert was flying when he crashed near Balad.

Gilbert's wingman dropped a GBU-12 on a building enemy fighters were using and then left to refuel. Gilbert and a joint terminal attack controller worked to identify three trucks that had fled the area of the targeted building.

KEENLY FOCUSED

Then-Brig. Gen. David L. Goldfein, who headed the crash investigation in 2006 and is now USAF Chief of Staff, noted in his report that communication between the JTAC and Gilbert was "challenging and prolonged" because of the need to save coalition lives while avoiding civilian deaths.

"He didn't want to harm civilians. He'd seen the devastating effects. He certainly wasn't going to harm our guys," Ravella said.

After several minutes, Gilbert located two armed trucks and rolled in for the first strafe with his 20 mm cannon, damaging the lead vehicle.

"While engaged in a dynamic environment with friendly forces under attack, [Gilbert] was at all times keenly focused on the well-being of both coalition ground personnel and Iraqi noncombatants," Goldfein concluded in the accident investigation report. "Tragically, [Gilbert's] channelized attention, excessive motivation to succeed, and target fixation caused him to press his attack below a recoverable altitude."

He and his fellow pilots weren't surprised at how Gilbert died. "The way he lived is the way he died," said Col. David G. Shoemaker, now the 56th Fighter Wing vice commander. He had flown with Gilbert at Aviano. He said, "That integrity and excellence showed in his last act."

Gilbert "fought like a tiger in battle that day," Rand said in an Air Force press release.

Ravella was home with the children in Phoenix when she heard a knock at the door.

"And I opened it and then I see just a sea of blue Air Force uniforms," she recalled.

Gilbert's fate was still unknown, and Ravella held out hope he had ejected and would be found alive. But once investigators were able to inspect Gilbert's jet, they found skull fragments and concluded he died on impact, after the results of DNA tests came back several days later.

Ravella said the finding at least brought some closure.

"I can't really imagine anything worse than thinking he was alive and being held by the enemy somewhere," she said.

Air Force Honor Guardsmen transfer the casket carrying Gilbert's remains during a full honors funeral Dec. 11, 2006. The final remains were repatriated this fall. There will be a memorial service to honor Gilbert Dec. 19, 2016, at Arlington National Cemetery.

USAF photo by Maj. Francisco G. Hamm

Gilbert was the first Viper pilot to die in Operation Iraqi Freedom.

The Army major in charge of the ground element wrote Ravella a letter two days after Gilbert's death to offer his unit's condolences.

"I feel that it is important you know what Troy did to save us from almost certain disaster on that day," he wrote. He said he and his men were outnumbered and outgunned and though they had repelled an attack, the enemy was preparing a mortar barrage.

"The pending attack would have been absolutely disastrous for us. With no ability to protect ourselves on the desert floor, we would most certainly have sustained heavy casualties," he said. "Troy, however, stopped that from happening. His amazing display of bravery and tenacity immediately broke up the enemy formations and caused them to flee in panic."

"My men and I will never forget the ultimate sacrifice your husband made ... and we will always be in his debt," the letter concludes.

Gilbert was posthumously awarded the Distinguished Flying Cross with valor device for his actions. A funeral service and burial of the partial remains was held at Arlington National Cemetery in December 2006.

Ravella remarried in 2008—to now-retired USAF Col. Jim Ravella, an F-15E Strike Eagle pilot who had lost his wife to cancer—but didn't stop pushing the Air Force for information on Gilbert's remains.

She did not watch propaganda videos that al Qaeda posted the next year, showing Gilbert's body—but pointed to them to remind authorities he still wasn't home.

The trail seemed to grow cold, and she knew that the odds of finding him went way down after US forces pulled out of Iraq in December 2011.

"It just became more than a needle in a haystack, I think at that point, in everybody's eyes, that his body would ever be recovered," she said.

But in 2013, Rand, now head of Air Education and Training Command at JBSA-Randolph, Texas, called and asked her to stop by. He told her five small bones from Gilbert's foot had been turned over to US authorities.

Ravella said the additional small amount of remains brought her peace because "to me, that was a message from the Lord—'I have him head to toe,' ... and I just wept."

Seven years to the day after the first burial, the additional remains were interred. Gilbert's children were now all old enough to take part in this second ceremony.

Just about three years later, on Aug. 28, 2016, an Iraqi tribal leader approached US advisors and said he had information about Gilbert's remains. Ravella said the tribal leader provided part of a jaw bone as proof.

On Sept. 7, the Armed Forces Medical Examiner System at Dover confirmed it was Gilbert's. The advisors returned to the tribal leader, and the rest of the remains, along with a flight suit, flight jacket, and parachute harness, were turned over.

Ravella said she heard some of the special operators who took part in the mission to recover the final remains were members of the same unit Gilbert saved in 2006.

"I'm just so grateful and am so humbled. I know that it was personal to them," she said.

US forces in Iraq held a dignified transfer for the remains onto the aircraft, and a 56th Fighter Wing pilot on a six-month deployment to Iraq returned home a week early to escort them.

Testing hadn't yet confirmed them as Gilbert's, but Rand told Ravella that officials were confident enough to have the family present for the return at Dover on Oct. 3.

"They knew the value of bringing a brother home and that we would want to be there, and they didn't want us to miss it," Ravella said.

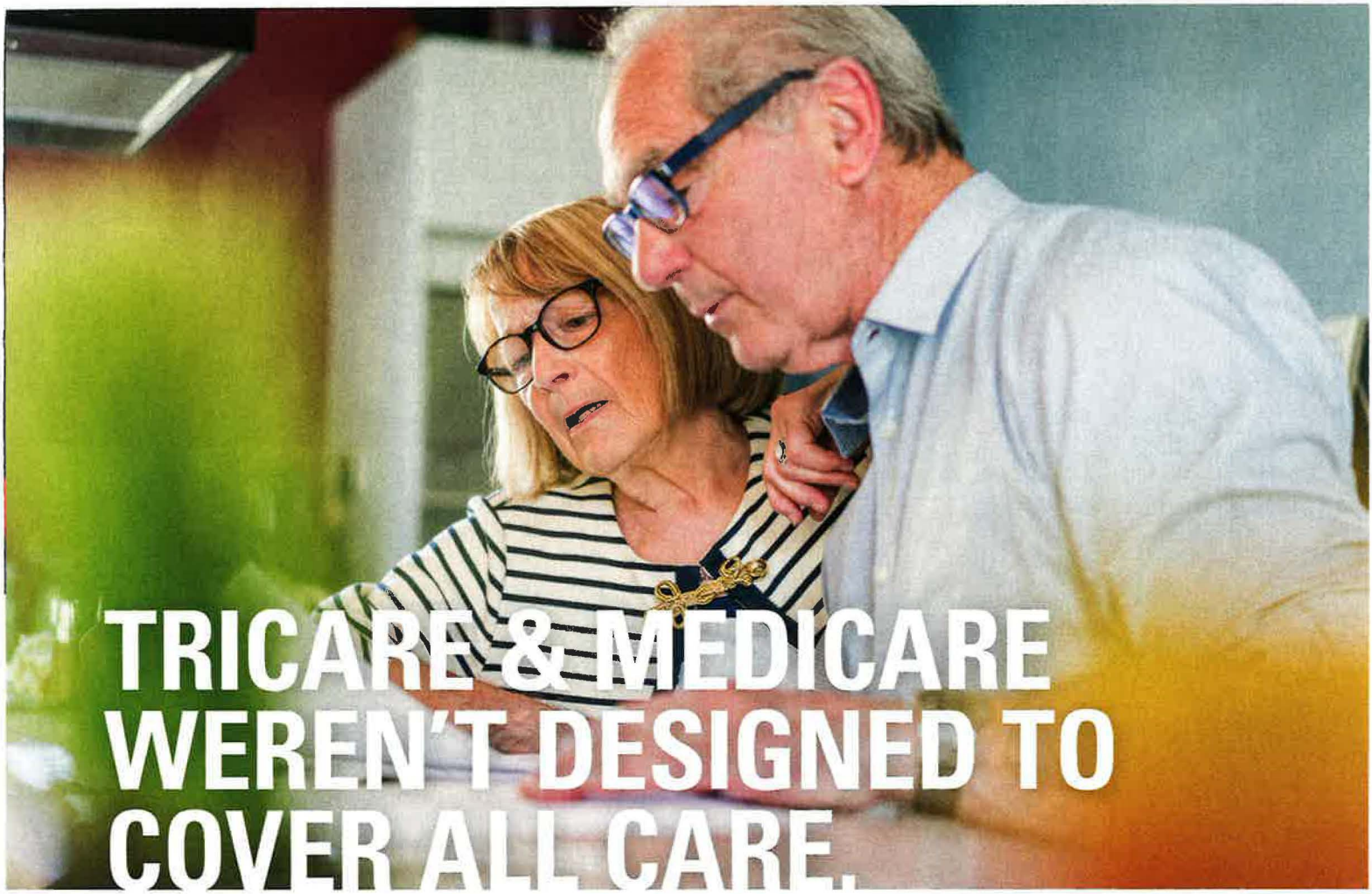
Gilbert's family, Goldfein, Rand, Ryder, Secretary of the Air Force Deborah Lee James, CMSAF James A. Cody, and base officials were there to receive Gilbert's remains. "It's really something powerful to watch," Ravella said.

DNA tests confirmed the remains were Gilbert's and the examiner told Ravella all of them have now been repatriated.

"It was just amazing to watch the Air Force put its arms around the family," Ryder said, describing the dignified transfer ceremony at Dover. "It was just very heartening, and as [an] airman it just made me very proud of the Air Force in that they had not given up on this."

LoForti, the AFRC division chief, said the return brought closure, "but we already know who he was. ... He was already a hero to us."

A memorial service for Maj. Troy L. Gilbert will be held at Arlington National Cemetery on Dec. 19, 2016, at 1 p.m. ✪



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KEEPING PEACE in Korea

By Amy McCullough, News Editor

USAF keeps its forces in Korea at maximum readiness to deter a belligerent and aggressive North.

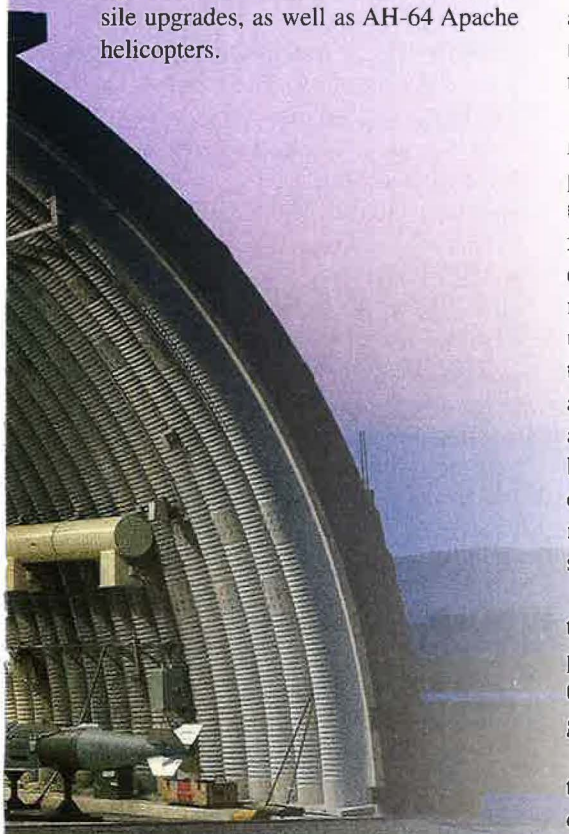
USAF photo by SSgt. Nick Wilson

Airmen perform prelight checks on an F-16 at Kunsan AB, South Korea, during Beverly Midnight 16-3, a readiness exercise to ensure security on the Korean Peninsula.

In just a few short decades, South Korea, once one of the poorest countries in the world, has pulled itself out of poverty and transformed into an economic powerhouse.

Often called the "Miracle on the Han," referring to the major river that runs through Seoul, South Korea now boasts the world's 13th largest economy and is one of the most wired countries on the planet. Of its roughly 51 million people, nearly half live in the greater Seoul metropolitan area—a bustling, modern mega city that is home to Samsung, one of the world's top smartphone producers. Four of the top five shipbuilding companies are based in South Korea, and the country is the No. 1 producer of flat-screen televisions. There are construction projects nearly everywhere you look and small cities are taking the place of farmland across the country. Those who were stationed on the peninsula in the late 1990s to early 2000s say it is virtually unrecognizable today.

The Republic of Korea's military capabilities also have made impressive strides. The ROK air force includes some 65,000 airmen and 700 aircraft, and its government continues to invest in modern equipment with the purchase of F-35 strike fighters, Global Hawks, Patriot and missile upgrades, as well as AH-64 Apache helicopters.



Despite the significant economic, technological, and military progress, the Korean War between the democratic south and the unstable, dynastic communist regime in North Korea never actually ended. For 63 years the Korean Peninsula has operated in a state of armistice—not war, not peace.

REAL, NEAR, PERSISTENT

The armistice helps maintain stability in the region, but North Korea is a very real, near, persistent, and lethal threat capable of inflicting significant damage on the South and the surrounding region.

That's why the motto, "Fight Tonight," is ingrained in the US forces stationed there, from the lowest-ranking airman to the Army four-star, Gen. Vincent K. Brooks, in charge of US Forces Korea.

At Osan AB, South Korea, Lt. Gen. Thomas W. Bergeson, 7th Air Force commander and deputy commander of US Forces Korea, said, "We send everybody up to the DMZ [demilitarized zone between North and South Korea] because when you can stand there and look face-to-face with somebody that's on the other side it really brings it home to you." He continued, "When you understand the vast array of long-range artillery right along the DMZ, and the thousands and thousands of forces that are right along there, you get the sense that we're at armistice and not at peace."

North Korea has the fourth largest military in the world, with roughly 70 percent forward deployed "fairly close" to the DMZ—located not even 50 miles from Osan. Its artillery force is the largest in the world: 13,000 systems, pretty much all of them hidden within 11,000 underground facilities. Capt. Kevin Liu, the deputy director of the commander's action group at Osan, said long-range artillery is typically a tactical weapon, but in South Korea it's a strategic threat—especially the North's 170 mm and 240 mm multiple rocket launchers, posing a significant threat to Seoul.

"If fired in volleys they would be able to strike Seoul and the surrounding area, potentially causing mass civilian casualties, significant collateral damage, and gross economic destruction," said Liu.

North Korea is believed to have 800 theater ballistic missiles with a range of capabilities and "enough plutonium for six to eight nuclear weapons," according to a 7th Air Force briefing.

Although its aircraft are mostly holdovers from the Korean War, "they have a lot of them and quantity is a quality all of its own," said Col. Rob Bortree, commander of the 607th Air Operations Center at Osan.

The underground facilities create additional problems because if a crisis were to arise US and South Korean forces would first have to find the weapons and then figure out how to attack, Bortree pointed out.

"The current assessment is [North Korea] will attack with very little to no notice," he said. "They can't sustain offensive maneuver and depth, so ... their initial plan is to get in and push us to the table to get concessions."

The North's 60,000- to 100,000-strong special operations force is often overshadowed by its aggressive ballistic missile and nuclear development programs, but it is "one of the largest SOF forces on record and they have the ability to move them very quickly south," said Bortree, who noted it "will be a significant challenge" if a crisis erupts.

North Korea has the world's second largest chemical weapons stockpile. Most of the buildings at Osan have heavy duty blast doors that when shut create an isolated and pressurized environment allowing airmen to continue to operate during an attack.

"Those aren't just for show. They are for a reason," said Bortree. "One of our assumptions is that we will be fighting in some type of chemical environment, in addition to short notice and everything else. And then the nuclear capability is also out there as something else we have to think about."

North Korea's state-run media warned of a more advanced type of nuclear test last year as it was expanding its test site at Punggye-ri, located in the northeast. In January, the North claimed to have detonated its first thermonuclear weapon. US Forces Korea officials said the nuclear tests produce much lower yield than what the North actually claims, noting the January test was either a "failed attempt or it was only intended to be a boosting device."

Still, North Korea is the only country this century to test nuclear weapons and the tests are becoming alarmingly more regular.

A few weeks after *Air Force Magazine's* visit, some 25,000 US service members, ROK forces, and participants from nine

Above: Two A-10s and an F-16 (back) train near Osan AB, South Korea, in May. Above right: Capt. Edward Ellingson (l) explains US Patriot missiles to Korean air force cadets at Osan.

nations gathered on the peninsula for the start of Ulchi Freedom Guardian—one of the world's largest military exercises. It is focused on defending the ROK. At the time, North Korea threatened to turn the South into a "heap of ashes through a Korean-style pre-emptive nuclear strike" if US and Republic of Korea forces showed "the slightest sign of aggression" during the annual military drill, reported NPR, citing a state-run North Korean media outlet.

Such amped up rhetoric has become a regular occurrence during and just before large-force exercises on the peninsula and military officials say they have gotten good at keeping an eye on the real-world threat while conducting the necessary training.

However, 7th Air Force Vice Commander Brig. Gen. Kyle W. Robinson said even with daily airborne ISR missions and intelligence briefs, it's difficult to predict when or how North Korea will act.

"Unless they come out and tell us, the only thing we can really do is try to understand or guess at this point," said Robinson.

"We don't think they've actually achieved what they've planned. At the same time, they've shown slow but steady progress in increasing the yields of what they've tested so far," USFK officials told *Air Force Magazine* in August. "They do have somewhat of a capability. It's definitely not as mature as most recognized nuclear weapon states, but it's something to take into account."

On Sept. 9, the North conducted its fifth nuclear test, the second one this year, drawing strong rebuke from the United States and as well as other nations.

Since the Korean War no provocation has reached crisis level, but the US has a detailed pre-positioned air tasking order that maps out the first few days of conflict. It's exercised regularly just in case. Everyone stationed on the peninsula knows exactly what their piece of the puzzle would be if the plan is executed.

"Seventh Air Force, when teamed with the Republic of Korea air force, is ready to deliver precise, intense, and overwhelming airpower," said Liu.

CONSTANT EXERCISES

Though the airspace in South Korea is roughly the size of Indiana, the air campaign in the early days of a second Korean War would be the "largest in modern history" and would include more than 2,000 sorties per day. That's more than twice the sorties flown on the first day of Operation Desert Storm.

Accomplishing this plan would require forces already stationed on the peninsula, US forces from around the region, and from the 17 sending nations, said officials. (Sending nations are 16 countries that joined the US in committing in 1953 to the UN Command's defense of South Korea.)

"As a result, 'Fight Tonight' is unlike in other places where you have time to build forces. ... We have to be able to start the war and then bring everything into position to execute, so this allows us to be able to practice that full-scale movement," said Bortree.

Because of the need to remain vigilant US forces in Korea are almost always exercising. A typical year includes some 30 exercises.

Exercise Vigilant Ace, first conducted in 2015, bridged the gap between strategic level exercises like Key Resolve and Ulchi Freedom Guardian and the more tactical ones that lacked higher-level command and control. Vigilant Ace was specifically designed to practice the US' ability to execute the pre-ATO, including quickly generating forces and accepting follow-on forces.

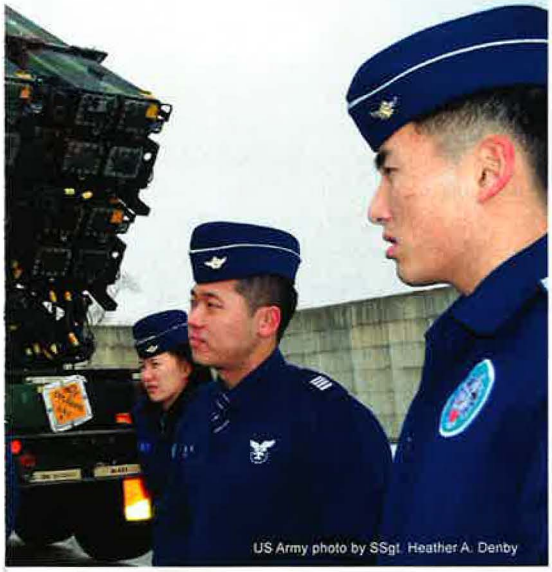
Unlike UFG, where the tactical piece is computer-based, airmen fly 24 hours a day during Vigilant Ace.

Last year's exercise included Total Force units from Japan and Guam in addition to more than 20,000 US and ROK participants and over 200 on-peninsula aircraft. The playing field spanned eight bases in Korea and required the movement of some 1,000 personnel.

"ROK and US and other component assets integrate in a very realistic scenario in our training airspace to ensure that not only can we do the strategic to operational like we do in UFG, but we can also do the operational command and control down to those tactical wings," said Col. Paul Kirmis, vice commander of the 607th AOC.

Col. Todd A. Dozier, 8th Fighter Wing commander at Kunsan AB, South Korea, said the operational tempo is definitely a challenge, but it's also an opportunity.

"Our mission remains deterrence. That's our No. 1 thing," said Dozier. "That's why we focus so much on being ready. Readiness is how deterrence is affected. That happens regardless of world events."



US Army photo by SSgt. Heather A. Denby

CLIMBING FAST

North Korea has significantly ramped up its nuclear and ballistic missile testing over the last year. US officials in Korea say the biggest concern is that one of these provocations could quickly escalate. Here is a rundown of North Korea's actions over the last year (as of Oct. 20).

- Jan. 6—Conducts fourth nuclear test, claiming to have detonated its first thermonuclear weapon. US Forces Korea officials say they don't believe the weapon was thermal.
- Feb. 6—North Korea claims it launched an Earth-observation satellite called Kwangmyongsong-4 (KMS-4) into orbit. US Strategic Command tracked two objects in space: the payload and the rocket body. US Forces Korea officials say the move shows the North's efforts to develop an intercontinental ballistic missile.
- March 9—North Korea publicizes a road-mobile ICBM and claims to have miniaturized nuclear warheads.
- March 14—State-run media says the North has successfully simulated atmospheric re-entry of a ballistic missile.
- April 15—STRATCOM tracks a failed North Korean missile launch.
- April 23—North Korean submarine launches a missile from the Sea of Japan.
- April 27-28—Two failed Musudan intermediate-range ballistic missile launch attempts.
- May 6-9—The 7th Congress of the ruling party of North Korea convenes—the first party congress in 36 years.
- May 31—Another failed Musudan IRBM launch attempt.
- June 21—Launches two presumed Musudan IRBMs from Wonsan into the Sea of Japan. USFK officials said up until this launch the Musudan was a "proven nonfunctional system," and though it isn't believed to have accomplished North Korea's full intentions, it "reached a pretty good range" and altitude.
- July 8—A presumed KN-11 submarine-launched ballistic missile launches off the coast of Sinpo into the Sea of Japan.
- July 18—Launches three missiles near Hwangju: two presumed back-to-back Scud tactical ballistic missiles, followed an hour later by the presumed launch of a Nodong IRBM.
- Aug. 3—Simultaneously launches two presumed Nodong IRBMs near Hwangju. STRATCOM said one of the missiles exploded immediately after launch, but the second flew over North Korea and landed in the Sea of Japan.
- Aug. 23—A presumed KN-11 SLBM launch occurs off the coast of Sinpo.
- Sept. 4—STRATCOM detects and tracks three Nodong missile launches.
- Sept. 9—North Korea conducts its fifth nuclear test.
- Oct. 15—STRATCOM detects a failed missile launch, presumed to be a Musudan IRBM.
- Oct. 20—North Korea attempts and fails to launch a Musudan IRBM.

Sources: US Strategic Command and US Forces Korea

And there's no doubt "events" on the peninsula have ramped up in recent years. Despite a series of high-profile launch failures, North Korea is aggressively developing a range of ballistic missiles, including everything from short-range to intercontinental ballistic missiles. Just like it has with its nuclear program, North Korea's missile program has demonstrated slow but steady progress.

Bortree said when he first arrived on peninsula he was briefed to expect a couple of North Korean launches a year, but now that can happen in just one month and is often repeated the next month.

On Aug. 23, one day after Ulchi Freedom Guardian began, the North launched what US Strategic Command believes to be a KN-11 submarine-launched ballistic missile off the coast of Sinpo. The missile was tracked some 300 miles, until it landed in the Sea of Japan. The launch took place less than a month after North Korea simultaneously launched two presumed Nodong intermediate-range ballistic missiles—an older missile typically considered to be a "tried and true workhorse."

"The submarine-launched ballistic missile [was] considered by many to be a laughable notion several years ago. ... It seemed a little beyond their capabilities," USFK officials told *Air Force Magazine*. "It's still probably not a successful system, but again, they are putting a pretty good amount of resources into it, especially relative to their economic capabilities."

To counter such advancements, the US relies on a multilayered air defense system that will soon include the US Army's Terminal High Altitude Area Defense (THAAD) system at the upper tier, Patriots for medium-tier missile defense, and the short-range air defense system at the lower tier, said Bergeson.

The US and ROK governments agreed to deploy a THAAD battery to South Korea in July. The anti-missile system, to be located in Seongju county in the country's south, is slated to arrive sometime in 2017.

Bergeson said THAAD is a "purely defensive capability that's needed in light of the increased development of longer-range ballistic missiles," but there is still some opposition from the local community, mostly regarding possible radiation exposure from the system's radars.

The US Army's 35th Air Defense Artillery Brigade at Osan also directly supports 7th Air Force. The brigade has Patriot Advanced Capability-3 hit-to-kill interceptors, with a seeker in the warhead, and are capable of hitting an incoming ballistic missile "nose-to-nose."

"It's pretty advanced technology. It's like hitting a bullet with a bullet," said Col. Mark Holler, 35th ADA commander.

The brigade also has the Patriot Guidance Enhanced Missile Tactical Ballistic Missile. GEM-T has a proximity-fused warhead interceptor that explodes when it gets close to an incoming ballistic missile, but does not directly strike it.

Holler said the Army is getting ready to field a new type of interceptor to South Korea, known as the Missile Segment Enhancement, or MSE. "It's essentially a more capable PAC-3 interceptor with extended range and lethality," said Holler. "I would say that it's likely in the very near

DOD photo by Petty Officer 1st Class Chad J. McNeeley

A North Korean soldier looks at Secretary of Defense Ashton Carter through the window of the Military Armistice Commission building in the demilitarized zone between North and South Korea.

future that this brigade could actually have three types of interceptors ready to fire." If that happens, the 35th ADA would be the first in the Army to have all three capabilities, he added.

De-escalation, however, is a top priority and airborne ISR plays a key role. The four U-2s attached to the 5th Reconnaissance Squadron at Osan fly eight- to 10-hour sorties several times a day. The multi-intelligence platform carries a high-resolution imagery and signals payload, as well as defensive systems at all times, said Maj. Daniel Collette, the squadron's director of operations.

Unlike a satellite, the U-2 is a dynamic capability that can easily be redirected if a situation arises, providing the commander more flexibility, he said.

The Dragon Lady spyplanes provide "the best possible awareness" of North Korean activities, helping US leaders decipher Kim Jong Un's intentions and providing warnings "when things may go awry," said Col. John Rice, 7th Air Force director of ISR.

Flexible deterrent options are another de-escalation tactic implemented this year.

Days after North Korea's fourth nuclear test, in January, a B-52 from Andersen AFB, Guam, flew over South Korea at roughly 10,000 feet in a very public demonstration that was soon broadcast by news outlets around the world. The show of force by the heavy bomber—escorted by a US F-16 and a South Korean F-15K Slam Eagle—was intended to demonstrate the United States' unwavering commitment to South Korea and to show North Korea the US is watching and there could be devastating consequences for its actions.

"The nice thing is it's not extremely provocative," said Robinson, the 7th Air Force vice commander. "It shows what could happen," but it's not like the Air Force is stationing the aircraft at Osan, which the North might see as a provocation by the US.

JUST A REMINDER

"The reality is it came, it did a low approach, and it [headed] back out so it was never stationed here," Robinson said. "It was simply a demonstration of resolve and then it left."

Almost exactly one month later four F-22s flanked once again by US F-16s and South Korean F-15Ks executed another display of force over South Korea in response to North Korean provocations. The Raptors, assigned to JB Elmendorf-Richardson, Alaska, had been conducting regular training at Kadena AB, Japan, when they were redeployed to South Korea.

"The F-22 Raptor is the most capable air superiority fighter in the world, and it represents one of many capabilities available for the defense of this great nation," Gen. Terrence J. O'Shaughnessy, then 7th Air Force commander, told reporters at the time. O'Shaughnessy is now commander of Pacific Air Forces.

Robinson said the F-22 flyover was "similar but not as visible" as the B-52 show of force a few weeks earlier, noting that it was meant more for an "internal audience."

The US conducted a similar demonstration of force in September after the fifth nuclear test. Two B-1B Lancers deployed to Andersen, flanked by two ROK F-15K Slam Eagles from Daegu AB, South Korea, flew closer to the demilitarized zone than any other B-1 in history.

Col. Andrew P. Hansen, commander of the 51st Fighter Wing at Osan, said pilots are regularly briefed on what North Korea is doing. The F-16s and A-10s assigned to the wing fly at a higher rate than any other combat air force and Hansen said it's important for them to understand the "why behind the readiness levels."

The fact that "bad guy land" is roughly the distance from Colorado Springs, Colo., to Denver, really drives home how quickly things could escalate, said Capt. Adam Peterson, an A-10 pilot assigned to the 51st FW.

Congestion, proximity to the North, and Seoul's booming real estate market drove a major infrastructure change that is finally nearing completion.

A $10.7 billion construction project at Camp Humphreys is almost done and US Forces Korea officials expect the majority of US troops stationed at the Yongsan Garrison in downtown Seoul to move there next year. Yongsan is the longtime home to USFK headquarters, but like the rest of the capital region, is within easy striking distance of North Korean artillery.

The local government wants to turn the garrison, located on prime real estate in central Seoul, into public parkland. (The US will continue to maintain a small footprint there.) The project is nearly 100 percent funded by the Republic of Korea and does not affect airmen stationed at Osan or Kunsan air bases.

Camp Humphreys, once a sleepy US base near the seaport city of Pyeongtaek, along the western coast of South Korea, is located about 40 miles south of Seoul and some 12 miles south of Osan Air Base.

Under the transformation the post will nearly triple in size from about 10,000 people to about 36,000, including military members, their families, civilians, and ROK forces.

The massive construction project, designed to accommodate the influx of personnel, will add an area roughly the size of the District of Columbia to the post, USFK officials said.

Both Osan and Humphreys are but a short missile or fighter flight from the North, however. "If you're always worried about it, then you can't train. Most of us are fairly confident that the force that's here in the South is large enough and trained well enough that it's going to deter any North Korean aggression," said Capt. Zachary Krueger, another A-10 pilot assigned to the 51st FW.

That doesn't mean the threat isn't always on his mind.

"Every time you go up there to fly, it's possibly one of the last opportunities we'll have prior to wartime operations and I try to make it worth it," Krueger said. ✪

By Robert S. Dudney

Snot Smart

"Adversaries think they can keep us out [of defended military areas]. I'm here to tell you they are absolutely wrong. We will, quite frankly, pound the snot out of them from range and in the close fight."—**Deputy Secretary of Defense Robert O. Work, address to the Association of United States Army, Oct. 4.**

Fun, but a Time-Waster

"As a pilot, dogfighting is fun, but it doesn't get the job done. If I'm dogfighting, I'm not bombing my target ... I'm not getting my job done, and what I'm probably doing is wasting gas and wasting time. I have stealth, so I've fought against F-16s and I've never gotten into a dogfight yet. You can't fight what you can't see, and if F-16s can't see me, then I'm never going to get into a dogfight with them."—**USAF Maj. Will Andreotta, F-35A fighter pilot, interview with *Business Insider,* Oct. 2.**

Ah, Blitzkrieg

"As currently postured, NATO cannot successfully defend the territory of its most exposed members. Across multiple games, using a wide range of expert participants in and out of uniform playing both sides, the longest it has taken Russian forces to reach the outskirts of the Estonian and/or Latvian capitals of Tallinn and Riga, respectively, is 60 hours."—**From "Reinforcing Deterrence on NATO's Eastern Flank," study by Rand Corp., quoted in *The National Interest,* Oct. 4.**

No Absolution

"One of the places where we spend a great deal of time is determining whether or not the tools we are developing absolve humans of the decision to inflict violence on the enemy. That is a fairly bright line that we're not willing to cross. ... In the world of autonomy, as we look at what our competitors might do in that same space, the notion of a completely robotic system—[one] that can make a decision about whether or not to inflict harm on an adversary—is here. It's not terribly refined, it's not terribly good, but it's here. As we develop systems that incorporate things like artificial intelligence and autonomy, we have to be very careful that we don't design them in a way where we create a situation where those system absolve humans of that decision."—**USAF Gen. Paul J. Selva, vice chairman of JCS, remarks to Center for Strategic and International Studies, Aug. 25.**

Old Gray Mares

"If we don't replace these [existing US strategic nuclear] systems, quite simply they will age even more and become unsafe, unreliable, and ineffective. The fact is, most of our nuclear weapon delivery systems have already been extended decades beyond their original expected service lives. So it's not a choice between replacing these platforms or keeping them, ... it's really a choice between replacing them or losing them."—**Secretary of Defense Ashton B. Carter, remarks at Minot AFB, N.D., Sept. 26.**

Sure, After a Stiff Drink

"While the probability of an accidental [nuclear] launch is low, human and machine errors do occur. I experienced a false alarm nearly 40 years ago, when I was undersecretary of defense for research and engineering. I was awakened in the middle of the night and told that some Defense Department computers were showing 200 ICBMs on the way from the Soviet Union. For one horrifying moment I thought it was the end of civilization. Then the general on the phone explained that it was a false alarm. He was calling to see if I could help him determine what had gone wrong with the computer."—**William J. Perry, former Secretary of Defense (1994-97) op-ed in *The New York Times,* Sept. 30.**

First, Kill All Lawyers

"The problem is the Russians don't care about international law and we do. And we don't have a basis [to use military force in Syria], our lawyers tell us."—**Secretary of State John Kerry, remarks to Syrian civilians at a UN meeting, Sept. 22.**

The Horror

"Finally, a real power move in American diplomacy. Secretary of State John 'Not Delusional' Kerry has made the one threat the Russians feared most—the suspension of US-Russia bilateral talks about Syria. No more lakeside tête-a-têtes at five-star hotels in Geneva. No more joint press conferences in Moscow. ... Butchering the Syrian people to save the Assad regime is an important Russian goal, but not if it comes at the unthinkable price of dialogue with Secretary Kerry."—**Sen. John McCain (R-Ariz.) and Sen. Lindsey Graham (R-S.C.), statement after Kerry warned Russia that the US might drop Syrian peace talks, Sept. 28.**

Hot Sticks

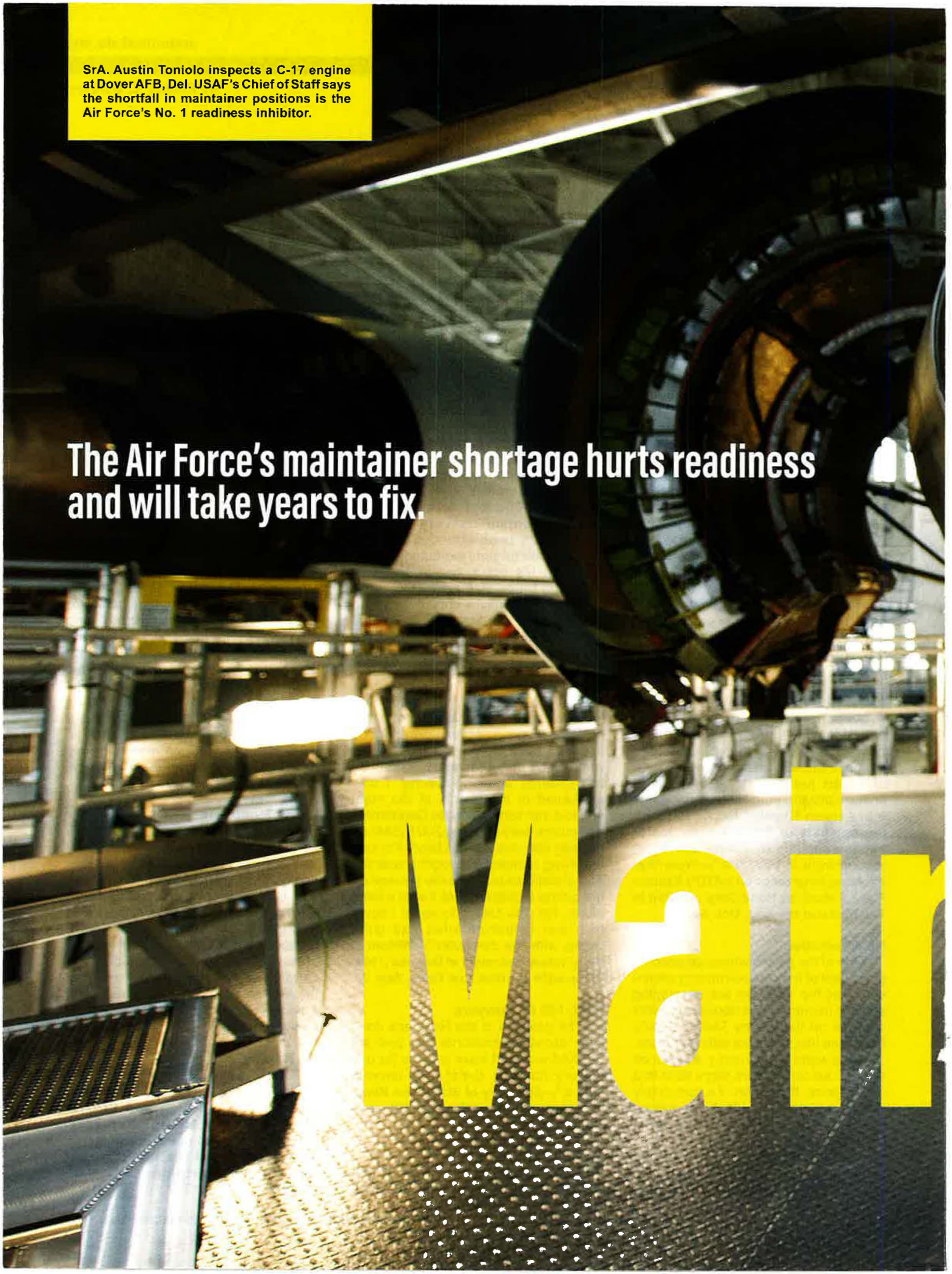
"This is not about social engineering. This is about maintaining a competitive advantage. The challenges we face as a nation are not getting less complex. They're getting more complex. Having a diverse group of leaders ... that are representative of the nation [and] can come together ... to provide creative solutions to some of these complex challenges is as much a warfighting imperative as it is about improving our Air Force."—**Gen. David L. Goldfein, USAF Chief of Staff, on new initiatives to increase diversity in the pilot force, *Air Force Times,* Sept. 29.**

China Syndrome

"Everywhere we went, we did talk about the situation in the South China Sea. China still appears to be building and has not appeared to stop or abate. This continues to be worrisome. ... We want a good and balanced relationship with China, but we do want China to respect the rule of law. More [freedom-of-navigation flying] operations are certainly a possibility."—**Secretary of the Air Force Deborah Lee James, after a two-week trip in Asia, *The National Interest,* Sept. 29.**

No No-First-Use

"That's our doctrine now, and we don't have any intention of changing that doctrine."—**Secretary of Defense Ashton B. Carter, rebutting calls to abandon the deterrence doctrine that leaves open a possibility of "first use" of nuclear weapons, remarks at Kirtland AFB, N.M., Sept. 27.**



SrA. Austin Toniolo inspects a C-17 engine at Dover AFB, Del. USAF's Chief of Staff says the shortfall in maintainer positions is the Air Force's No. 1 readiness inhibitor.

The Air Force's maintainer shortage hurts readiness and will take years to fix.

Mai

USAF photo by SrA Aaron J. Jenne

ntainer Misery

By Will Skowronski, Senior Editor

The Air Force's plan to end its maintainer shortage—the first step to restoring full-spectrum readiness—is underway, but planners believe balance will not be restored until 2019.

The multipronged strategy to reduce the current shortfall of 4,000 maintainers—increasing accessions while offering retention bonuses to experienced maintainers—relies on the service being allowed to implement its requested manpower increase, Col. Patrick T. Kumashiro, chief of the maintenance division on the Air Staff, told *Air Force Magazine.* USAF will be short even more maintainers if the force doesn't grow, because the number

of maintainer authorizations is expected to increase from 68,000 to 70,000 by the end of 2021 as the F-35A fleet grows while maintenance-intensive legacy aircraft are kept in operation.

During his nomination hearing for Chief of Staff in June, Gen. David L. Goldfein said "manpower and specifically maintenance manpower" is the Air Force's No. 1 readiness limiter.

"So your support for our increase in manpower is the No. 1 issue for us," he told the Senate Armed Services Committee members.

SEQUESTER AND THE GAP

The service's maintenance manning level is the lowest it has been in more than 20 years, Maj. Gen. Scott D. West, director of current operations on the Air Staff, testified before lawmakers in July. Between 2004 and 2015, Active Duty maintenance manpower decreased by 17,000 airmen, or 21 percent of the total, while the number of aircraft was only reduced by 11 percent.

In February, Lt. Gen. John B. Cooper, deputy chief of staff for logistics, engineering, and force protection, told lawmakers the service's attempt to solve the $8 billion sequestration problem compounded the maintainer gap.

"The first place that we went to, the easiest place to go to get dollars that quick, that soon, is the personnel account," he said, and the Air Force "unfortunately" began bringing in too few maintainers.

The maintainer gap is most acute among those supporting the service's fighter portfolio. Historically, USAF has aimed for a 95 percent manning rate, but as of July, only 89 percent of positions shredded to the fighters were manned.

"When you look at anything below 90 percent, we start having concerns," Kumashiro said.

The F-16 fleet has been hit particularly hard; only 75 percent of the experienced five-level positions—held by senior airmen and staff sergeants who directly turn wrenches and generate sorties—are filled. Kumashiro attributed the F-16 shortfall to the demands of deployment and overseas rotation requirements.

"That operational tempo has an impact on overall retention," he said.

Because of the shortage, the service has been unable to generate the number of sorties needed to maintain readiness.

Ensuring deployments are fully staffed has left home stations shorthanded and unable to fully utilize the available iron for training sorties. Wing commanders have told service planners they are generating 30 percent fewer sorties, per squadron, per day at home, Kumashiro said.

Fewer sorties has meant less training and left the Air Force unready to go toe-to-toe with a near-peer adversary.

"I commonly say it takes two things to make a fighter pilot," Lt. Col. Jason Cockrum, who manages career fields for the combat air forces, told *Air Force Magazine* earlier this year. "One is airframe, so you need jets. And the other is maintainers. And you could really apply that beyond the fighter community as well."

"If called upon to fight state-to-state, an associated training delay would pose a significant risk to mission," West stated in House Armed Services readiness subcommittee testimony. "Conversely, deploying airmen in their current readiness state to fight ... would significantly increase the risk to success."

Col. Stephen C. Scherzer, commander of the 52nd Maintenance Group at Spangdahlem AB, Germany, said when 12 of the base's F-16s were deployed to Southwest Asia in April, the package was fully manned—but the jets that stayed behind couldn't be flown enough to meet home-station readiness requirements.

Between October 2009 and June 2016, he told *Air Force Magazine,* his unit has seen a 7.5 percent decrease in mission capable rates. It doesn't help that the aging F-16s have required more and more maintenance to remain airworthy.

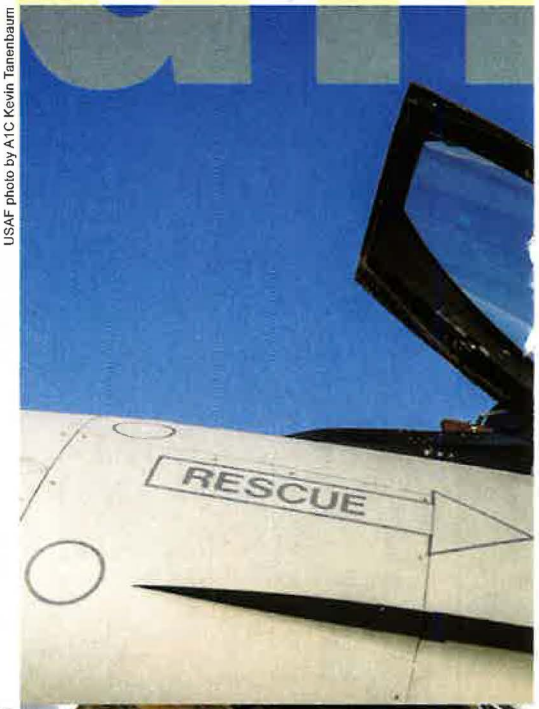
"We've had aircraft that sit down longer times waiting to be fixed," Scherzer said. "A lot of that has to do with parts availability, but then a lot of it has to do also with we just don't have the folks and some specialties."

Scherzer said he actually had to limit his airmen's hours because the standard maintenance shift had become 12 hours a day, five days a week, with possible weekend duty, leaving maintainers working up to 12 days straight sometimes. Roll calls, paperwork, and other responsibilities were handled after hours, meaning each workday really lasted between 13 and 14 hours. The hours were reduced to an all-encompassing 10 hours a day after it was clear an airman's home life, physical conditioning, and study time were being impacted, creating an unsustainable strain.

The effect of the shortage is magnified by a lack of administrative support at the bases. Just before retirement as Air Force Chief of Staff, Gen. Mark A. Welsh III acknowledged that leadership might not have fully anticipated the consequences of cutting the tail out of squadrons to keep the tooth during the last 25 years of downsizing. Airmen, Scherzer said, have to pick up extra jobs like approving travel vouchers or being a physical training monitor.

"Those bills just have to be paid in order for the base to run. And that's had an impact everywhere," he said.

Unit surveys show "our folks are tired," a sentiment Scherzer is sure is reflected across the force.



USAF photo by A1C Kevin Tanenbaum

USAF photo by Capt. Elias Zani

To make up for the increased down time, the 52nd MXG has looked for innovative ways, including "hotpitting," to get the most out of the available iron, Scherzer said. During a hotpit, a pilot lands, refuels, and takes off again without shutting the engine down or turning the aircraft over to the maintenance crew, allowing one pilot to get two sorties on the same day.

"That helps us in that we'll only have to generate that aircraft once," Scherzer said. "So we're max utilizing the aircraft, if you will, more often than we had to do before."

But the quick turnaround is not optimal for training purposes.

"We have to do that to generate the sorties, but that pilot now doesn't get a chance to debrief after his first sortie, and he goes back up again," Kumashiro said.

Scherzer said the 52nd MXG also cross-trains maintainers to cover any seams that open up, particularly while a portion of the unit is deployed.

"We have to ask folks to step out of their comfort zones and step out of their career fields," he said, and it "takes longer to do things."

While facing shortfalls in other specialties, equipment, and infrastructure, the maintainer shortage is the first readiness hurdle the service needs to clear, West explained to lawmakers.

"Since development of human capital takes the longest to complete," he said, "we must first address personnel shortfalls in critical skills."

USAF can't reduce the shortage in one fell swoop because units can only absorb and train so many raw recruits. Instead, the service plans to fill the gaps incrementally.

"We have to have time to develop the force to ensure that we have experienced maintainers to support our complex weapons systems. ... We cannot solve it in one year," Kumashiro said.

In Fiscal 2016, the service aimed to bring in about 8,300 maintainers, almost 3,000 more than the 5,500 that were accessed in Fiscal 2014, but still not as many as it needs in the long run. Planners believe between 8,000 and 8,500 accessions a year for the next five years will close the gap.

"Based on our forecasting today, ... just on pure manning numbers, we should be healthy" by 2019, Kumashiro said. "Now the caveat to that is we are still very concerned about the experience levels that we'll have during that time frame. ... So to an extent, we're still going to have some level of risk. Even though we may have the overall total numbers, we may not have the right workforce mix that we need to have."

Bringing on so many raw recruits creates its own challenges, even if done incrementally.

"The same folks that we're asking to generate the sorties, are the same folks that we're asking to give [on-the-job training] to these new accessions, so that's a challenge that we're going to have to face as a wing and as units out here," Scherzer pointed out, "and we're starting to figure out how we're going

Above left: A1C Obadiyah Ivens prepares the cockpit of an F-16 at Nellis AFB, Nev., for a Green Flag mission. Above right: SrA. Jonathan Enos inspects the wheel assembly of an F-16. The tire was leaking air and needed to be replaced. Only 75 percent of USAF's Experience Level Five F-16 maintainer positions are filled. Left: TSgt. Kevin Brown and A1C Collin Blackburn, propulsion technicians, guide an engine into place on an F-15E during Red Flag Alaska at Eielson AFB, Alaska.

SrA. Kyle Lacy, a crew chief, places probe covers on an F-16 during a surge operation at Misawa AB, Japan.

USAF photo by A1C Jordyn Fetter

to do that piece right now as accessions come in, so it's going to be interesting."

His airmen are nevertheless happy to see "those accessions coming on because they know that in five to seven years, things are going to be a lot rosier than they are now," he said.

Planners are exploring how to leverage technology—including iPads and software applications—to optimize training opportunities. But the use of how-to tutorials won't change training requirements, including the need for hands-on work under the guidance of seasoned maintainers, Kumashiro said.

To that end, the Air Force began offering retention bonuses to experienced maintainers in 2015 to retain their knowledge and ability to train new ones. Today, the service offers 43 Air Force specialty codes—largely flight line maintainers—an average bonus of $50,000 to stay on another four to six years.

"We're trying to retain our most experienced maintainers to reduce the normal attrition that would occur based on people deciding to leave the Air Force," Kumashiro said.

Planners view a take rate above 50 percent as a positive, and in Fiscal 2015, more than 60 percent of those eligible took the bonus.

But finding the right maintainer balance is complicated by the need to maintain legacy systems while fielding the F-35—which alone will require an additional 40 maintainers a month to keep up with the rollout schedule of two aircraft a month—and other new platforms.

"We can't just field the F-35 and put 4,000 18-year-olds on the F-35. We've got to be able to transition our experienced workforce from some weapons system," Kumashiro said. "We need to have stability in our force structure so we can plan to support those requirements. And so at some point in time we do have to transition from our legacy weapons systems over to ... the F-35, the KC-46, the B-21. ... We have to be able to do that."

SUPPORT NEEDED

But stability has been hard to come by. Congress threw a wrench in USAF's plans when it rejected the service's proposal to retire the A-10 and transition those maintainers to the F-35.

Uncertainty "creates a lot of turbulence in trying to manage our force and the people to support those weapons systems," Kumashiro commented.

To mitigate the effect of the shortage while incrementally rebuilding the force, the service is turning to contractors, the Air Force Reserve, and the Air National Guard for help.

"We would love to be more agile in the process, but developing your workforce takes time, so we need support," Kumashiro said.

Starting in Fiscal 2017, contractors will fill about 1,100 maintainer positions held by Active Duty airmen in training units at Davis-Monthan AFB, Ariz., Little Rock AFB, Ark., Nellis AFB, Nev., Eielson AFB, Alaska, Andersen AFB, Guam, Holloman AFB, N.M., Kirtland AFB, N.M., Peterson AFB, Colo., and Rota AB, Spain, and at avionics units at Eglin and Tyndall in Florida.

The contractor solution, which will run $100 million a year for three years, "is not ideal," Kumashiro said, "but we really had no other choice." He noted that USAF used those positions to allow overseas maintainers to rotate back to CONUS.

To further ease the transition, the service resequenced the F-35 beddown schedule, sending aircraft to Burlington Arpt., Vt., in 2019, instead of to Eielson, which will now receive them in 2020. An Active Duty F-35 maintenance unit at Luke AFB, Ariz.—currently manned by contractors—will transfer to the Reserve in 2017. The moves allow the service to rely on Guard and Reserve experienced maintainers while training its new accessions.

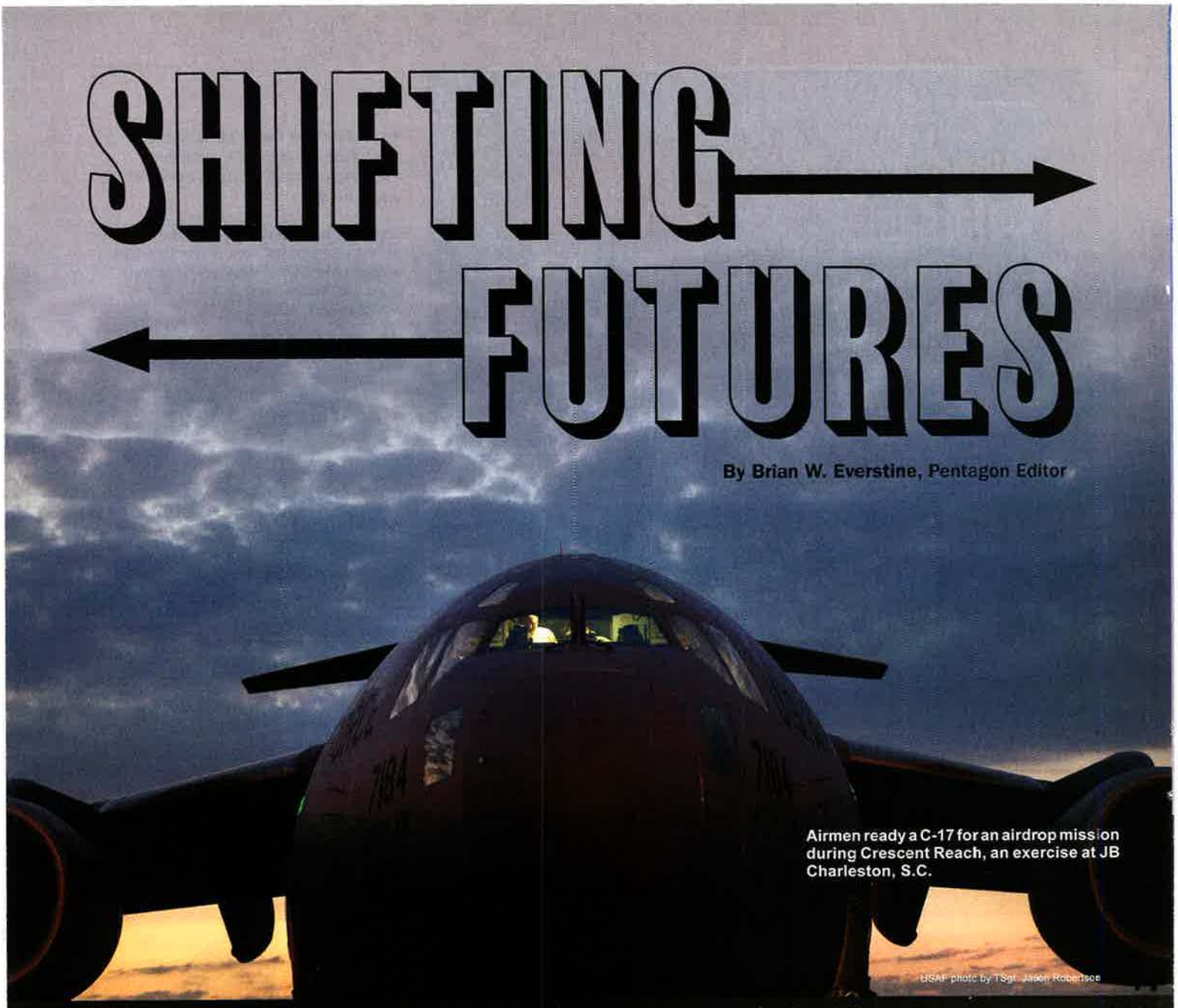
"The Guard and Reserve clearly have been just great partners in trying to help us solve the Active Duty maintenance manning shortfall," Kumashiro said. "There's no way that we could do this on our own."

Kumashiro believes Congress understands the challenges the Air Force faces and wants to help, but only budget stability will allow the service to plan how to structure its force. For now, planners are carefully optimistic about their multifaceted plan to reduce the maintainer shortfall and, in the end, increase readiness.

"We have a good way ahead that minimizes the readiness risk, but we still have major concerns," Kumashiro said, adding, "I think there is light at the end of the tunnel." ✪

SHIFTING FUTURES

By Brian W. Everstine, Pentagon Editor



Airmen ready a C-17 for an airdrop mission during Crescent Reach, an exercise at JB Charleston, S.C.

USAF photo by TSgt Jason Robertson

Short on funds, the Air Force must plan for the future while meeting today's wartime needs.

THE Air Force needs to be prepared for any possibility. To meet that daunting task, it is taking multiple, large-scale steps to determine what its future requirements will actually be and take care to ensure these overlapping plans can move forward to reality, top service officials said at AFA's Air, Space & Cyber Conference at National Harbor, Md., in September.

"My sense is that we may not have the exact prediction right when it comes to the future of combined arms and the global challenges we face," new Air Force Chief of Staff Gen. David L. Goldfein said in his address at ASC, held just outside of Washington, D.C. "History would suggest that may be China, Russia, Iran, North Korea, violent extremism, [but] we don't have that exactly right."

To prepare for the future, Goldfein is directing in-depth, long-term looks at key areas he says the service must revitalize and refocus on. The Air Force can't simply throw money at these issues, because the service just does not have it.

It is not just strategic planning, however—the Air Force's often geriatric equipment needs a refresh to remain relevant against current and future enemies. Air Combat Command and Air Mobility Command are looking to move beyond conventional thinking to get an idea of what is essential for key airframes of the future in a time of strict budgets and intense combat requirements.

"Balancing this fleet with current demand, reduced capacity of aircraft and personnel, and technological advances among our adversaries make maintaining Air Force full-spectrum readiness a challenge," Air Force Secretary Deborah

USAF photo by A1C Kristan Campbell

Airmen perform maintenance on an MQ-9 Reaper for a Red Flag 16-3 mission at Creech AFB, Nev.

Lee James said at the conference. "But we are taking the necessary steps to ensure the Air Force's dominance for another generation."

THREE STUDIES

Goldfein's first major initiative as the service's Chief is to begin a look at three key areas he says will define airpower in the future. A series of studies will take the entirety of his tenure at the top of the Air Force.

Goldfein used his inaugural high-profile public speech as Chief of Staff of the Air Force at ASC to announce the three studies. They will investigate how to revitalize squadrons across the service; strengthen the role of Air Force leaders in the joint community; and improve multidomain command and control for the future.

"If we focus on these, we'll be ready for [whatever comes] next," Goldfein said. "And this is one thing I know with absolute 100 percent clarity. We have from right now until then to get ready. And it will take all of us, airmen, industry, allies, joint partners—all of us working together to present to combatant commanders, to our Secretary of Defense, and our Commander in Chief the air component where squadrons are revitalized as the heartbeat of our Air Force, where our Air Force consists across the board of joint leaders and teams that can step in in a crisis and lead a joint task force if the nation calls upon us to do it."

Goldfein named three one-star generals to take the lead on these studies.

Brig. Gen. Stephen L. Davis, director of manpower, organization, and resources, will study how the service can refocus on the squadrons. "I believe that it is at squadron level where we succeed or fail as an Air Force," Goldfein said. "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 occurs."

The service needs to seriously study and understand what the future squadron structure will be.

Photo by Brittany Palmer

Gen. David Goldfein, USAF Chief of Staff, speaks at AFA's Air, Space & Cyber Conference about the state of the force.

An E-8 JSTARS taxies at al Udeid AB, Qatar. A draft request for proposals to recapitalize the aircraft type has been released to industry.

USAF photo by SrA. Janelle Patiño

A KC-46 Pegasus refuels an A-10 in July. The mission was the last test required for the tanker's Milestone C production decision. AMC has a requirement for 479 tankers, but is only buying 179 KC-46s.

Boeing photo by John D. Parker

"This is where we step back and ask ourselves the fundamental question: What does a 21st century squadron need to look like?" Goldfein said. "I think it looks different. I think there may be a civilian-military mix to it." In addition to more civilian involvement, Goldfein said the Air Force needs to follow the work of his predecessor, Gen. Mark A. Welsh III, and incorporate even more of the Air National Guard and Reserve into the squadron mix.

Brig. Gen. Brian M. Killough, director of strategy, concepts, and assessments, will direct the study of strengthening joint leadership in the Air Force. This includes how airmen, both enlisted and officer, are developed and how they can work more with other services.

Goldfein said he will strengthen the joint preparedness of wing and numbered Air Force-level commands, so they can be ready to lead task forces. There must be a strong air focus in the planning of campaigns to "ensure that we are actually looking at the business of combined arms" and ensure that all components, especially air, are optimized. To do so, USAF should produce leaders truly conversant in joint operations, who know how to work with other services.

"That means we strengthen the path that we go on to be able to build joint leaders who are able to have that airman's voice in the dialogue, especially at the level of campaign design," Goldfein said. "So that in campaigns of the future, they are truly joint in nature and all of those cultures are in play to get to the best possible solution."

Brig. Gen. B. Chance Saltzman, director of future operations, is to look at how to develop networked systems and next generation, multidomain command and control, to prepare the Air Force for what comes next in the "information age of warfare," Goldfein said. The service brings in massive swaths of intelligence, surveillance, and reconnaissance data and that information must be "fused" in a way to enable combatants to make decisions immediately and stay ahead of possible adversaries.

The service will have to develop common mission systems, common data, and common architecture that can be analyzed using artificial intelligence and machine-to-machine data to understand and make decisions immediately.

The Air Force's command and control infrastructure must "be the connective tissue for the joint force as we go forward," Goldfein said. "Some would say we're already there, and I agree. But there are still so many of our processes that are in the industrial age. And for our industry partners, this is a partnership that we have to work together because it starts fundamentally changing the way we think about procurement."

The new way of thinking starts with a common mission system, and then thinking about how platforms and sensors can fit into that system, he said.

To address this future command and control environment, Air Combat Command is going to look at future procurement and operations, as it recently did with its fighter force. Earlier this year, the command published an Enterprise Capability Collaboration Team project report on the future of combat air, called Air Superiority 2030. In it, ACC experts discussed what the next generation of air superiority could be—beyond the Air Force's newest fifth generation fighters such as the F-22 and F-35. This included increased networking between aircraft and looking at stealth less as a singular component, such as low observable, and more as a combination of approaches.

ACC is directing a year-long ECCT project on command and control, because being able to rapidly put resources where they're most needed can help multiply capacity, Air Combat Command chief Gen. Herbert J. "Hawk" Carlisle said at ASC.

The study comes as the Air Force is beginning recapitalization of its E-8 Joint Surveillance Target Attack Radar System fleet. A draft request for proposals to in-

Staff photo by Mike Tsukamoto

Secretary of the Air Force Deborah Lee James greets retired Lt. Col. Richard Cole, one of the original Doolittle Raiders, before he announced the name of the new USAF bomber, the B-21 Raider, at AFA's Air, Space & Cyber Conference.

dustry was released days before Carlisle announced the study. The procurement of command and control will continue, because once the JSTARS process finishes, the Air Force will need to recapitalize the E-3 Airborne Warning and Control System and its RC-135 Rivet Joint fleet, Carlisle said.

LESSONS LEARNED IN ISR

The state of certain Air Force fleets related to the current demand highlights strategic planning. Since 2007, the Defense Department has increased the number of intelligence, surveillance, and reconnaissance aircraft available by 600 percent—a dramatic boost in a fleet almost unparalleled across the military, Chairman of the Joint Chiefs of Staff Marine Corps Gen. Joseph F. Dunford Jr. said at the conference. Despite this astronomical growth in capability, the Air Force is still only meeting 30 percent of DOD's overall demand for ISR.

"We cannot meet the demands today requested of any of our combatant commands," Carlisle said at the conference. "We are short resources across everything the Air Force does. We are undermanned, and under resourced in everything."

The military cannot buy its way out of the problem and instead should plan ahead on how it can collect, analyze, and disseminate information, Dunford said.

In the meantime, the Air Force is standing up new MQ-9 Reaper operating locations and doubling its classes for operators so future demands can come closer to being met, James said.

The problem long-term isn't simply having to buy more aircraft, Dunford said. Instead, the military's leadership must have enough information to set reasonable requirements and make appropriate resourcing and tasking decisions.

"We need to make sure we're pursuing the right objective," Dunford said. "I hope that's music to the ears of airmen, because we've gone to the Air Force over and over again to increase capacity."

Critical Air Force modernization programs to address capability shortfalls are multilayered and in various stages of maturity. MQ-9 Reaper ISR and strike capabilities are well-established. The fifth generation F-35 fighter has just reached initial operational capability; it is officially ready to go to war. And the KC-46 Pegasus program is still in the process of getting off the ground.

For Air Mobility Command, the focus on what's next should begin before its newest aircraft—the Boeing KC-46A Pegasus—even becomes operational.

AMC may recast its 15-year-old strategy of replacing the KC-135 Stratotanker and KC-10 Extender with a three-phase program dubbed KC-X, KC-Y, and KC-Z. Gen. Carlton D. Everhart II, AMC commander, said a new approach is needed. The Pegasus—which won the KC-X contest—will likely be the KC-Y, he told reporters, albeit with some new technologies and equipment to let it get closer to heavily-defended airspace. He still has a requirement to buy 479 tankers, but the KC-46A program only provides 179 new aircraft. The Pegasus is larger and more capable than the KC-135, but he needs new tails as quickly as possible, and skipping the second contest might bring new aircraft online faster, he said.

Everhart asserted that all too soon, perhaps as early as the mid-2030s, something even more advanced will be needed to deliver fuel to the forward battle areas, and possibly beyond. The KC-Z, he said, might be smaller, possibly unmanned, and capable of penetrating an anti-access, area-denial environment. The time is now to begin assessing that requirement, he said.

AMC is conducting studies on this future right now and is working with industry on the possibilities. For the first time in years, AMC hosted an industry day at Scott AFB, Ill., to do this outreach.

"We are engaging with industry to find out from them, ... 'What are you thinking about?'" Everhart said.

Meanwhile, AMC's strategic airlifters require upgrades and modernization, though they have a lot of life left. The newest airlifter, the C-17 Globemaster III, is receiving upgrades, such as a new head-up display, new oxygen-generating systems, and bigger fuel tanks to keep the fleet fresh. AMC has also studied options for how to best base the aircraft to extend its life—such as rotating C-17s from certain regions that contribute to aircraft corrosion to drier regions where that does not happen. Moves like this could mean the C-17 could theoretically last up to 80 years, Everhart said.

The notion of military aircraft flying for 80 years sounds, on the surface, absurd. But that may well be reality, as proved by USAF's longstanding plans for the B-52. The current fleet of eight-engine bombers has been continuously upgraded, but today's aircraft were purchased in the early 1960s and are expected to fly into the 2040s, when they will be eight decades old.

Secretary James at the conference dropped the biggest "bomb," figuratively. Alongside the sole remaining Doolittle Raider, retired Lt. Col. Richard E. Cole, James announced the service's secretive new long-range strike bomber had a name: the B-21 Raider.

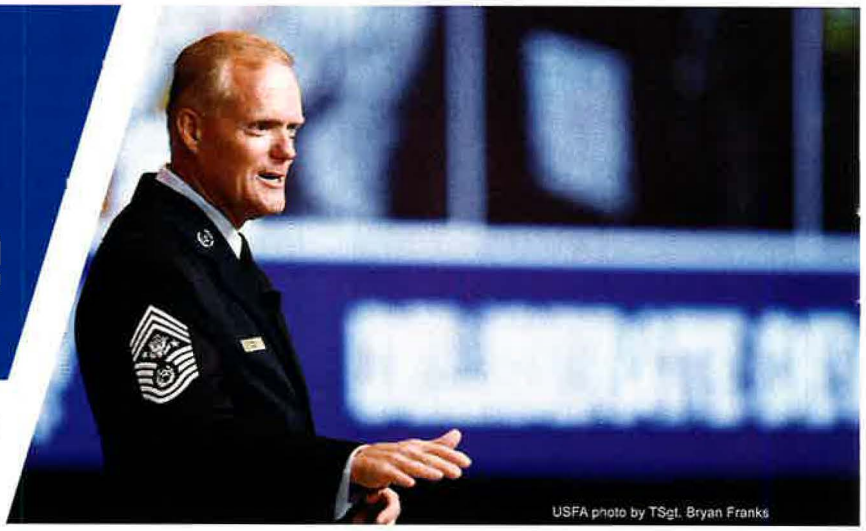
The Air Force has maintained for years that it needs to buy 80 to 100 of these aircraft to recapitalize its fleet, but shortly after the name was announced the head of Air Force Global Strike Command said 100 B-21s is probably the minimum acceptable number.

AFGSC head Gen. Robin Rand said he must move on from heavy reliance on ancient bombers like those venerable B-52s. The Air Force's bomber fleet is already stretched thin because of B-1s and B-52s rotating through operational commitments in US Central Command and the continuous presence in US Pacific Command, while the BUFFs and stealthy B-2 bombers also have nonstop US Strategic Command nuclear requirements.

The command is studying the number of bombers it will need in the 2030-50 time frame. "We won't set the official number" for a while, Rand said, but "I can't imagine we would have one less bomber." ✪

The Hard Knock Life

By June L. Kim, Associate Editor



USFA photo by TSgt. Bryan Franks

USAF photo by SrA. Justyn M. Freeman

USAF photo by TSgt. Miguel Lara III

CMSAF James Cody cautioned that airmen must be resilient because they will never have it easy.

Clockwise from left: TSgt. Rene Garcia puts a panel back on an F-16 during phase maintenance at Bagram Airfield, Afghanistan. CMSAF James Cody speaks at AFA's Air, Space & Cyber Conference in September. His presentation focused on taking care of airmen at all levels. SSgt. Kory Stanton goes over forms during a preflight check for a B-2 at Andersen AFB, Guam.

Uncertainty will always be a part of serving in the Air Force, so airmen must stay flexible and adaptable, USAF's top enlisted airman said during AFA's 2016 Air, Space & Cyber Conference at National Harbor, Md., in September. CMSAF James A. Cody, making his last AFA address before retirement, pressed airmen to remain resilient.

Asked when USAF will ever get a break from having to do "more with less," Cody said airmen have to put their workload in perspective. The service is the smallest it has ever been, and the work-life balance, he said, "is not about an even scale. It'll fluctuate."

While Air Force leaders at every level must acknowledge the hardships airmen are facing, Cody chided the unknown questioner, saying, "It's a little bit unfair to just sit there and [ask], 'When does it stop?' ... It stops when the nation tells us they need us to stop doing the business for the nation."

Senior leaders "don't just sit up in the Air Staff and think about new things to have people do," he said. "Quite the contrary. We try to balance that workload based on the requirements."

THE RIGHT BALANCE

He added his regret that "do more with less" has become a modern epithet in the military, "because it really just puts the wrong connotation" on the expectations of airmen, he said.

"We have to look [at] how reasonable and sustainable that is over time and then figure out the right balance," he said. "Heck, yeah, we do a lot more today," Cody observed, "but we have a lot more assets at our fingertips to be able to do a lot more." Airmen 30 years ago put in the same number of hours that airmen do today, he noted.

Cody said USAF leaders have moved to reduce additional duties, to give back to airmen what Chief of Staff Gen. David L. Goldfein called "white space on their calendars."

Goldfein and Air Force Secretary Deborah Lee James said they eliminated or reduced 29 of 61 additional duties that have accumulated for airmen during the past several years. Though

USAF photo by A1C Chr stopher Dyer

USAF photo by SSgt

Left: SrA. Jason Watson, a crew chief, cleans the landing gear and wheels of an F-16 before a sortie during Red Flag-Alaska at Eielson AFB. Above: SrA. Kristine Thomas, a loadmaster, prepares to marshal a C-17 during a Patriot Warrior exercise at Volk Field ANGB, Wis., in August.

the additional duties were introduced to reduce administrative burdens, "we have heard your concern and frustration," wrote James and Goldfein in an August memo. The added tasks "affect our ability to focus on core missions, which in turn impacts our readiness," they wrote, saying that this move was just the "first step in this initiative" to reduce the workload of airmen.

Two specific areas of additional duties getting focus are ancillary training and computer-based training, Cody told reporters at the conference. These two areas affect every airman and "I'm optimistic that the review of the ancillary training and CBT will produce a greater net effect on the majority of airmen," he said.

To reduce people shortages in critical specialties, the Air Force announced changes in April to allow airmen to cross-train from less-critical career fields into those in high demand. Cody told reporters at the conference that though retraining is targeted by grade, "the rank isn't the job."

While he would ideally want midlevel airmen for these specialty switches, they must have some experience in the field they want to cross-train into. In the maintenance field, Cody said, "I need them to be a staff sergeant or tech sergeant, ... experienced in maintenance."

Cross-training from a support-type field might be more difficult. For example, if a staff sergeant or tech sergeant specializing as a medical technician wants to cross-train to maintenance, "well, that's great," Cody said, "but they can't perform as a seven-level or even a five-level." They would have to start as "a three-level, get the five-level upgrade, [and] get the experience."

ESSENTIAL EDUCATION

The important thing is that airmen are able to do the job, he said.

Cody wants to steer clear of potential situations where NCOs in their new specialty find themselves in "a leadership role based on their rank, but they don't have the experience or credibility in that career field."

Education, Cody insisted, is "absolutely essential to the future of our Air Force," and "we have elevated leaps and bounds [from] where it was."

"We have redesigned basic military training," restructured professional military education into sequenced courses in airmanship, and now, there are "credentialing opportunities online ... [for] every one of our primary career fields," he said. Next year, the Community College of the Air Force will have graduated more than a half-million airmen since 1972.

Enlisted airmen are "educated in their technical career fields, and that validates what they need to be a professional airman and the things [that] we do for our nation," he said. "We should be proud of that."

Cody reported that USAF is working to do better in supporting those with exceptional family members—those who require special housing, medical attention, education, and financial support—but it will take time to reshape the bureaucracy in this regard.

"There's been a significant amount of effort to try to get this right," but it must be done as a defensewide effort, he said. If it's not done together with other military service leaders, one or more will get out of step with the others. He promised that USAF would not let go of this initiative. ✪

VULNERABILITY IN CYBERSPACE

By Will Skowronski, Senior Editor

Planners must ensure credible cyber defenses are present all through military systems.

Recent high-profile national cyber attacks show that everyone is vulnerable to the threat—including the Air Force. Unfortunately, like much of the world, USAF isn't properly organized or equipped to defend against dedicated cyber attacks, Gen. John E. Hyten, chief of Air Force Space Command, said during AFA's 2016 Air, Space & Cyber Conference in September.

Hyten said the 50th Space Wing at Schriever AFB, Colo., has mission defense teams looking at defending the service's capabilities across the board, "and holy cow, have we learned from our airmen as we've given them the responsibility to defend our weapons systems," he said.

While the service's cyber protection teams do have the equipment to defend weapons systems, he said, they take those tools or capabilities with them when they leave a particular wing or mission group. This is a problem that has to be addressed, said Hyten, who was confirmed, a week following the AFA conference, to head US Strategic Command.

Cyber attacks are "as much a threat to us in terms of our ability to effectively perform our mission as any of the other ... tools that our adversary can use," Gen. Ellen M. Pawlikowski, commander of Air Force Materiel Command, said. "Our weapons systems are not totally invulnerable because they are not necessarily connected to the web when they're executing their mission."

NO EASY FIX

The wide range of threats—from losing control of a weapon-carrying remotely piloted aircraft, to plug-in equipment infecting a fighter jet's software, or simply a power outage at a base that powers cyber or space weapons—means there's no easy fix.

"There is no 'one size fits all' when it comes to our wings," Hyten said. "Every wing is different. ... We need to be able to look at all of those wings and understand what we have to do."

Pawlikowski said the service has recognized its weapons systems are vulnerable to cyber attacks for years, but has taken little action to defend them.

"We spent a couple years ... acting like Chicken Little and really didn't do anything to get at this issue of our weapons systems," Pawlikowski said. While almost everyone has been trained on network security, "we never really took a look at, 'What do we do about this? How do we deal with this?'"

In January 2015, a number of Air Force organizations, including Space and Missile Systems Center, AFMC, and acquisition, created a cyber resiliency steering group to understand the threat and think of ways to counter it.

The effort might have arrived just in time. US Cyber Command, which monitors the array of cyber threats to military assets, is beginning to see attempts to attack and take control of networks, rather than merely attempts to steal information, USAF Lt. Gen. James K. McLaughlin, CYBERCOM's deputy commander, said during the conference.

"It's really a different military problem," he asserted.

Last year, USAF's cyber resiliency group devised a campaign plan that may take up to seven years, with seven areas of focus: analyze mission threads to find potential cyber vulnerabilities; "bake in" cybersecurity to future weapons systems and upgrades; develop the needed cyber expertise;

make weapons systems more flexible so cyber defenses can be upgraded; establish a common understanding of the problem and common vocabulary for cyber security entities; reduce the vulnerability of legacy weapons systems; and collect intelligence on real-world threats.

Pawlikowski said although a lot of time has been spent on building the team of experts needed to implement these seven "lines of attack," it has made progress on each focus area. It has spent the last year—with the help of RAND Corp., MITRE Corp., and industry partners—beginning the work of mapping mission threads and analyzing vulnerabilities.

The mission-thread approach provides a situational awareness that other approaches might not, Pawlikowski said. As an example, she explained the multiple steps required to carry out an F-16 precision strike, many having no direct connection to flying the aircraft or launching weapons. These involve automatic test equipment used for maintenance or the system for uploading operational flight programs, each creating software connections to the aircraft—and thus cyber vulnerabilities. Planners need to consider these ancillary connections.

"When you look through and you lay out the mission thread that it takes to conduct a global precision attack, you find that there are cyber threat 'surfaces,' as I like to call them, all over the place," she said.

The best way to prevent attacks in the future, Pawlikowski said, is to address cybersecurity as early as possible in the life cycle of a weapon and make sure cyber defenses are included at the outset.

"We don't want to have to scab it on," she said.

The goal is to provide each necessary player—including contractors, government engineers, financial managers, and acquisition managers—the tools and knowledge to understand how to carry out a cyber risk assessment, then develop a test and evaluation master plan that includes cyber testing, Pawlikowski said. Cyber requirements will also be built into a program's contracts.

This cybersecurity effort will require recruiting and developing cyber experts and engineers.

"Tools are no good without the craftsmen that know how to use them," she said.

To that end, the Life Cycle Management Center is standing up an engineering team that will support all USAF program offices in developing cybersecurity measures as any given system moves through acquisition. The team will develop training programs and classes for people throughout the Air Force.

LINES OF ATTACK

Even designing systems for cyber security from the outset won't be enough, as threats will change faster than the pace of recapitalization. Accordingly, the fourth "line of attack" calls for building flexible, agile, and adaptable weapon systems with the use of open architecture and other means so platforms can be constantly upgraded to meet new threats.

"We have to be able to respond quickly," Pawlikowski said. As an example, "we can't take 10 years to change out the GPS positioning, navigation, and timing equipment in an airplane if there's [already] a cyber threat that has been able to negate our ability to use GPS."

To ensure the cyber campaign can be carried out across a program's life cycle, she said, USAF needs a classification guide and vocabulary that will establish a common understanding, because the current grasp of the security environment is scattershot.

Flexibility, agility, and adaptability depend on the cyber language to be "universally consistent," she said.

While planners want to bake in security measures in future weapons systems, the cyber campaign's sixth line of approach requires finding fixes for places where legacy systems are vulnerable.

Air Force Research Laboratory is working with industry partners to find the "biggest threat surfaces" and ones that appear in multiple mission threads so they can be closed with available resources first, Pawlikowski said. The most cost-effective approach will employ a combination of hardening cyber defenses while making systems resilient enough to fight through a cyber attack.

All system automated defenses will be supplemented by local defense teams.

"This is a combination of man-in-the-loop and building cyber resiliency," she explained. "One of the things that we've learned over the years," she said, is that trying to create comprehensive, automatic self-protection methods for weapon systems, "particularly ones that have a lot of threat surfaces," forces a reliance on software hardening that "can cause us to break the bank and not be very effective." Realistically, "when we look at introducing solutions to cyber protection, ... it's not all on our industry partners to harden this thing so it's impenetrable."

The best way to prevent attacks in the future, Pawlikowski said, is to address cybersecurity as early as possible in the life cycle of a weapon and make sure cyber defenses are included at the outset.

Pawlikowski said she expects each USAF base will have a cyber operator to defend on-site weapon systems between 2020 and 2025.

Hyten said there are plans to assign each operations group a cybersecurity squadron, charged with defending systems, within 10 years.

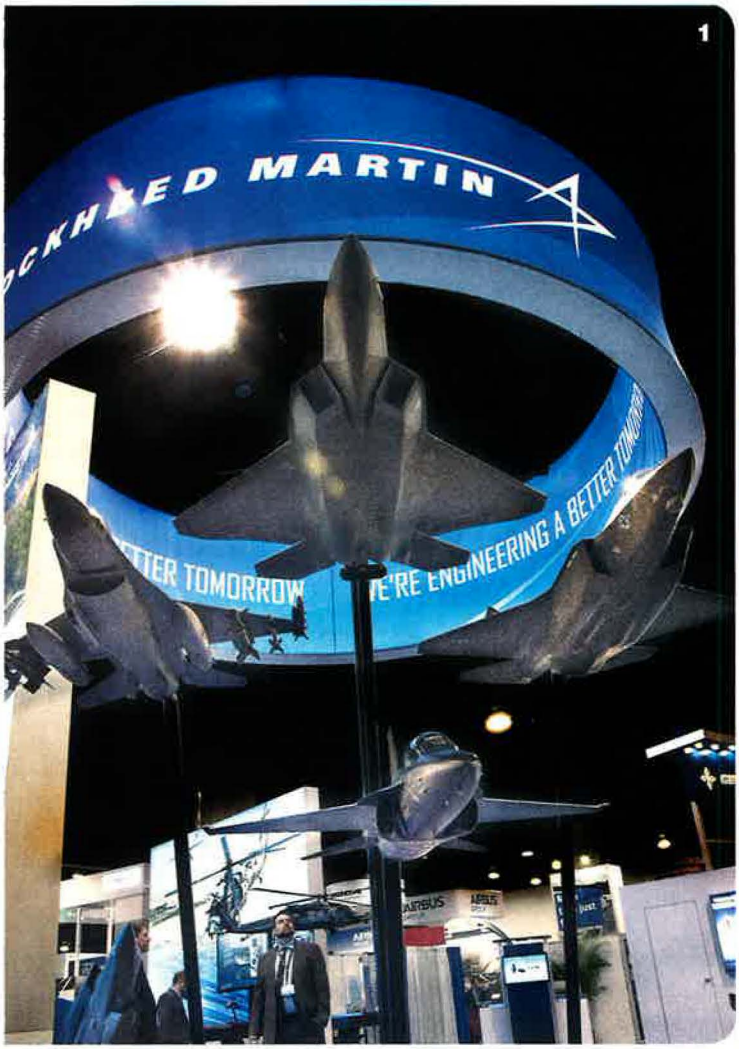
But while planners can try to anticipate potential vulnerabilities, monitoring real-world cyber attacks is the only way to understand the true threat.

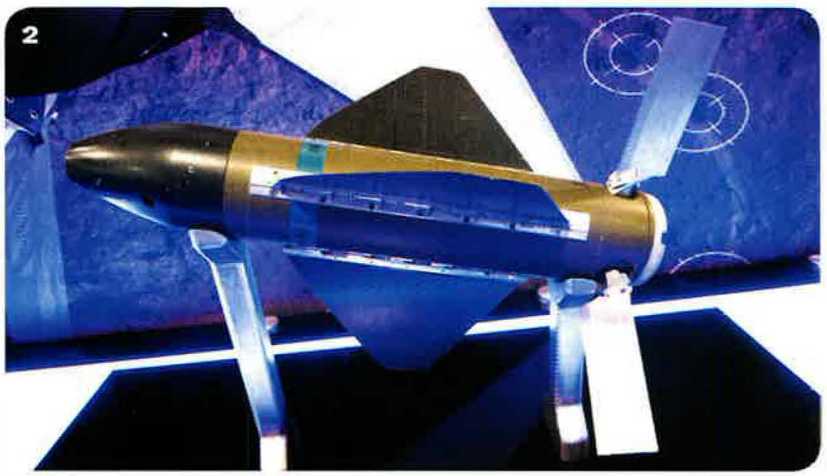
"We need to have cyber intelligence as part of this solution," Pawlikowski said while describing the seventh line of attack. "We can't try to defend against whatever our own creativity says we can do. We have to have intelligence."

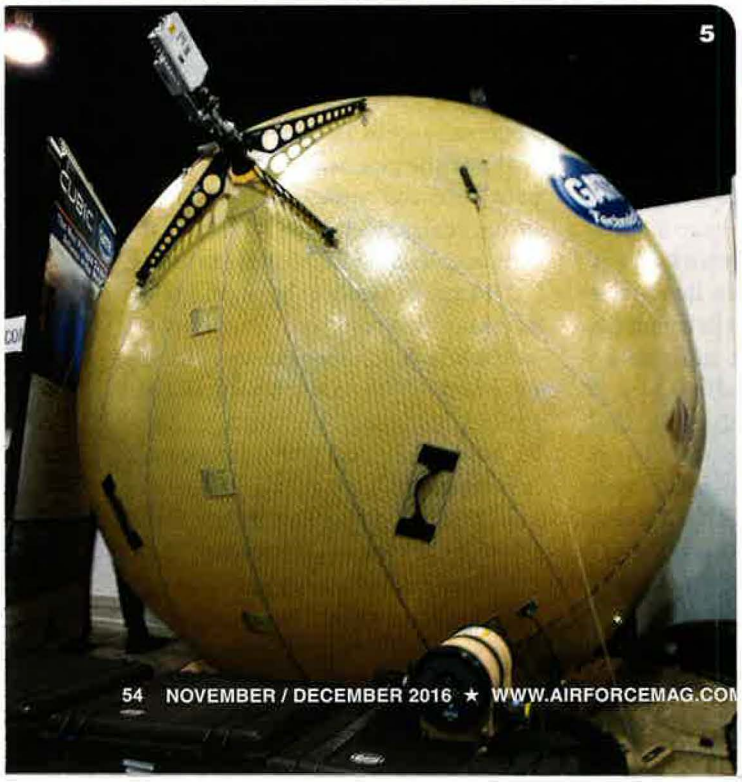
She added that none of the interrelated lines of attack require technological breakthroughs to carry out.

"This is all just plain hard work," she said. "This is all just digging in,

Visitors thronged the technology exposition at AFA's 2016 Air Space & Cyber Conference. Among them were Air Force Secretary Deborah Lee James and other civilian USAF leaders, service four-stars, visiting foreign Air Chiefs, and dozens of USAF general officers—all inspecting industry's best ideas for meeting current and future Air Force needs.







Staff photography by Heather Lewis and Mike Tsukamoto

More than 120 exhibitors presented the latest technology.

LEFT PAGE: 1. Lockheed Martin's booth proclaimed its status as USAF's fighter builder, adding its T-50A T-X trainer hopeful—at bottom in the photo—to a large-model formation of an F-16 at left, F-22 at top, and F-35 at far right. **2.** Orbital ATK's Hatchet miniature glide weapon is one candidate for a new class of very small, precise munitions. **3.** The Air Force Research Laboratory displayed a demonstrator-simulator of its Automatic Ground Collision Avoidance System. Deployed on F-16s, Auto-GCAS has already saved several lives. **4.** CMSAF James Cody shares a light moment with US and foreign airmen. **5.** A full-size Cubic GATR Technologies portable, inflatable communications terminal was an expo eye-catcher.

THIS PAGE: 1. CMSgt. Melvina Smith, top NCO of the 509th Bomb Group at Whiteman AFB, Mo., takes a turn in a T-50A trainer demonstrator, assisted by Lockheed Martin's Kenn Cooper. **2.** Elbit Systems displayed this full-size dual-mode JDAM bomb. Elbit makes the laser guidance system. **3.** Models of America's two strategic missiles—an Air Force Minuteman III and a Navy Trident D-5 missile—displayed by BAE Systems. The company hopes to earn work on the new Ground-Based Strategic Deterrent missile. **4.** Textron promotes its 12-foot-wingspan Aerosonde remotely piloted aircraft as a multimission system having more than 14 hours' duration. **5.** Rockwell Collins' F-35 helmet has been described as head-mounted "work space."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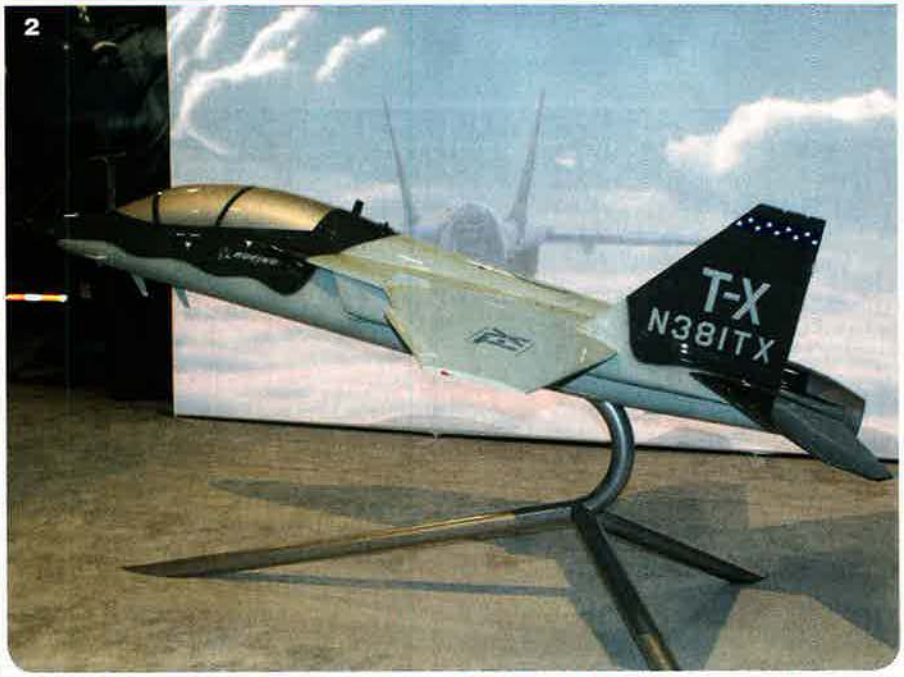
T-X
N381TX
2


3


Block 50 Ground Control Station
- Demonstrator Version -
5


4

LEFT PAGE: 1. Aircrew and battlefield airmen alike are getting more wearable tech to improve connectivity, survivability, and situational awareness. **2.** As the T-X trainer competition reaches its climax, three competitors presented large models at the tech expo. Boeing rolled out its new-design T-X—model shown here—a week before the conference and brought a trailer with a simulator for VIPs to try. **3.** Lockheed Martin's T-50A is a proven trainer that has served with the Republic of Korea Air Force for a decade. **4.** The Raytheon T-100 T-X offering is based on the Alenia Aermacchi (now Leonardo-Finmeccanica) MB-326. **5.** A General Atomics employee shows off a proposed cockpit-like Block 50 common ground control station for remotely piloted aircraft.

THIS PAGE: 1. This Lockheed Martin/Hawker-Beechcraft AT-6 is an armed version of USAF's T-6 trainer for a low-cost/permissive airspace close air support aircraft. **2.** Jessi, of the Warrior Canine Connection, makes friends with SMSgt. Tiger Platt, a KC-10 boom operator trainer at JB McGuire-Dix-Lakehurst, N.J. **3.** Bombardier's Global 6000 business jet is a candidate for the platform to carry the next version of the Joint Surveillance Target Attack Radar System. **4.** The Bombardier jet shown by Lockheed Martin in its proposed JSTARS configuration. **5.** Lockheed Martin displayed a hybrid wing concept for a future airlifter. The model had interchangeable propulsion systems.


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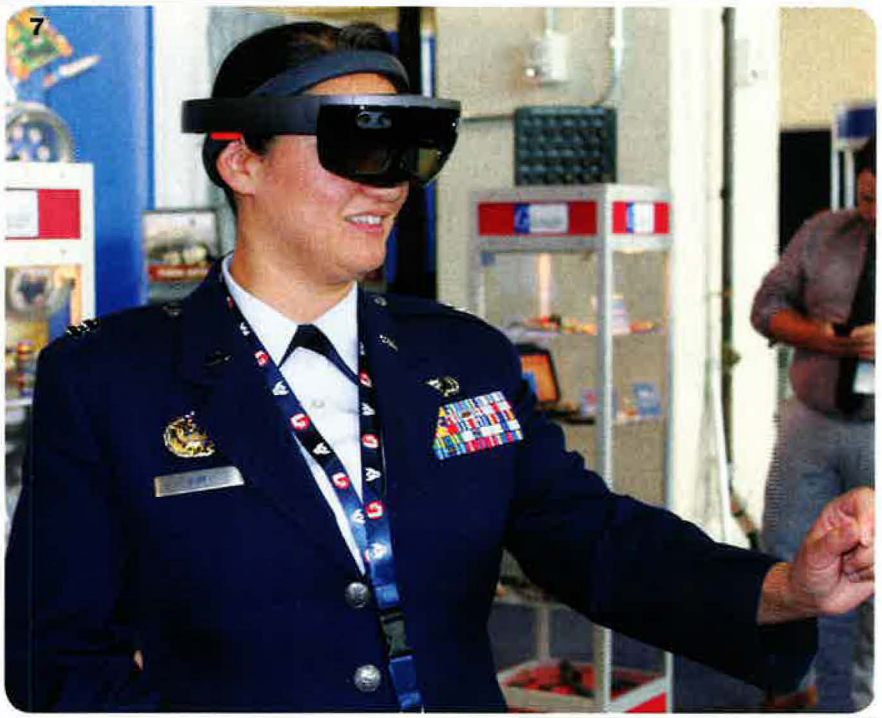
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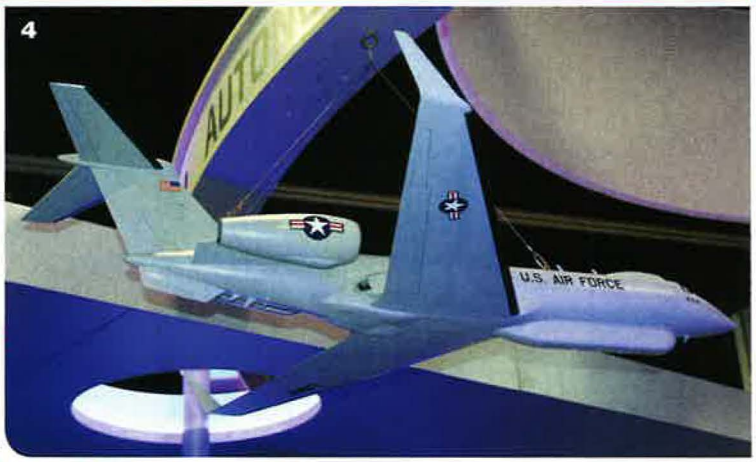


1. Boeing presented models of intelligence, surveillance, and reconnaissance aircraft in anticipation of USAF modernizing its ISR fleet in the coming decade. All were based on the 737. Three shown were the Rivet Joint, **2.** JSTARS, and **3.** Compass Call. **4.** Northrop Grumman's JSTARS recap would likely be hosted on the Gulfstream 550 business jet. **5.** Subcontractors were well-represented at the expo. Among Marotta's products are control actuators. **6.** Raytheon's Griffin is another small precision munition, touted as reducing collateral damage. **7.** Capt. Michelle Kim explores a booth display using Microsoft's HoloLens 3-D imaging system. **8.** Tactical Air Control Party gear on display included a portable satellite ground station. **9.** The General Atomics Aeronautical Systems entrant in the Defense Advanced Research Projects Agency's Gremlins initiative. The system is a recoverable remotely piloted vehicle. DARPA's idea is to create a class of weapons that can be reused and built cheaply enough that some could be sacrificed without crippling the force structure. **10.** A Lockheed Sikorsky HH-60 Combat Rescue Helicopter model in a menacing black paint job. **11.** Chuck Heflebower, an AFA national director and Leidos executive, makes a point with Air Combat Command chief Gen. Hawk Carlisle.

Exhibitors agreed the expo was a great success, offering excellent opportunities for face-to-face exchanges with USAF's top leaders and to showcase innovative ideas to enhance the force. ✪

AIR FORCE resources are so thinly spread that only a campaign of innovation at every level will get the service through the challenging years ahead, said service, industry, and Pentagon leaders at AFA's Air, Space & Cyber Conference, held in September at National Harbor, Md.

One of the keys to continuing to provide more mission with fewer assets is to ask the right questions. These are about capabilities—not necessarily the platforms that provide those capabilities, Marine Corps Gen. Joseph F. Dunford Jr., Chairman of the Joint Chiefs of Staff, said in his keynote address.

The question is not "how do we buy more Predators?" but "how do we make decisions and get the information we need?" said Dunford.

Air Force Chief of Staff Gen. David L. Goldfein observed that if the need is for a particular kind of intelligence, "I don't care" what platform delivers it. By not defining the answers, he said, airmen will be free to deliver the solutions to capacity problems in ways leaders didn't expect.

Dunford warned that anticipated budgets won't provide enough money to buy the expanded capability that rising demands on the Air Force require. Innovation and streamlined acquisition practices will have to become the norm. "The path we're on won't get us there," he said.

The conference was held a week before the end of Fiscal 2016, just before Congress passed a continuing resolution rather than a full-up defense authorization bill, and Air Force Secretary Deborah Lee James detailed the many hits the USAF budget will take as a consequence. These mainly affect new starts and programs about to go to higher production rates, such as the F-35 fighter and KC-46 tanker.

CORRECTING THE BALANCE

James said, though, that as much as the Air Force must keep up with modernization, she's put a priority on increasing the number of people in the service, correcting an imbalance she acknowledged she played a role in creating.

The "historic downsizing" of the last 20 years has resulted in the smallest Air Force ever, James said, explaining that while the personnel cuts "made sense on paper" they have severely hurt readiness, especially at a time of steadily increasing operations tempo. In a press conference, she said she would make personnel a higher priority than the F-35, KC-46, and B-21, the three modernization programs she has held up as existential to USAF's future.

The service also finds itself in a "battle for talent," characterized by James as a competition for "recruiting and retaining the best." To be more competitive, she said the Air Force will renew its efforts to achieve greater diversity and tap the full talent pool. James promised to soon roll out a "second diversity and inclusion initiative" to reach USAF manpower goals.

Another area of innovation will have to be in professional military education.

"I don't fear budget constraints," allowed Lt. Gen. Steven L. Kwast, commander and president of Air University at Maxwell AFB, Ala. "If we're clever enough problem-solvers, $6 billion should be enough" to train the force to modern standards. He also called out diversity as a crucial element in delivering relevant training.

At Air University, he said, civilians, foreign exchange students, and cross-service personnel train together with airmen, who make up only 48 percent of students. This variety of perspectives will help airmen avoid building "a blind spot that brings you down."

THEIR BLOOD

By Wilson Brissett, Senior Editor

Far left: Cadets at Field Day at the Air Force Academy in Colorado Springs, Colo., in 2015. Left: Air Force Chief of Staff Gen. David Goldfein speaks at AFA's Air, Space & Cyber Conference. Above: The combined air operations center at al Udeid AB, Qatar. The CAOC provides command and control for air operations over Iraq, Syria, Afghanistan, and other nations in the Middle East. Above right: Marine Corps Gen. Joseph Dunford Jr., Chairman of the Joint Chiefs of Staff, delivers a keynote address at AFA's conference in September.

Kwast said innovation and economizing go hand in hand. It's about "taking a $10 problem, solving it for 10 cents, and making your enemy solve it for $100." Following this mind-set, he said, will help the Air Force leave behind "the industrial age of education" because it's "not suited to a complex world."

Following on this thought, Goldfein said it's time to "move into the information age of warfare." He'll take solutions from anywhere, he said, and will start by listening carefully to all ideas, especially when "we don't have money and manpower to throw at the situation."

Goldfein said he is looking at revitalizing the squadron as the heart of the Air Force organizational chart, and he encouraged his commanders to cultivate new ideas from the bottom of the chain of command.

The accelerating pace of technological advance requires intense innovation in acquisition and development technology, too. Joint chiefs vice chairman Gen. Paul J. Selva said that means seeking innovation in places where the defense enterprise has not usually looked before. Though the armed services pioneered technologies in the past, now it is commercial industry leading the way, and government leaders must entice nontraditional vendors to participate in national defense. The Pentagon will have to emulate and embrace the high-risk, high-reward mind-set of technology start-ups, he said.

RISKING EARLY FAILURE

The defense acquisition environment is where "start-ups don't find themselves comfortable," Selva said, given the risk-averse mind-set of the defense enterprise. These companies are on the cutting edge, but either don't know about defense work or are leery of doing business with DOD, which tends to be overly prescriptive on how to develop new systems.

"Reinventing ourselves around the kinds of technologies that make us successful," Selva went on, requires a willingness to "risk failure early" in the process. Risk aversion has hampered development of a next generation of remotely piloted aircraft that could operate in the anti-access, area-denial environments being created by China and Russia, he said.

To meet these challenges, USAF must evolve, taking on "more risk to speed up acquisitions," said Kenneth S. Callicutt, director of capability and resource integration at US Strategic Command. The same is true for the development of autonomous vertical lift systems, where the military has shown "too much conservatism," according to Patrick Donnelly, program director, rotary wing, at Boeing Phantom Works.

In a niche where "it's a risk for industry to invest," Donnelly continued, "we need a quicker acquisitions cycle" to meet the current technical challenges and to make sure companies are rewarded financially for their investment.

The difficulty in attracting new talent—both individuals and companies—might be generational. "Would you expect to see a millennial at the opera?" asked Gen. Ellen M. Pawlikowski, commander of Air Force Materiel Command. "We have to reach out to the forums they go to, which may put some of us out of our comfort zone."

Others aren't convinced the gap is so wide. In the area of space programs, the Air Force already has a "strong cultural tradition of innovation," insisted Winston A. Beauchamp, deputy undersecretary of the Air Force for space.

Goldfein agreed. In addressing the fundamental challenge of developing a command and control system capable of competing in the "networked approach to the warfare of the future," the Air Force doesn't need to start from scratch, he said. Instead, he pointed to his own experience in the combined air operations center, where a multinational team has coordinated intelligence, surveillance, and reconnaissance for global counterterrorism operations since 2003.

The CAOC is a space where innovation meets modernization, Goldfein said, and creative problem-solving meets complex challenges on a tight budget.

"Innovation is in our blood," Goldfein asserted, saying he is sure airmen will deliver needed capability if leadership gets out of their way and lets them do it. ✪

Photo by Doug Van Sant

Opening ceremony at the Outstanding Airmen of the Year dinner on Sept. 19 at the AFA National Convention and Air, Space & Cyber Conference at National Harbor, Md.

By Gideon Grudo, Digital Platforms Editor

More than 7,200 attendees gathered for the 2016 Air Force Association National Convention and the Air, Space & Cyber Conference, dedicating time to better understand Air Force issues.

Top USAF leaders, such as Secretary of the Air Force Deborah Lee James, Chief of Staff Gen. David L. Goldfein, and CMSAF James A. Cody, took the stage at the Gaylord National Resort and Convention Center in National Harbor, Md., just outside Washington, D.C. Deputy Secretary of Defense Robert O. Work and Chairman of the Joint Chiefs of Staff Marine Corps Gen. Joseph F. Dunford Jr. both gave keynote addresses. All speakers shared with audiences their present challenges as well as their visions for the Air Force's future.

The 68th annual AFA National Convention began Saturday, Sept. 17, with two days of AFA business, followed by three days of conference activity, filled with 38 speaker sessions.

A wreath-laying ceremony took place Sunday morning, Sept. 18, at the Air Force Memorial in Arlington, Va. Scott P. Van Cleef, the AFA board chairman, paid tribute to the lives and contributions of AFA members and friends who have died in the last year. Retired Maj. Gen. William J. Dendinger, AFA's national chaplain, conducted the invocation, homily, and benediction for the event. Van Cleef, AFA Vice Chairman for Field Operations David A. Dietsch, and Vice Chairman for Aerospace Education Richard B. Bundy read a memorial tribute list of the deceased, and Van Cleef, Goldfein, and Cody closed the ceremony by laying a wreath at the memorial.

The conference commenced with welcoming remarks by Van Cleef and an awards ceremony highlighting more than 40 individuals and groups for their contributions to the aerospace community. Van Cleef, Secretary James, Goldfein, and major command leaders presented citations of honor and Air Force crew and team awards, Air National Guard and Air Force Reserve awards, and professional, civilian, education, and management awards.

James, joined on the main stage by Goldfein, Cody, Van Cleef, and AFA industry supporters, snipped the ceremonial red ribbon with oversized scissors—a sign of the official opening of the technology exposition—on Sept. 19. More than 120 exhibitors showcased their products.

AFA formally honored the Air Force's 12 Outstanding Airmen of the Year with a ceremonial dinner following a reception sponsored by Northrop Grumman on Sept. 19. Cody congratulated the 12 airmen during his keynote address at the dinner ceremony. TSgt. Tamara R. Acfalle, one of the 2015 Outstanding Airmen of the Year, acted as master of ceremonies, and Deputy Chief of Chaplains Brig. Gen. Steven A. Schaick led the gathering in prayer. The Air Force Honor Guard presented the colors and the Air Force Band provided entertainment during the evening's festivities.

Thanks to financial support from Lockheed Martin, the 12 Outstanding Airmen attended events in and around Washington, D.C., throughout the conference. The "golden dozen" toured Capitol Hill and Arlington National Cemetery and visited the Pentagon. The conference acknowledged the profound challenges facing today's US defense complex and celebrated the achievements of the airmen operating within it. The event concentrated its focus via military leaders and national defense and policy experts on subjects ranging from cyber, space, intelligence, surveillance, and reconnaissance, to nuclear and energy issues.

The first day of the conference, Monday, saw much focus on the changing role of airpower in the US. Tuesday discussions centered on the cyber realm and acquisition in tough budget times.

Fifteen senior leaders discussed everything from training to innovation during the Today's Air Force–Senior Leader Perspective panel.

AFA's Air Force Anniversary Gala toasted the service's 69th anniversary on Sept. 21. Kenneth Goss served as master of ceremonies. During the event, the following were saluted with national aerospace awards:

Gen. Mark A. Welsh III, USAF (Ret.), 20th Air Force Chief of Staff, with the H. H. Arnold Award, recognizing the most significant contribution to national defense by a member of the military; Jamie M. Morin, director, Cost Assessment and Program Evaluation, with the W. Stuart Symington Award, recognizing the top contribution by a civilian in the field of national defense; SpaceX, with the John R. Alison Award, for the most outstanding contribution by industrial leadership to national defense; Harry A. Talbot, recognized with the AFA Chairman's Aerospace Education Award, for long-term commitment to aerospace education with a significant nationwide impact.

AFA Lifetime Achievement Awards went to: Gen. Richard B. Myers, USAF (Ret.), Gen. Charles A. Horner, USAF (Ret.), Lt. Gen. James M. Keck, USAF (Ret.), and Lt. Col. John T. Correll, USAF (Ret.). Maj. Gen. Claude M. Bolton Jr., USAF (Ret.), received the award posthumously.

Frank J. Beatty, Dawn A. Goldfein, and Athena J. Cody—spouses of Deborah Lee James, Gen. David L. Goldfein, and CMSAF James A. Cody, respectively—shared personal stories of resiliency and the issues they focus on in meetings with Air Force families around the world during the Air Force Town Hall.

AWARDING EDUCATION

Greg Ennis, an engineering teacher at James Clemens High School in Madison, Ala., was honored as the 32nd recipient of AFA's National Aerospace Teacher of the Year Award. Ennis distinguished himself by integrating aerospace into his classroom, school, and community. He teaches grades nine through 12. The award was in partnership with Rolls-Royce. For more on Ennis, see the Wingman section.

In addition, AFA honored Allen Stubblefield of Fullerton, Calif., as the CyberPatriot Coach of the Year. Christopher B. Walcutt, of Winter Park, Fla., was named CyberPatriot's Mentor of the Year. CyberPatriot, AFA's flagship STEM program, is the nation's largest youth cyber education program.

AFA BUSINESS

Forty-one state delegations with 185 authorized delegates attended the National Convention, where they conducted AFA business, including elections and program management. In concert with AFA's mission to educate, advocate, and support, the delegates approved a Statement of Policy for 2017, a document that represents AFA's position on topics of importance to the Total Force, veterans and retirees, and Air Force civilians, including key modernization and national security issues.

AFA ELECTIONS

In national officer elections, F. Whitten Peters of Washington, D.C., was elected for a first term as Chairman of the Board. F. Gavin MacAloon of Fairfax, Va., was elected for a first term as Vice Chairman of the Board for Field Operations. Richard B. Bundy of Spotsylvania, Va., was elected for a second term as Vice Chairman of the board for Aerospace Education. John T. Brock of Oviedo, Fla., was elected for a second term as National Secretary. Steven R. Lundgren of Fairbanks, Alaska, was elected for a first term as National Treasurer.

In other elections, National Directors elected for a three-year term were: Kathleen M. McCool of San Antonio, Director at Large; Leonard R. Vernamonti of Clinton, Miss., Director at Large; and Joan Sell of Littleton, Colo., National Director, West Area. Terry J. Cox of Enid, Okla., was elected to fill the remaining year of a three-year term as National Director, Central Area.

Newly elected Region Presidents are: Tyler Johnson, Central East; William H. Striegel, Northwest; and Russell V. Lewey, South Central.

DOD AND FOREIGN AF LEADERS

Many Air Force leaders participated in the conference as presenters and session


Photo by Doug Van Sant

Photo by Brittany Palmer


Photo by Brittany Palmer

Left: USAF Chief of Staff Gen. David Goldfein, Secretary of the Air Force Deborah Lee James, CMSAF James Cody, and AFA's outgoing Chairman of the Board Scott Van Cleef open the technology exposition at the Air, Space & Cyber Conference. Below left: Gen. John Hyten, commander of Air Force Space Command, greets SSgt. Shawn Briggs at the Air Force's booth at the expo. Below: Marine Corps Gen. Joseph Dunford, Chairman of the Joint Chiefs of Staff, gives a keynote address at the conference.

Photo by Brittany Palmer

AFA Chairman Van Cleef moderates the senior leader panel at the conference. Seated are (l-r) Goldfein, Cody, Gen. Paul Selva, Gen. Joseph Lengyel, Gen. Seve Wilson, Gen. Hawk Carlisle, Gen. Robin Rand, Gen. John Hyten, Gen. Ellen Pawlikowski, Gen. Carlton Everhart, Gen. Terrence O'Shaughnessy, Lt. Gen. Darryl Roberson, Lt. Gen. Marshall Webb, Lt. Gen. Scott Rice, and Lt. Gen. Maryanne Miller.

Above: Second Lt. Joseph Mabbitt and cadets Kyle Gaumnitz, Katie Zamora, and Winston Crosby from the Citadel tour the expo. Above right: John Shaud, a former AFA executive director, and his wife, Beverly, took in the sights.

attendees. Numerous senior Air Force leaders also took part in media-only sessions. Senior Air Force, DOD, and government leadership speaking at the conference included Work, Dunford, James, Goldfein, and Cody. Other high-level leaders included Gen. Paul J. Selva, vice chairman of the Joint Chiefs of Staff; Gen. Joseph L. Lengyel, chief of the National Guard Bureau; Gen. Herbert J. "Hawk" Carlisle, commander of Air Combat Command; Gen. Robin Rand, commander of Air Force Global Strike Command; Gen. John E. Hyten, commander of Air Force Space Command; Gen. Ellen M. Pawlikowski, commander of Air Force Materiel Command; Gen. Carlton D. Everhart II, commander of Air Mobility Command; Gen. Terrence J. O'Shaughnessy, commander of Pacific Air Forces; Gen. Tod D. Wolters, commander of US Air Forces in Europe; Gen. Stephen W. "Seve" Wilson, vice chief of staff; Lt. Gen. Darryl L. Roberson, commander of Air Education and Training Command; Lt. Gen. Marshall B. Webb, commander of Air Force Special Operations Command; Lt. Gen. Leon Scott Rice, director of Air National Guard; and Lt. Gen. Maryanne Miller, chief of Air Force Reserve.

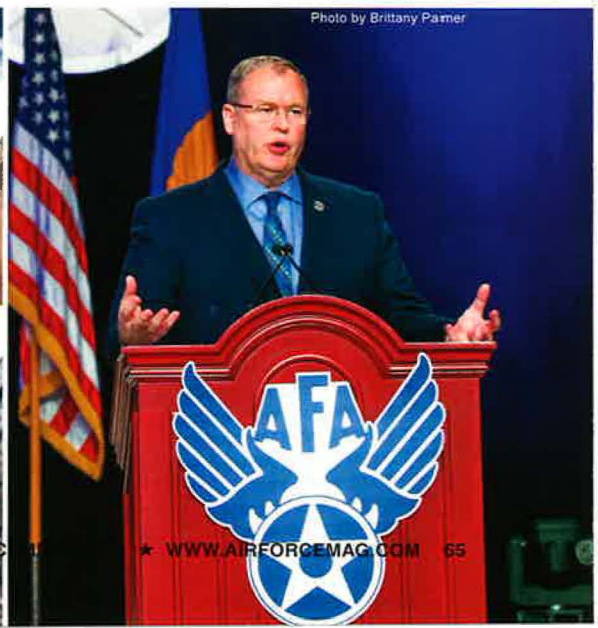
AFA hosted NATO Air Chiefs from various countries: Brig. Gen. Vladimir Avdiaj, Albanian air force commander; Lt. Gen. Michael Hood, commander, Royal Canadian Air Force; Brig. Gen. Miroslav Kovac, commander of the Croatian air force and air defense; Brig. Gen. Jaromír Šebesta, Czech air force commander; Maj. Gen. Max Arthur Lund Thorsoe Nielsen, chief of air staff, Defence Command Denmark; Col. Jaak Tarien, commander of Estonian air force; Lt. Gen. Christos Vaitsis, chief of Hellenic air force general staff; Col. Armand Saltups, commander, Latvian air force; Col. Audronis Navickas, commander of the Lithuanian air force; Lt. Gen. Dennis Luyt, commander, Royal Netherlands air force; Inspector General Tomasz Drewniak, inspector of the Polish air force; Gen. Manuel Teixeira Rolo, chief of staff, Portuguese air force; Maj. Gen. Laurian Anastasof, chief of the Romanian air force; Maj. Gen. Miroslav Korba, commander of the Slovak air force; Col. Bojan Brecelj, commander, 15th Wing, Slovenian armed forces; and Air Chief Marshal Stephen Hillier, chief of the air staff, Royal Air Force.

ACKNOWLEDGEMENTS

The Air Force Association thanks supporting partners Northrop Grumman, Lockheed Martin, Boeing, Raytheon, General Dynamics-Mission Systems, Leidos, L-3, Pratt & Whitney, Top Aces, BAE Systems, Rolls-Royce, AECOM, Bombardier, Rockwell Collins, and Aurora Flight Sciences for their generous support of AFA and for helping to make ASC16 an overwhelming success.

AFA National Convention Parliamentarian was David T. "Buck" Buckwalter. Inspectors of Election were Robert M. Gehbauer (chairman), Kevin M. Grady, Bob George, and Paul H. Weseloh. Vance M. Clarke chaired the Credentials Committee, serving with Thomas W. Gwaltney, James M. Mungenast, and Karel J. Toohey.

Below left: Goldfein greets TSgt. Lindsey Green at the USAF booth. Below: Deputy Defense Secretary Robert Work delivers an address on the Third Offset at the conference.



Agile Capability

By Gideon Grudo, Digital Platforms Editor

The Air Force is slow to innovate, knows it, and is trying to fix it.


USAF photo

The need for agility was raised repeatedly at AFA's September Air, Space & Cyber Conference.

Maj. Gen. Robert D. McMurry Jr., then Air Force Research Laboratory boss, said requirements for new technology need to be driven by science, not intuition. "We drive requirements higher than we need to," he said, by setting demands at: "This is what we think we need to have."

If USAF instead anchors requirements in experimentation, it will start with a "more achievable" baseline and ensure higher success rates, McMurry said.

The Air Force's technology requirements need to be grounded in experiment-driven reality instead of intuition because the current reality is hampering the research lab's ability to advance its work. New technologies are arriving later and are proving more expensive than they need to be because of unrealistic requirements, a hypercompetitive contracting environment, and a culture that shuns mistakes at all costs, said McMurry, who took over at AFRL, located at Wright-Patterson AFB, Ohio, in May.

Just after the conference, on Sept. 23, he was nominated for a promotion to lieutenant general to become commander of the Air Force Life Cycle Management Center, also at Wright-Patterson.

Improving the capability development process is a priority on the Air Staff as well, said Jeff H. Stanley, USAF associate deputy assistant secretary for science, technology, and engineering, speaking at the conference.

Enterprise capability collaboration teams launched in 2015 "reinvigorated development planning," he said, in an effort to "provide more agility and really, truly deploy innovative strategic choices."

"The purpose of an experimentation campaign isn't to produce a product, but to understand or answer a question or mature a [concept of operation]. I think we're on that path," said Stanley. For example, in the area of directed energy, the Air Force has a "flight plan we're following right now and hopefully that will lead to an analysis of alternatives and program of record downstream, based on this experimentation campaign we have ongoing."

MARRYING UP EXPERTS

On Sept. 29, USAF announced a new Air Force Materiel Command entity—the Air Force Strategic Development Planning and Execution Office—specifically established to be flexible and quick in living up to its name. Gen. Ellen M. Pawlikowski, AFMC commander, drove the creation of the office and said in a news release that it is poised to "marry up" operational combatants and doctrine experts from across USAF with acquisition and technology folks.

"The Air Force is aggressively pursuing a path toward strategic agility in our capability development activities," Jack Blackhurst, director of the new office, said in the release. "We are transforming into an agile enterprise to maintain—and increase—our edge in the emerging environment and leverage the full innovative potential in all our airmen."

What exactly the office will be doing—its "experimentation campaign plans"—hasn't gotten final approval yet, and the office's budget is still tied up in congressional deliberations, so few details are yet available, an Air Force Materiel Command representative told *Air Force Magazine*. The office will be within the Air Force Materiel Command at Wright-Patterson.

Getting the military to be more agile isn't just an internal Air Force problem. McMurry told lawmakers on Sept. 28 that slow processes bleed over into relationships with industry, compounding the difficulty in getting revolutionary capabilities quickly into the field. Testifying before the House Armed Services Committee's emerging threats and capabilities panel, McMurry said AFRL's biggest impediment is the speed that it closes deals with industry partners.

"It doesn't matter that you're a lab; you're really focused on trying to make the same kind of quality decisions and preparations to put something on contract," he said. "Our researchers need to be competent at that, but we really need them to be better, ... to be researchers."

The new AFRL office's main focus is to address these sorts of challenges. According to the release announcing the Strategic Development Planning and Execution Office's creation, it is to "build in agility" and "truly innovative" strategy.

All that to say: The Air Force is modifying its structures and working to change its culture. USAF hopes this will allow it to more quickly develop and field the new capabilities that combat forces need. ✪

AIR FORCE ASSOCIATION NATIONAL AWARDS 2016

NATIONAL AEROSPACE AWARDS

H. H. Arnold Award
For the most significant contribution by a military member to national defense
Gen. Mark A. Welsh III, USAF (Ret.), 20th Chief of Staff of the Air Force

W. Stuart Symington Award
For the most significant contribution by a civilian in the field of national defense
Jamie M. Morin, Director, Cost Assessment and Program Evaluation

John R. Alison Award
For the most outstanding contribution by industrial leadership to national defense
SpaceX

AFA Chairman's Aerospace Education Achievement Award
For long-term commitment to aerospace education, making a significant impact across the nation
Harry A. Talbot

David C. Schilling Award
Most outstanding contribution in the field of flight
336th Fighter Squadron, Seymour Johnson AFB, N.C.

Theodore von Karman Award
Most outstanding contribution in the field of science and engineering
Air Force Tactical Exploitation of National Capabilities, Schriever AFB, Colo.

Gill Robb Wilson Award
Most outstanding contribution in the field of arts and letters
Bill Yenne

Hoyt S. Vandenberg Award
Most outstanding contribution in the field of aerospace education
National Museum of the United States Air Force

Thomas P. Gerrity Award
Most outstanding contribution in the field of systems and logistics
Lt. Col. Shonry O. Webb, 31st Logistics Readiness Squadron, Aviano AB, Italy

Department of Veterans Affairs Employee of the Year Award
Most outstanding performance of duty as a Veterans Affairs employee
Carma Heitzmann, National Director, Homeless Veterans Community Employment Services

General Billy Mitchell Award for C4 Excellence
C4 professional who most enhanced the US Air Force's warfighting capability
MSgt. Stuart C. Wilson, 92nd Cyberspace Operations Squadron, JBSA-Lackland, Texas

Lieutenant General Claire Lee Chennault Award
For outstanding aerial warfare tactician(s) from ACC, PACAF, USAFE, ANG, and AFRC
Maj. Drew A. Bures, 48th Operations Support Squadron, RAF Lakenheath, UK

General Larry D. Welch Award-Officer
Most significant impact by an individual on the overall operations, safety, security, and effectiveness of the Air Force nuclear mission
Maj. Matthew B. Thrift, 48th Fighter Wing, RAF Lakenheath, UK

General Larry D. Welch Award-Enlisted
Most significant impact by an individual on the overall operations, safety, security, and effectiveness of the Air Force nuclear mission
SMSgt. Brian T. Newbraugh, 341st Maintenance Group, Malmstrom AFB, Mont.

General Larry D. Welch Award-Civilian
Most significant impact by an individual on the overall operations, safety, security, and effectiveness of the Air Force nuclear mission
Brent R. Backman, Offutt AFB, Neb.

General George C. Kenney Award
Most significant contribution by an individual or team in the area of lessons learned
450th Intelligence Squadron, Ramstein AB, Germany

Joan Orr Spouse of the Year Award
For civilian spouses of military members for their significant contributions to the United States Air Force
Nicole R. Bridge, United States Air Forces in Europe, Ramstein AB, Germany

Chief Master Sergeant of the Air Force Thomas N. Barnes Award
Most outstanding aircraft crew chief in the United States Air Force
SSgt. Andrew D. Schellenger, 727th Special Ops Aircraft Maintenance Squadron, Cannon AFB, N.M.

PROFESSIONAL, CIVILIAN, EDUCATION, MANAGEMENT, AND ENVIRONMENTAL AWARDS

AFMC Management Award - Executive Division
George W. Miller, 711th Human Performance Wing, Wright-Patterson AFB, Ohio

AFMC Management Award - Middle Division*
Lt. Col. Scott Fitzner, Acquisition Systems Support Branch, Wright-Patterson AFB, Ohio

AFMC Management Award- Junior Division*
Capt. Caroline Kurtz, 711th Human Performance Wing, Wright-Patterson AFB, Ohio

USAFA Cadet of the Year
Cadet 2nd Class John L. Hilgenhold, Colorado Springs, Colo.

AFROTC Cadet of the Year
Cadet 1st Lt. Nicholas C. Cox, Detachment 410, University of St. Thomas, Minn.

CAP Aerospace Education Cadet of the Year
C/Capt. Austin M. Dillow, St. Mary's Composite Squadron, Md.

Chaplain Corps Award
Capt. Kevin Hostettler, 35th Fighter Wing, Misawa AB, Japan

Paul W. Myers Award for Physicians
Maj. Peter Easter, Medical Services Flight Commander, Luke AFB, Ariz.

Juanita Redmond Award for Nursing
Capt. Jessica C. Ramirez, 366th Surgical Operations Squadron, Mountain Home AFB, Idaho

Stuart R. Reichart Award for Lawyers
Col. Peter Marksteiner, Director, Civil Law and Litigation Directorate, JB Andrews, Md.

Verne Orr Award for Effective Utilization of Human Resources
305th Aerial Port Squadron, JB McGuire-Dix-Lakehurst, N.J.

Civilian Senior Manager of the Year
Neal Dollar, 52nd Mission Support Group, Spangdahlem AB, Germany

Civilian Program Manager of the Year*
Ben Crosby, 39th Contracting Squadron, Incirlik AB, Turkey

Civilian Program Specialist of the Year*
Kit Lui, Chief, Operations Flight, Laughlin AFB, Texas

Civilian Wage Employee of the Year*
Anthony Anderson, 374th Civil Engineering Squadron, Yokota AB, Japan

Gen. Edwin W. Rawlings Award – Management*
Michael Vaughn, Environmental Program Manager, Wright-Patterson AFB, Ohio

Gen. Edwin W. Rawlings Award – Technician*
Not Awarded for 2016

*Presented at recipient's location

AFA LIFETIME ACHIEVEMENT AWARD

Recognizes a lifetime of work in the advancement of aerospace.

GEN. RICHARD B. MYERS, USAF (RET.)

Myers was the 15th Chairman of the Joint Chiefs of Staff. He has commanded at all levels and served in significant staff positions throughout the Air Force. He holds the Colin L. Powell Chair for National Security, Leadership, Character, and Ethics at National Defense University. In April, he was selected as the interim president of Kansas State University.

GEN. CHARLES A. HORNER, USAF (RET.)

Horner was commander in chief of North American Aerospace Defense Command and US Space Command and commander of Air Force Space Command. He commanded coalition air forces in the 1991 Persian Gulf War. Horner was a command pilot with more than 5,300 flying hours in a variety of fighter aircraft.

LT. GEN. JAMES M. KECK, USAF (RET.)

Keck's career spanned World War II, Korea, and Vietnam and diverse functional areas including multiple command and staff positions, inspector general, comptroller, operations, intelligence, personnel, plans, and materiel. General Keck's determined efforts ensured peerless support to airmen and their families. His involvement with AFA began immediately after World War II, in its formative years. With more than 37 years of Active Duty and 40 years of devotion to the Air Force Association, he exemplifies a lifetime of contributions to AFA.

MAJ. GEN. CLAUDE M. BOLTON JR., USAF (RET.)*

Bolton was commander, Air Force Security Assistance Center, Headquarters Air Force Materiel Command. He managed foreign military sales programs with totals exceeding $60 billion that supported more than 80 foreign countries. He was a command pilot with more than 2,700 flying hours in more than 30 different aircraft. During his tour at the Pentagon, he was the F-16 program element monitor and also saw duty in the Office of Special Programs.

LT. COL. JOHN T. CORRELL, USAF (RET.)

Correll served 20 years in USAF, retiring as lieutenant colonel. He worked for *Air Force Magazine* from 1982 to 2002 and served as its editor in chief for 18 years. He developed the annual Almanac issue, built the magazine into a world-class and widely respected source for USAF and national security news, and writes fluently on Air Force history, doctrine, and organization. His work has appeared in most issues of *Air Force Magazine* over the past 35 years.

*Posthumous award

Left to right: AFA Chairman of the Board Scott Van Cleef (right) presented the Gen. H. H. Arnold Award to retired Gen. Mark Welsh, 20th Chief of Staff of the Air Force. The W. Stuart Symington Award for a civilian in the field of national defense was presented to Jamie Morin, director, Cost Assessment and Program Evaluation. The John R. Alison Award for industrial leadership in national defense was presented to SpaceX. The award was accepted by Tim Hughes, senior vice president and general counsel for SpaceX.

CITATIONS OF HONOR

Outstanding contribution of an individual or organization to the development of aerospace power.

19th Space Operations Squadron, Schriever AFB, Colo.
The 19th Space Operations Squadron deployed five Global Positioning System navigation warfare teams, providing combatant commands the ability to employ the world's most accurate, secure, anti-jam navigation signal for maximum performance of theater operations.

24th Expeditionary Field Investigations Squadron, Al Udeid AB, Qatar
The 24th Expeditionary Field Investigations Squadron conducted operations in the most dangerous parts of the world, ensuring the safety of Airmen operating throughout the 20-nation Air Force's Central Command area of responsibility.

Maj. Michael C. Pochet, Fort Belvoir, Va.
Major Pochet expertly choreographed the actions of hundreds of participants from 16 organizations in the first of its kind interagency event demonstrating a significant portion of the United States government's National Technical Nuclear Forensics and Attribution processes.

CREW AND TEAM AWARDS

Lt. Gen. Howard W. Leaf Award
Best test team
AMCTES Strategic Airlift Test Team, JB McGuire-Dix-Lakehurst, N.J.

Lt. Gen. William H. Tunner Award
Best airlift crew
Reach 870 and Reach 871, JB Lewis-McChord, Wash.

Brig. Gen. Ross G. Hoyt Award
Best air refueling crew
906th Air Refueling Squadron, Scott AFB, Ill.

Gen. John P. Jumper Award
Best remotely piloted aircraft crew in USAF
Pilot: Maj. Ryan Cross, Sensor Operator: TSgt. Tyler Tate
Mission Intelligence Coordinator: Capt. Ryan Hess

Gen. Curtis E. LeMay Award
Best bomber aircrew
Crew of Bone 11, 37th Expeditionary Bomb Squadron, Ellsworth AFB, S.D.

Gen. Thomas S. Power Award
Best missile combat crew
10th Missile Squadron, Malmstrom AFB, Mont.

Gen. Jerome F. O'Malley
Best reconnaissance crew
The Crew of Python 71, 55th Wing, Offutt AFB, Neb.

Best Space Operations Crew
1st Expeditionary Space Control Squadron, Rotation Team 2, Southwest Asia

Airborne Battle Management Crew
968th Expeditionary Airborne Air Control Squadron, Crew 5, 380th Air Expeditionary Wing, Southwest Asia

BAVA Humanitarian Mission of the Year Award
Crew of Trek 959, JB Elmendorf-Richardson, Alaska

AIR NATIONAL GUARD AND AIR FORCE RESERVE COMMAND AWARDS

Earl T. Ricks Award
Outstanding ANG airmanship
Crew of Skier 72, Stratton ANGB, N.Y.

CMSgt. Dick Red Award
Best ANG maintainer
MSgt. Christian Hammaren, 105th Airlift Wing, Stewart ANGB, N.Y.

Outstanding ANG Unit
Best ANG unit airmanship
211th Rescue Squadron, JB Elmendorf-Richardson, Alaska

George W. Bush Award—Enlisted
Not awarded in 2016

George W. Bush Award—Officer
Not awarded in 2016

President's Award for AFRC
Best AFRC flying unit or individual of the year
Lt. Col. Michael S. Bess, Eglin AFB, Fla.

AFRC Unit Award
Best AFRC wing of the year
926th Wing, Nellis AFB, Nev.

AFRC Citizen Airman Award—Enlisted
Outstanding Civilian Employer and Enlisted Member
Not awarded for 2016

AFRC Citizen Airman Award—Officer
Outstanding Civilian Employer and Commissioned Member
Not awarded for 2016

2016 AFA FIELD AWARDS

Donald W. Steele Sr. Memorial Award
(AFA Unit of the Year)

Paul Revere Chapter, Mass.
President James Thurber

Outstanding State Organization

Texas
President Bob Gehbauer

Outstanding Chapters by Size

Small Chapter
Enid Chapter, Okla.
President Dan Ohnesorge

Extra Large Chapter
Langley Chapter, Va.
President Tyler Johnson

Medium Chapter
Delaware Galaxy Chapter, Del.
President John Murphy

Aerospace Education Excellence Award

Presented to one chapter in each of the AFA size categories annually for excellence in aerospace education programming. To qualify, a chapter must have received the Aerospace Education Achievement Award this year.

Large Chapter
Swamp Fox Chapter, S.C.
President David Hanson

Extra Large Chapter
Montgomery Chapter, Ala.
President Scott Key

Aerospace Education Achievement Award

Presented to chapters for outstanding achievement in aerospace education programming.

Ak-Sar-Ben Chapter, Neb.
President Christopher Canada

Albuquerque Chapter, N.M.
President Frederick Harsany

Central Florida Chapter, Fla.
President Gary Lehmann

Danville Chapter, Va.
President Gerald Hovatter

Gen. Charles A. Gabriel Chapter, Va.
President John Kennedy

Gen. David C. Jones Chapter, N.D.
President William Wages

Hurlburt Chapter, Fla.
President James Connors

Lance P. Sijan Chapter, Colo.
President Donald Kidd

Lincoln Chapter, Neb.
President Lang Anderson

Montgomery Chapter, Ala.
President Scott Key

Paul Revere Chapter, Mass.
President James Thurber

Swamp Fox Chapter, S.C.
President David Hanson

Wright Memorial Chapter, Ohio
President Kenneth Curell

Member of the Year

David T. "Buck" Buckwalter

Distinguished Sustained Education Achievement Award

Jack C. Price

Gold Life Member

John A. Shaud

Unit Exceptional Service Awards

Airmen and Family Programs
Eglin Chapter, Fla.
President Candace Lovell

Best Single Program
Langley Chapter, Va.
President Tyler Johnson

Communications
Lance P. Sijan Chapter, Colo.
President Donald Kidd

Community Partners
Enid Chapter, Okla.
President Dan Ohnesorge

Community Relations
Hurlburt Chapter, Fla.
President James Connors

Overall Programming
Paul Revere Chapter, Mass.
President James Thurber

Veterans Affairs
Long Island Chapter, N.Y.
President Fred DiFabio

Jack Gross Award

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

Small Chapter
Enid Chapter, Okla.
President Dan Ohnesorge

Medium Chapter
Ramstein Chapter, Europe
President Dustin Lawrence

Large Chapter
Tennessee Valley Chapter, Ala.
President Frederick Driesbach

Extra Large Chapter
Paul Revere Chapter, Mass.
President James Thurber

Chapter Size Larger Than 1,100
Frank Luke Chapter, Ariz.
President Edward Logan

CyberPatriot Coach and Mentor

MENTOR OF THE YEAR

Christopher B. Walcutt

COACH OF THE YEAR

Cmdr. Allen Stubblefield, US Navy (Ret.)

Arthur C. Storz Sr. Membership Awards

Presented to the AFA chapter or individual producing the highest number of new members during the 12-month period ending June 30, 2016, as a percentage of total chapter membership as of July 1, 2015. This award is based on both the quantity of new members as well as sustained new member recruitment. A chapter must be chartered for at least three years to qualify.

Enid Chapter, Okla.
President Dan Ohnesorge

Individual Award
Dan Ohnesorge

Chairman's Citation

John R. Allen Jr.
Katie McCool
Tom Gwaltney
Susan Mallett
Whit Peters
Stephen Gourley

Individual Awards by Region

Central East

Medal of Merit
Joe Burke
Mark Douglas
Terry Marlow
Gordon Strong
Dave Uzzell
Brad Wilkins

Exceptional Service Award
Jonathan Dagle
Kip Hansen
Derald Wentzien

Far West

Medal of Merit
Joe Boyle
Velvet Hoover
Brenda Pluntze
Steve Pluntze
Laura Pope

Exceptional Service Award
Arnie Streland

Florida

Medal of Merit
Susan Ault-Davis
Christina English

Exceptional Service Award
Sharon Branch
Kenneth Kelly

Great Lakes

Medal of Merit
Guy Ramey
Steve Winslow

Exceptional Service Award
Tom Koogler

Midwest

Medal of Merit
Mark Morgan
James Thomas

Exceptional Service Award
Diane Bartels

New England

Medal of Merit
Ruthie Barnes
Joe Carriere
Richard Lorenz
James Navarro
Edie Singleton
Mike Therrien

Exceptional Service Award
Jeffrey Katz
Jamie Thurber

North Central

Medal of Merit
Ralph Delperdang
Gloria Lennon
Bob McGonigal
David Pohlen
Randy Schwinler

Northeast

Medal of Merit
Miles Crago
Nicholas Donato
Tynisa Haskins

Exceptional Service Award
Fred DiFabio
Bruce Whitman

Northwest

Medal of Merit
James Fenner
Alexander Morris

Rocky Mountain

Medal of Merit
Robert Blind
Scott Fox
Roy Griggs
Michael Sweetland
Patti White

Exceptional Service Award
Linda Aldrich
Barbara Binn
Peter Illoway

South Central

Medal of Merit
John Erich Anderson
Jay Carlson
Charles Nath
Paula Penson
Ken Philippart
B. R. Witt

Exceptional Service Award
Olen Scott Key
Jim Mungenast
John R. Phillip

Southeast

Medal of Merit
Stu Carter
George Castle
Mike Espiritu
Edward Logan
Tyler Worley
Adriana Van Wyk

Exceptional Service Award
Peter Gillespie
Fred Harsany
Mark Koechle

Texoma

Medal of Merit
Cheyenne Bode
Richard Buschelman
Mary Feightner
David Garver
Armand Morrissette
Dan Ohnesorge
George Pankonin
Ryan Wiebbecke
Sonya Yelbert

Exceptional Service Award
Gary Copsey
Terry Cox
Joan Lopez
Bob Slaughter
Paul Weseloh

Overseas

Medal of Merit
Grant Ellis
Brian Klatt
Jeremiah Roper
Brandon Shirley

Exceptional Service Award
Abraham Almonte

Chapter Rention Award

OVERALL RETENTION AWARD

Small Chapter
Happy Hooligan Chapter, N.D.
President Leonard Fyhrie

Medium Chapter
Cape Fear Chapter, N.C.
President John Lasley

Large Chapter
Tennessee Valley Chapter, Ala.
President Frederick Driesbach

Extra Large Chapter
Ak-Sar-Ben Chapter, Neb.
President Christopher Canada

Chapter Size Larger Than 1,100
Thunderbird Chapter, Nev.
President Dennis Littrell

FIRST-YEAR RETENTION AWARD

Small Chapter
Llano Estacado Chapter, N.M.
President Dennis Mills

Medium Chapter
Cape Fear Chapter, N.C.
President John Lasley

Large Chapter
Maj. Gen. Oris B. Johnson Chapter, La.
President James Jones

Extra Large Chapter
Hurlburt Chapter, Fla.
President James Connors

Chapter Size Larger Than 1,100
Central Oklahoma (Gerrity) Chapter, Okla.
President Marc Stewart

Community Partner Membership Awards

GOLD AWARD

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

Altus Chapter, Okla.
Cheyenne Cowboy Chapter, Wyo.
Enid Chapter, Okla.
Fairbanks Midnight Sun Chapter, Alaska
Fort Wayne Chapter, Ind.
Gen. David C. Jones Chapter, N.D.
Happy Hooligan Chapter, N.D.
Mel Harmon Chapter, Colo.
Meridian Chapter, Miss.
Montgomery Chapter, Ala.
Northeast Texas Chapter, Texas
Swamp Fox Chapter, S.C.
Tennessee Valley Chapter, Ala.

ACHIEVEMENT AWARD

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

Col. H. M. "Bud" West Chapter, Fla.
Central Oklahoma (Gerrity) Chapter, Okla.
David D. Terry Jr. Chapter, Ark.
Eglin Chapter, Fla.
Gen. Bruce K. Holloway Chapter, Tenn.
Golden Triangle Chapter, Miss.
Hurlburt Chapter, Fla.
John C. Stennis Chapter, Miss.
McChord Chapter, Wash.
Miami-Homestead Chapter, Fla.
Paul Revere Chapter, Mass.
Robert H. Goddard Chapter, Calif.
Sarasota-Manatee Chapter, Fla.
Shooting Star Chapter, N.J.
Thunderbird Chapter, Nev.
Ute-Rocky Mountain Chapter, Utah

Special Recognition Awards

SUSTAINED NEW MEMBER RECRUITMENT

These chapters have attained the quarterly new member recruitment goal for three consecutive quarters, extending from October 2015 to June 2016.

Altus Chapter, Okla.
Central Florida Chapter, Fla.
Col. H. M. "Bud" West Chapter, Fla.
Enid Chapter, Okla.
Fairbanks Midnight Sun Chapter, Alaska
Falcon Chapter, Fla.
Gen. David C. Jones Chapter, N.D.
Golden Triangle Chapter, Miss.
Green Mountain Chapter, Vt.
Keystone Chapter, Japan
Lawrence D. Bell Museum Chapter, Ind.
Mel Harmon Chapter, Colo.
Miami-Homestead Chapter, Fla.
Paul Revere Chapter, Mass.
Ramstein Chapter, Germany
Rushmore Chapter, S.D.
Spangdahlem Chapter, Germany
Tennessee Valley Chapter, Ala.
Thomas B. McGuire Jr. Chapter, N.J.
Tucson Chapter, Ariz.
Ute-Rocky Mountain Chapter, Utah

STATE GROWTH

These states have realized a growth in total membership from June 2015 to June 2016.

Alabama
Alaska
Arizona
Arkansas
California
Colorado
Delaware
District of Columbia
Florida
Georgia
Hawaii
Idaho
Illinois
Indiana
Kansas
Kentucky
Louisiana
Maryland
Massachusetts
Michigan
Mississippi
Missouri
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
Ohio
Oklahoma
Pennsylvania
Rhode Island
South Carolina
Tennessee
Texas
Utah
Virginia
Washington
West Virginia
Wyoming

CHAPTER GROWTH

These chapters have realized a growth in total membership from June 2015 to June 2016.

Abilene Chapter, Texas
Aggieland Chapter, Texas
Ak-Sar-Ben Chapter, Neb.
Alamo Chapter, Texas
Albuquerque Chapter, N.M.
Altus Chapter, Okla.
Ark-La-Tex Chapter, La.
Austin Chapter, Texas
Brig. Gen. Harrison R. Thyng Chapter, N.H.
Brig. Gen. Frederick W. Castle Chapter, N.J.
Billy Mitchell Chapter, Wis.
Bob Hope Chapter, Calif.
C. Farinha Gold Rush Chapter, Calif.
Cape Canaveral Chapter, Fla.
Cape Fear Chapter, N.C.
Central Florida Chapter, Fla.
Central Indiana Chapter, Ind.
Central Maryland Chapter, Md.
Central Oklahoma (Gerrity) Chapter, Okla.
Charleston Chapter, S.C.
Chattanooga Chapter, Tenn.
Cheyenne Cowboy Chapter, Wyo.
Chicagoland-O'Hare Chapter, Ill.
Chuck Yeager Chapter, W.Va.
Cochise Chapter, Ariz.
Concho Chapter, Texas
Danville Chapter, Va.
David D. Terry Jr. Chapter, Ark.
Del Rio Chapter, Texas
Delaware Galaxy Chapter, Del.
Dobbins Chapter, Ga.
Enid Chapter, Okla.
Everett R. Cook Chapter, Tenn.
Fairbanks Midnight Sun Chapter, Alaska
Falcon Chapter, Fla.
Finger Lakes Chapter, N.Y.
Fort Wayne Chapter, Ind.
Fort Worth Chapter, Texas
Fran Parker Chapter, N.M.
Frank Luke Chapter, Ariz.
Fresno Chapter, Calif.
Gen. Bernard A. Schriever Los Angeles Chapter, Calif.
Gen. Bruce K. Holloway Chapter, Tenn.
Gen. Charles A. Gabriel Chapter, Va.
Gen. Charles L. Donnelly Jr. Chapter, Texas
Gen. David C. Jones Chapter, N.D.
Gen. Joseph W. Ralston Chapter, Ohio
Gen. Russell E. Dougherty Chapter, Ky.
Genesee Valley Chapter, N.Y.
Gold Coast Chapter, Fla.
Hangar One Chapter, N.J.
Harry S. Truman Chapter, Mo.
High Desert Chapter, Calif.
Hurlburt Chapter, Fla.
Inland Empire Chapter, Wash.
Iron Gate Chapter, N.Y.
John C. Stennis Chapter, Miss.
Keystone Chapter, Japan
L. D. Bell-Niagara Frontier, N.Y.
Lawrence D. Bell Museum Chapter, Ind.
Lexington Chapter, Ky.
Long Island Chapter, N.Y.
Lt. Col. B.D. "Buzz" Wagner Chapter, Pa.
Maj. Gen. Dan F. Callahan Chapter, Tenn.
Maj. Gen. Edward E. Fry Chapter, Kan.
Mercer County Chapter, N.J.
Metro Rhode Island Chapter, R.I.
Maj. Gen. Oris B. Johnson Chapter, La.
Miami-Homestead Chapter, Fla.
Minuteman Chapter, Mass.
Nation's Capital Chapter, D.C.
Northeast Texas Chapter, Texas
Northern Shenandoah Valley Chapter, Va.
Northern Utah Chapter, Utah
Otis Chapter, Mass.
Palm Springs Chapter, Calif.
Paul Revere Chapter, Mass.
Pioneer Valley Chapter, Mass.
Roanoke Chapter, Va.
Rushmore Chapter, S.D.
Salt Lake City Chapter, Utah
San Diego Chapter, Calif.
San Jacinto Chapter, Texas
Sarasota-Manatee Chapter, Fla.
Scott Memorial Chapter, Ill.
Seidel-AFA Dallas Chapter, Texas
South Georgia Chapter, Ga.
Southern Indiana Chapter, Ind.
Strom Thurmond Chapter, S.C.
Tennessee Valley Chapter, Ala.
Thomas B. McGuire Jr. Chapter, N.J.
Thomas W. Anthony Chapter, Md.
Thunderbird Chapter, Nev.
Tulsa Chapter, Okla.
Tucson Chapter, Ariz.
Waterman-Twining Chapter, Fla.
Whiteman Chapter, Mo.
Wright Memorial Chapter, Ohio

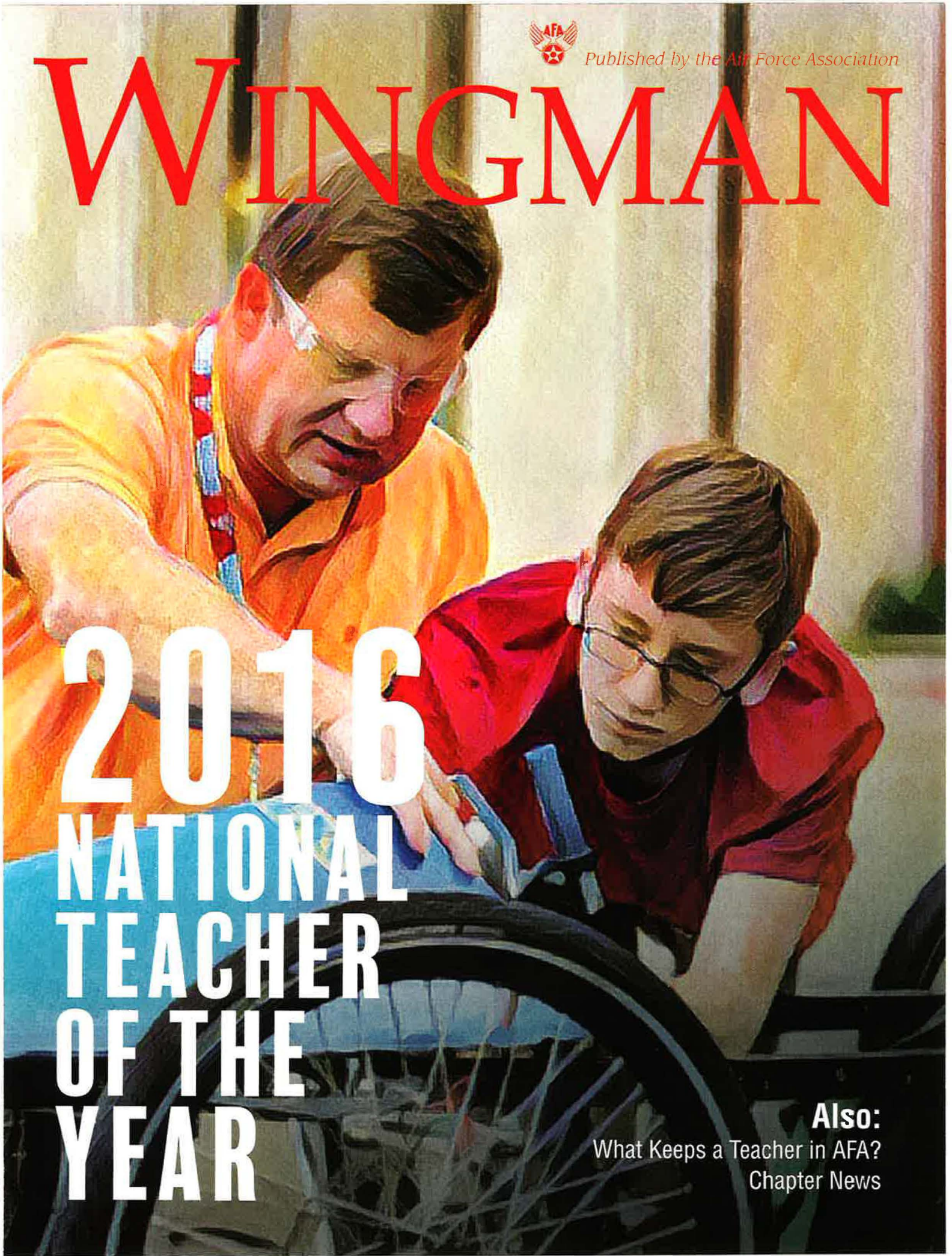
REGION GROWTH

These regions have realized a growth in total membership from June 2015 to June 2016.

Central East
Europe
Far West
Florida
Great Lakes
Midwest
New England
Northwest
Pacific
Rocky Mountain
South Central
Southeast
Southwest
Texoma

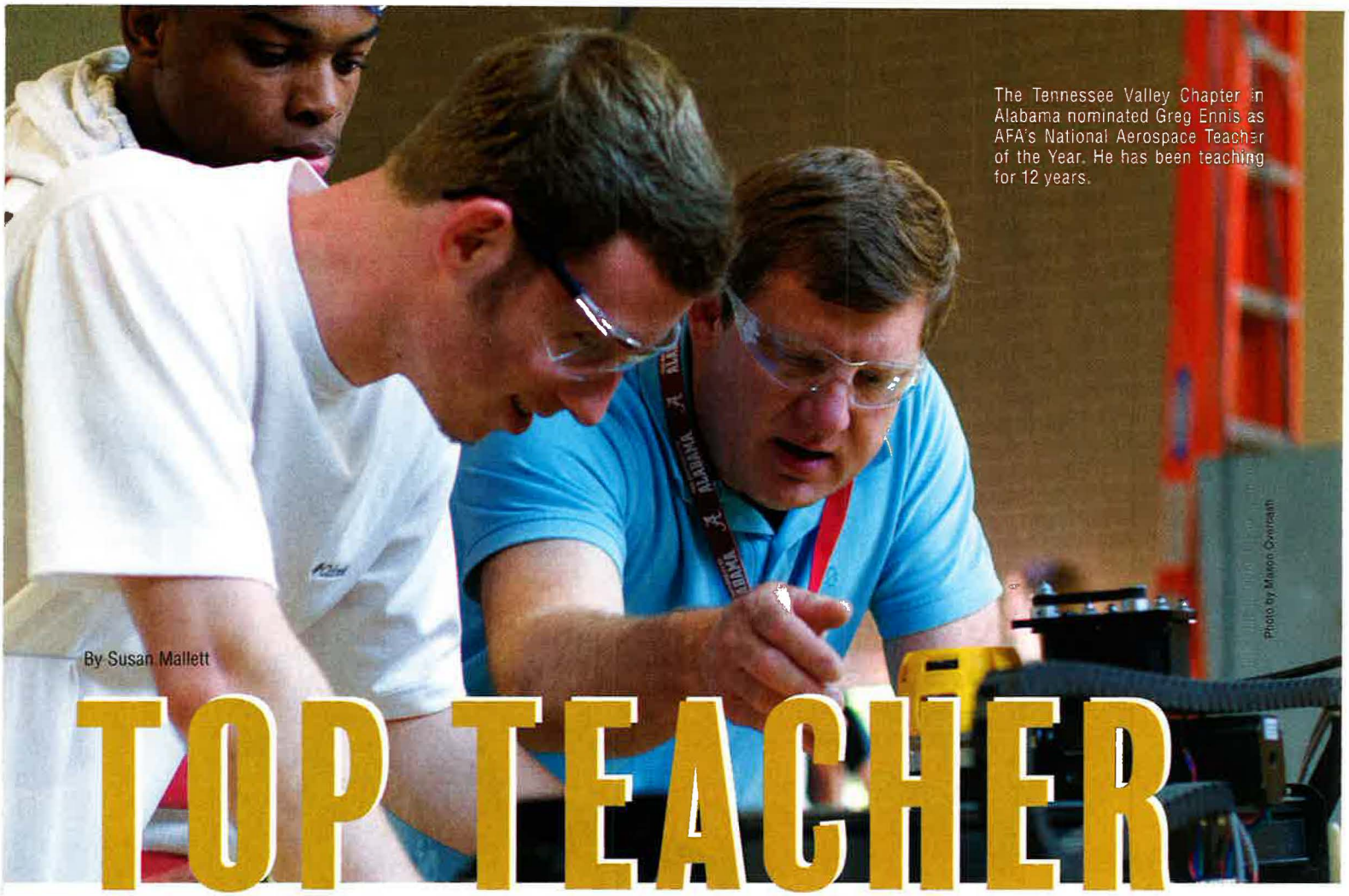
Published by the Air Force Association

WINGMAN



2016 NATIONAL TEACHER OF THE YEAR

Also:
What Keeps a Teacher in AFA?
Chapter News



The Tennessee Valley Chapter in Alabama nominated Greg Ennis as AFA's National Aerospace Teacher of the Year. He has been teaching for 12 years.

Photo by Mason Cummings

By Susan Mallett

TOP TEACHER

Greg Ennis, a high school engineering teacher at James Clemens High School in Madison, Ala., is the 2016 Air Force Association National Aerospace Teacher of the Year.

He began his career as an engineer, after graduating from the University of Alabama in Tuscaloosa. But after 10 years in the field, Ennis lost his job. A friend convinced him to become a long-term substitute teacher at her school.

"I took the job and loved it," Ennis wrote in his Teacher of the Year biographical essay. "People can't understand why I gave up a much higher paying career to become a teacher, but the rewards that come from being able to shape lives are far greater," he wrote.

When he lost his job as an engineer, students in Alabama gained a superb STEM teacher.

Ennis, who went on to earn a master's degree in education from the University of Alabama in Birmingham in 2007, began an innovative blueprint for teaching and learning. The first step? Moving out of the classroom to provide students with real-life applications of a standard curriculum, like internships with local engineering companies and at NASA's Marshall Space Flight Center in Huntsville, Ala. He has collected resources to enhance his classroom and school, providing new technology and opportunities, such as bringing in a 3-D printer and 3-D router—similar to a milling machine—and creating a student-led school TV station.

LET'S GO CLUBBING

He has turned his learning environment into a testing ground for his students' future and continues the effort well after school hours and into weekends and summers.

Ennis feels after-school clubs bring the biggest opportunities for extended learning and application of skills. In the clubs, students can work on projects at their own pace and interest level.

Ennis says, "While classroom learning is essential, the learning experiences in these clubs greatly broaden student expertise and preparation for college and careers. They become more capable and more confident in themselves."

At James Clemens High School, where he has taught for four years, he has founded, sponsored, or mentored many organizations: the StellarXplorers team that was a 2016 finalist in the AFA space-system design competition; two robotics clubs; an engineering club; and the Innovative System Project for the Increased Recruitment of Emerging STEM Students program, where youngsters work with university students on designing payloads for spacecraft. He initiated the nationally recognized Project Lead The Way and its associated aerospace engineering class at the high school.

A point of pride is co-sponsorship of a Society of Women Engineers high school chapter. The group collaborates with professional female engineers, conducting outreach programs to elementary and middle schools. They encourage younger female students to seek careers in the STEM fields.

To increase the knowledge of fellow educators, he has co-developed a teacher workshop with the Defense Acquisition University; he helped develop the new Aviation Challenge for Educators course for the US Space and Rocket Center at Huntsville; and he rounded up funding for a neighboring middle school so its students could build a tester that determines the strength of bridges they build from materials like craft sticks or balsa wood.

EXTRA EXTRA CURRICULAR

As if all the extracurricular activities were not enough, in his personal life, Ennis and his wife, Vanessa, help kids who are in great need.

They volunteer in resource and relief roles for the Big Oak Girls' Ranch in Springville, Ala. The Ennises give the children a break from group home life by hosting them at their own Decatur, Ala., home, or the couple stays in the group home to give the caregivers a respite. The Ennises foster children, watch over other kids in state custody, and give financial support to various children's homes.

NO DESK GENERALS, HERE

In an essay explaining the message he wants to convey as AFA National Aerospace Teacher of the Year, Ennis said: "Instead of being the desk general, we should be 'in the field,' understanding what our students need and meeting those needs."

Susan Mallett, of the Montgomery Chapter in Alabama, is the youth development and AFA programs coordinator at Civil Air Patrol's national headquarters. She is a member of AFA's Aerospace Education Council.

PRESENTED BY ...

Greg Ennis' selection marks the first time AFA's program to honor a science, technology, engineering, or math teacher has a presenting sponsor, Rolls-Royce.

"This sponsorship will provide additional resources for the National Teacher of the Year, including representing AFA at the National Convention and Air, Space & Cyber Conference and various Rolls-Royce events throughout the year," stated a press release announcing the exclusive sponsorship in August. "Rolls-Royce is an engineering company at its heart, and we are proud to support STEM activities around the United States," commented Phil Burkholder, president of Defense Aerospace for Rolls-Royce of North America, in the release.

About the cover:
AFA's National Aerospace Teacher of the Year Greg Ennis helps a student with an electric car project. Ennis coaches a GreenpowerUSA electric vehicle racing team. Photo by Mason Overcash, with staff illustration by Kristina Parrill.

AFA National Aerospace Teacher of the Year— More Winners

FIRST RUNNER-UP

Meredith L. Swartzendruber

- Earth and space science teacher
- Grade: 8
- Everett Meredith Middle School, Middletown, Del.
- Nominated By: Brig. Gen. Bill Spruance Chapter

SHORT STORY

Swartzendruber started out in public relations and marketing. After two years, she decided, "I wanted to do more—to make a difference. I went back to school to earn my teaching certification."

Two years into her new job, she went to the Space Academy for Educators at the US Space and Rocket Center in Huntsville, Ala.

"This was the turning point in my teaching career," she says, "as it sparked my passion for aerospace education."

PROUDEST OF...

Guiding students in devising a space experiment to be launched this fall or winter.

SECOND RUNNER-UP

Cecelia Ann Carroll

- Mathematics teacher
- Grade: Middle school
- Hampstead Academy, Hampstead, N.H.
- Nominated By: Brig. Gen. Harrison R. Thyng Chapter

SHORT STORY

Carroll began teaching as a summer park instructor. In the mid-1970s, she headed to Australia, then to Ghana, then back to Australia. She says, "I hadn't decided to teach so that I could travel, but the opportunities were there, especially for a math teacher."

Today, "my role goes well beyond teaching math," she says. "I share in my school's mission to help build character and confidence through teamwork and service to others."

PROUDEST OF...

Introducing SeaPerch to her school. The program helps students build underwater robotic vehicles.

Teacher of the Year—and still Advancing AFA

THINK ABOUT GIVING BACK, THE AFA LEADERS HINTED.

By Daniel W. Caron

Photo by Julie Sicks-Panus

Caron teaches at an aerospace career summer academy. He specifically tapped several local AFA Teachers of the Year as instructors.

AFA selected Daniel W. Caron as its National Teacher of the Year in 2004. He had been active in AFA even before then—and that didn't happen by chance. Here's how he got hooked.

I have been teaching for 36 years. While an instructor in Prince George's County, Md., in the late 1990s, I learned about AFA Educator Grants at a NASA workshop and applied for a couple of them. The grants award up to $250 for class projects that aren't otherwise covered by school budgets.

Moving back to New Hampshire in 1999, I applied for additional grants and convinced others in my department to apply as well.

In 2001, AFA New Hampshire President, Eric P. Taylor—now with the Liberty Bell Chapter in Pennsylvania—and Edward Josephson—then president of what was the Pease Chapter—contacted me. The chapter had asked members for names of teachers to nominate as its Teacher of the Year. My name had come up.

Taylor and Josephson also at the time mentioned that I might want to "think about giving back" since I'd already received a few AFA grants.

As part of being named Chapter Teacher of the Year, the New Hampshire AFA presented me with a membership, and shortly afterward, Josephson persuaded me to become the Pease Chapter VP for education.

New Hampshire had two AFA chapters back then, but when they merged together in 2006, I became both the Brig. Gen. Harrison R. Thyng Chapter VP and state VP for aerospace education. I've held both positions ever since.

PAINT THE HOUSE

When I was selected as AFA's National Teacher of the Year in 2004, it was the second year I'd been nominated by the local AFA chapter. After that first attempt, Taylor and Josephson spoke to members of the selection committee to find out what made a winning application. They then met during the winter to update and revise my application.

I'd been outdoors working on the house, when my wife, Alberta, called me in for a phone call.

I listened to the voices on the other end—L. Boyd Anderson and Mary Anne Thompson, leaders of what was then the Aerospace Education Foundation—telling me I'd won the national-level award. I thought, "OK, this is cool, but I still have to finish painting the house."

HOW I PROMOTE AFA

As a teacher, I know there is never enough money to do what you want to do. I've always been a proponent of leveraging resources from different organizations. Whenever I offer a workshop at state, regional, or national technology education conferences, I conclude with a mention of the organizations that award classroom improvement grants. AFA is at the top of the list.

As the AFA state VP for education, I coordinate the chapter/state Teacher of the Year program, beginning with

sending out a call for nominees. We've had as few as two nominees or as many as five. I handle all the correspondence and administration for the process, from soliciting applications to arranging the award presentation. If I feel our candidate is strong, I work with them to build their nomination package.

I recruit teachers to participate in the Civil Air Patrol's Aerospace Education Member program. Here's an example: In 2013, the state AFA provided a Matching Grant to develop a series of teacher workshops on how to use the CAP Aerospace Dimensions modules. These modules include topics such as an introduction to flight, aircraft systems and airports, and rockets—and are packed with theories and activities.

At these workshops, the relationship between CAP and AFA is explained to the teachers, and they are encouraged to apply for grants, STEM kits, CAP's Aerospace Education Excellence awards, and membership in AFA.

WORKING THE TEACHERS

About 10 years ago, I became involved with a group of aviation enthusiasts called WinnAero. Their goal is to increase aerospace career awareness. Each summer, the group offers a career academy for kids. AFA has a significant presence at this course.

Two instructors are past AFA State Teachers of the Year: Robert Rotier and Paul Gelinas. Four presenters have been past State Teachers of the Year: Daniel Heeter, Tice Leonard, Dominic Goupil, and John Leahy. I recruited them because they provide us with credibility.

The director of an educators' association once said that people don't join organizations because of what they can receive; they join because of what they can contribute.

That's been the case with me. ✪

Daniel W. Caron teaches technology/engineering education at Gilford High School in Gilford, N.H.

Photo via John Glass

MAKING AFA MEMORABLE

Tennessee's Chattanooga Chapter presents its Teacher of the Year with a striking gift: an eagle statuette. Chapter President John W. Glass III says teachers are excited to receive the Teacher of the Year check for $250, of course, but many have later written to him, saying the eagle—measuring 11 inches tall and mounted on travertine marble—has found a prominent place in their classroom or home.

"The value of the eagle as an advertisement [for] the Air Force Association is far more lasting than the certificate," Glass wrote.

Chris Raynolds, a chemistry and physics teacher at Signal Mountain High School received the eagle (at left) as Chattanooga Chapter's Teacher of the Year 2016.

CHAPTER NEWS

By June L. Kim, Associate Editor

Updates on AFA's activities, outreach, awards, and advocacy.

P-47 MEMORIAL CHAPTER

Air Force Association officials held a chartering ceremony in early September to reactivate the P-47 Memorial Chapter in Newburgh, Ind.

The chapter had been disbanded in 1998 and was reactivated due to rekindled interest. The nearest chapter is more than two hours away, said Ronald E. Axley, newly minted chapter president. "We had a lot of AFA members in the area who never attended meetings ... because of the distance."

David A. Dietsch, then AFA vice chairman for field operations, officiated at the ceremony. Great Lakes Region President Paul A. Lyons, Indiana State President William A. Megnin, then-outgoing Indiana State President Chuck Hassel, State Treasurer William Howard Jr., and Fort Wayne Chapter President Brandon M. Monticue were in attendance.

David W. Pfettscher is the chapter's VP and Meyer P. Stepura is secretary and treasurer.

The chapter was named in honor of the World War II P-47 Thunderbolt. Some were produced in nearby Evansville.

Photo by Larry Michael

At the Great Lakes Region meeting in Dayton, Ohio, in August, Tom Koogler presents an AFA mug to Jill Weaver. She had been selected as Ohio State Teacher of the Year. State President Koogler received a national-level Exceptional Service Award at this meeting. AFA Executive Vice President Denise Hollywood (at far left) made the presentation.

Staff photo by Mike Tsukamoto

Molly Mae Potter was crowned Ms. Veteran America in a competition held in October in Washington, D.C. A member of the Austin Chapter and Texas state VP for government relations, Potter is part of AFA's newest class in the Emerging Leader Program. A photo feature on her will appear in Wingman in January 2017, along with her Emerging Leader profile.

DOBBINS CHAPTER

The Dobbins Chapter (Ga.) in August held a reception for 22nd Air Force's new commander, Maj. Gen. John P. Stokes.

In a crowd of approximately 50 people that included senior officials from 22nd Air Force and from AFRC units nationwide, Chapter President Michael Wilkins gave an overview of AFA and an update on local efforts of the chapter, such as supporting and funding STEM education programs and outreach events for AFROTC and Civil Air Patrol, wrote Eden Nastal, chapter VP for communications.

"We are fortunate ... that our members are highly committed to supporting programs, special events, and campaigns that focus on leadership, student achievement, teacher development, and all forms of diversity," said Wilkins.

GEN. CHARLES A. HORNER CHAPTER

Members of the Gen. Charles A. Horner Chapter (Iowa) found a new way to invest in the younger generation.

Chapter members began "sponsoring" meals for cadets from Iowa State University's AFROTC Det. 250 whenever they attend chapter meetings, said Keith W. Morgan, chapter VP for aerospace education.

The partnership began five years ago when Morgan was an AFROTC instructor at the detachment. Since then, Morgan said he has fostered the relationship "to involve cadets ... and help them on their path to becoming Air Force officers."

The school's Arnold Air Society cadets have also benefited from the partnership, said Scott Mlcoch, a chapter member and senior at Iowa State. Chapter members helped plan and raise funds for an AAS 5K run for the university's student-veterans last November, and chapter member Keith E. Luchtel was a guest speaker at the squadron's dining-out in April.

Photo by Mitch Roecker

Scott Mlcoch, Tyler Laska, and Benjamin Shaffer (l-r, in airman battle uniforms) lead physical training exercises during a candidate training program at Iowa State University's Central campus.

NORTHERN UTAH CHAPTER

The Northern Utah Chapter celebrated one of its own during a ceremony in August. Jack C. Price was awarded AFA's national-level Distinguished Sustained Education Achievement Award at the Hill Aerospace Museum in Roy, Utah. Price is a former AFA chairman of the board and former president of the Aerospace Education Foundation (until 2006 an AFA affiliate). He "received the award for his decades of volunteer service, vision, and leadership in aerospace education, which established the path for several world-class STEM programs," wrote AFA National Director Richard A. Hartle.

The award was also announced during the anniversary dinner at AFA's Air, Space & Cyber Conference in late September.

Reunions

Anyone who flew or supported the **F-106.** Sept. 6-10, 2017, at the Millennium Maxwell House Hotel in Nashville. **Contact:** Bob Kwiecinski (772-571-6056) (bobski9933@aol.com).

485th Tactical Missile Wg. June 16-18, 2017, in Colorado Springs, CO. **Contact:** Chris Ayres (719-650-6089) (clemsonayres@gmail.com).

Norton-March Aircrew Assn. March 23-25, 2017, Riverside, CA. **Contact:** Tom Block (c141load@reagan.com) (www.norton-marchaircrew.org).

USAF enlisted flying personnel (WWII-today). **Contact:** Ralph E. Jones (rjonessr29@att.net).

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(4) Paid distribution by other classes of mail through the USPS (e.g., first-class mail)	0	0
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(1) Free or nominal rate outside-county copies included on PS Form 3541	0	0
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(3) Free or nominal rate copies mailed at other classes through the USPS (e.g., first-class mail)	48	50
(4) Free or nominal rate distribution outside the mail (carriers or other means)	57	57
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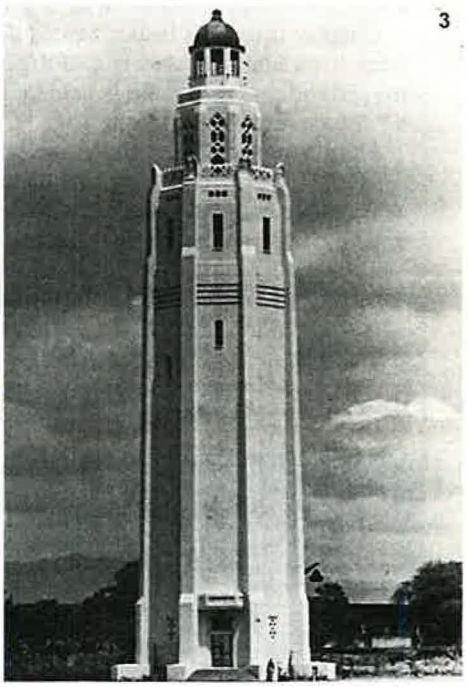
I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).



HICKAM

The Cavalry Convert

West Point star. ... Cavalryman in America and the Philippine Islands. ... Decorated hero of the US "Punitive Expedition" into Mexico. ... University professor. ... First historian of the US Air Service. ... Pioneer airpower advocate. ... Aviator killed in the line of duty.

Each term applies to Lt. Col. Horace Meek Hickam, the air officer for whom the US named a huge air base in Hawaii. It was an apt tribute to a Renaissance man of aviation's early years.

Hickam, at West Point, was an academic star and three-sport letterman. Commissioned in 1908, he served in cavalry units in Vermont, Georgia, and Texas. While in Texas in 1911, he volunteered to take aviation training at Fort Sam Houston, where he flew airplanes in his spare time. That was the start.

Hickam spent several years in the Philippines. In 1915, Hickam returned to Arizona, and joined the Gen. John J. "Black Jack" Pershing expedition into Mexico to capture Pancho Villa. It was here that Hickam first saw combat. He received a Silver Star for bravery in the April 22, 1916, battle at Tomochic.

Hickam was promoted and posted to the University of Maine as professor of military science but his academic career was cut short by US entry into World War I. In August 1917, Hickam sought and was granted a transfer to the Air Service and reported to Rockwell Field, Calif., for flight training.

Though Hickam got his wings, the Great War ended before he could get to it. Hickam soon went to Washington, D.C., where he served as chief of information. He launched the influential Air Service Newsletter and wrote the air arm's first history.

Hickam in the 1920s became a potent force for airpower and an independent air service, taking on soldiers who viewed the airplane as a mere auxiliary of land forces. "I am confident that no general thinks he can command the Navy, and no admiral thinks he can operate an Army," Hickam once wrote, "but some of them think they can operate an air force."

In 1932, Hickam—now a lieutenant colonel—was sent to Fort Crockett, Texas (near Galveston) and given command of Third Attack Group. Disaster awaited. On Nov. 5, 1934, Hickam was practicing night landings on an unlighted runway when his A-12 Shrike struck an embankment and flipped over. He was killed instantly.

The War Department soon named its new Hawaiian base Hickam Field in his honor. In Japan's Dec. 7, 1941, attack on Pearl Harbor, Hickam took major damage and casualties, but was soon back in operation and playing a pivotal role in the Pacific War.

The newly formed US Air Force in 1948 renamed the field Hickam Air Force Base. In 2010, the Pentagon merged Hickam with the Navy's Pearl Harbor complex to produce JB Pearl Harbor-Hickam. It is home to Active Duty C-17s, F-22s of the Hawaii ANG, and Pacific Air Forces headquarters.

HORACE MEEK HICKAM

Born: Aug. 14, 1885, Spencer, Ind.
Died: Nov. 5, 1934, Galveston, Texas
College: University of Indiana, US Military Academy, Air Corps Tactical School, Command and General Staff School, Army War College
Service: US Army, Cavalry, Air Service/Corps
Era: World War I, Interwar
Years Active: 1908-34
Combat: Mexican Punitive Expedition
Final Grade: Lieutenant Colonel
Honors: Silver Star
Occupation: US military officer officer
Famous Friends: Billy Mitchell, Alexander de Seversky

HICKAM AIR FORCE BASE

State: Hawaii
Nearest City: Honolulu
Area: 4.4 sq mi / 2,850 acres
Status: Open, renamed
Opened: (by Air Corps) Sept. 15, 1938
Original Name: Flying Field Tracts A/B (April 3, 1935)
Renamed: Hickam Field (May 21, 1935)
Renamed: Army AB APO 953 (May 16, 1942)
Renamed: Hickam Field (June 1, 1946)
Renamed: Hickam AFB (March 26, 1948)
Closed: (by USAF) Sept. 30, 2010
Reopened: (Joint Force) Oct. 1, 2010
Renamed: JB Pearl Harbor-Hickam
Home Of: Hq PACAF; 15th Wing
USAF Presence: USAF, Hawaii ANG

1. Horace Hickam, circa 1918. **2.** Hickam as a major at Bolling Field, D.C., in 1920. **3.** Hickam Field's iconic 171-foot Moorish-style tower. **4.** A C-17, jointly operated by PACAF and the Hawaii Air National Guard, flies over JB Pearl Harbor-Hickam.