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About the cover photo: F-35A pilot Capt. Stephen Del Bagno prepares for flight at Forth Worth, Texas. See "The Pendulum Swings Back," p. 4. Photo by SSgt. Peter Thompson/USAF.

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By Adam J. Hebert, Editor in Chief

Summer Budget Blockbuster

March 15, 2017

President Trump declared at the end of February that his 2018 budget will bring a "historic increase in defense spending to rebuild the depleted military of the United States of America." While this is welcome news for those who have watched the Air Force suffer through years of insufficient funding, Trump's budget ideas immediately came under attack from all sides.

Some immediately noted the increase fell well short of a promised 10 percent boost. Trump proposed increasing DOD's budget from $584 billion approved for 2017 to $603 billion next year—a three percent rise. (The 10 percent figure was measured against sequestration limits, a budget ceiling that remains the law of the land but has been bypassed every year since 2013.)

Meanwhile, nondefense spending would be cut by the same $54 billion defense was slated to receive. Budget offsets smartly prevent huge deficit increases, but the money would be pulled from other departments. This will be spending Trump criticized in the past, which will bring fire from the left. For example, "the President is surrendering America's leadership in innovation, education, science, and clean energy," claimed House Minority Leader Rep. Nancy Pelosi (D-Calif.).

The State Department could see its funding slashed by 30 percent, a troubling cut. Without effective diplomacy and development programs, the US would increasingly rely on the military to solve overseas problems—when they are more expensive, difficult, and deadly. As Defense Secretary James N. Mattis told lawmakers when he led US Central Command, "If you don't fund the State Department fully, then I need to buy more ammunition."

Defense hawks blasted DOD's increase as too meager. "We can and should do more than this level of funding will allow," said Rep. Mac Thornberry (R-Texas), House Armed Services Committee chairman. "The administration will have to make clear which problems facing our military they are choosing not to fix."

Sen. John McCain (R-Ariz.), Senate Armed Services Committee chairman, added, "A defense budget of $640 billion is required in Fiscal Year 2018 as a first step toward restoring military readiness, rebuilding our military, and reshaping our forces for the realities of 21st century warfare." If enacted, $640 billion really would be a 10 percent year-to-year increase.

When a budget increase does come, where does the money go? Trump has criticized NATO, said US allies must pay more for their defense or risk losing US protection, and has downplayed the Russian threat. Other top defense officials have said essentially the opposite.

"It is not clear to me why we would need 355 ships if our foreign policy says we are going to reduce our commitments around the world and let allies do more for their own defense," Center for Strategic and International Studies budget guru Todd Harrison told *The New York Times*. "If you want to build a military more suited to deter Russia and China than to deter terrorists, it is a very different capability that you want to buy."

This year's funding battles promise to be epic.

The administration is just now embarking on new national security strategy and nuclear posture reviews. Do not expect them to recommend an Air Force that does any less for the nation.

A three percent budget increase does not suddenly yield improved counterterrorism skills, better high-end capabilities, rebuilt readiness, and increased end strength. It is, at best, a down payment. How the money is spent is critically important—it cannot go to pork barrel projects, pet programs, across the board increases, or (worst of all) long-term unfunded mandates.

At AFA's March Air Warfare Symposium in Orlando, Fla., top USAF officials touted manpower. Acting Air Force Secretary Lisa S. Disbrow cited personnel shortfalls in "maintainers, pilots, acquisition and contracting personnel, cyber experts, and software coders" as part of the reason the service must grow from 317,000 airmen to 350,000—just to fill empty positions. The nuclear enterprise still needs strengthening, and remotely piloted aircraft positions remain undermanned.

Modernization requirements are also diverse. The F-35 strike fighter, KC-46 tanker, and B-21 bomber are at different acquisition stages, but must stay on schedule or be accelerated if possible. The ICBM fleet and nuclear command and control infrastructure need replacement. There are severe weapons shortages to address. The JSTARS battle management aircraft needs recapitalization, and USAF needs to take a hard look at buying an inexpensive light attack aircraft.

This summer's budget battles will be intense and emotional, as competing philosophies are debated in public. But even after the administration and Congress agree on the totals and where the dollars come from, they can't just throw money at defense. The nation must still get the Air Force budget right. ✪

A three percent budget increase won't suddenly rebuild readiness.

SrA. Joshua Kleinholz/USAF

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WOUNDED AIRMAN PROGRAM

The Pendulum Swings Back

After reducing airmen to pay for modernization, USAF must now change course.

By John A. Tirpak, Editorial Director

Under a new President, in a changing world security situation, and with a Congress perhaps moving toward repeal of the Budget Control Act, the Air Force is likely due for a major course correction in the coming months. Manpower, cut several years ago to pay for long-postponed modernization, is swinging back as the new top priority.

It is not yet clear if promised higher defense spending will materialize to preserve USAF's massive refit program. Moreover, a new national strategy review is already underway, and a fresh Nuclear Posture Review will overlap it. These will set new benchmarks for the size of both the conventional force and the capability of the nation's nuclear deterrent.

Air Force leaders spoke to all this uncertainty at AFA's Air Warfare Symposium 2017, held March 2-3 in Orlando, Fla. They offered guarded optimism that the service's readiness crisis will finally be addressed, but could not offer assurance—even under a promised budget boost—that modernization won't be the collateral damage. Air Force leaders asked their industry counterparts for patience and ingenuity in holding design and manufacturing teams together while new policies take shape.

"What we don't want to do is to make wide swings without having some sense of what a predictable budget will look like, so that we don't start something we can't sustain," Chief of Staff Gen. David L. Goldfein told reporters at a symposium press conference. "That's actually the way you can do damage to a service."

Acting Air Force Secretary Lisa S. Disbrow, sitting beside Goldfein, said the Air Force is considering going up from 317,000 airmen now to 350,000 in as little as five years, "and we may need to grow beyond that number" in the future, depending on the outcome of the national strategy review.

"We had a comprehensive personnel review," Disbrow said. "As this defense strategy comes together, and if the case becomes that the Air Force does need to grow—as we think it does—then we'll have to take another look" at what the final number should be. But 350,000 air-

Lt. Col. Brad Bashore, 58th Fighter Squadron commander, walks to his jet during exercise Northern Lightning at Volk Field ANGB, Wis., on Aug. 19, 2016. There is a shortage of 1,500 pilots across the total Air Force.

Second Lt. Angelica Phillips and 1st Lt. Joseph Whelan practice in a missile procedures trainer in 2015. Some nuclear equipment dates to the dawn of the nuclear era.

men, she said, "that's the minimum just to fill … the structure we have today."

Such a figure would bring the Air Force up to full manning, reduce the excessive overtime airmen have been working, and relieve key shortages, such as in pilots. Goldfein, citing airline numbers, has said that their demands will far exceed USAF's annual production of about 1,400 pilots, and the shortage has to be addressed as a national problem.

Disbrow said the service is about "1,500 pilots short across the total Air Force." Nearly 1,000 of those are Active Duty fighter pilots. There aren't enough to fill both cockpits and staff positions—notably at combined air and space operations centers—where pilot expertise is essential.

Most Air Force units have been at some 80 percent of their authorized manning levels for quite some time. Goldfein noted that in the 2014 budget, the service decided to take some risk with its personnel levels to free up cash for modernization. The fighter force, he said, averages 27 years old, the bomber, tanker, and advanced trainer force are more than 50 years old, and the nuclear deterrent force has elements that go back to the beginning of the nuclear age. Modernization was a can that had been kicked down the road so many times it could no longer be deferred.

But then the world situation changed, Goldfein asserted. Since that decision to borrow from the personnel accounts, Russia invaded Ukraine and threatened the Baltic states, China has been building islands in the South China Sea, and the US entered a new Middle East war, the fight against ISIS. The shortages of airmen—particularly pilots and maintainers—really began to bite.

The new Defense Secretary, James N. Mattis, said almost from his January confirmation that readiness would be the driving factor among his priorities. For the Air Force, readiness rides on having enough people.

Besides the uncertainty of whether Congress will honor President Trump's call for a major increase in defense

Betsy Moore/staff illustration; SrA. Stormy Archer/USAF; John Turner/USAF

A B-52 Stratofortress prepares to land at Barksdale AFB, La. Average age of the bombers, the KC-135 tankers, and the T-38 trainers is more than 50 years old.

> "WE'RE LOOKING AT HOW AUTOMATION AND ROBOTICS COULD FREE UP MANPOWER TO BE REPURPOSED IN OTHER AREAS."
>
> **ACTING AIR FORCE SECRETARY LISA DISBROW**

spending, the Air Force cannot simply throw a manpower switch and fill its ranks, Goldfein said.

"That's why it's so important that we can have some reasonable projection of a stable budget of the future, so we can bring airmen in on a glide slope that's sustainable over time and can continue to build a healthy force."

The new strategy review, Disbrow said, will look at "the timing required, how many [people and machines], how many conflicts at once." In terms of readiness, it will answer the most tinent question: Ready to do what?

It will produce a "force planning construct," she said in her keynote speech at the symposium, to determine the "number, the size, the timelines, and the conditions of the conflicts we're expected to prepare for." She said the services have been assured "there are no preconceived positions going in."

The capacity issue has to be addressed, Goldfein said, because "so many simultaneous campaigns" means "you're actually short of forces" to take on new ones, and the Air Force remains resolved that it will not resort to a "tiered readiness" model. Upward of 80 percent of USAF forces need to deploy immediately in the event of a major conflict, he said, and that won't allow a tiered readiness approach.

Of the overall pull on USAF resources, Disbrow said, "I can't imagine it's going to be any less demanding than it is now." She added that she expects no relief "on our responsibility for a safe, secure, reliable nuclear deterrent."

Goldfein said the Air Force will be a mix of new and old, or legacy, systems for some time to come, because there simply won't be enough money—even with a modest increase—to do everything the service would like. Even using an out-of-date estimate of $120,000 as the average cost of an airman per year, a 33,000-person increase in end strength would cost about $4 billion per year.

The 612th Air and Space Operations Center, Davis-Monthan AFB, Ariz., commands and controls air and space power in the US Southern Command area. Robust multidomain C2 should give the Air Force an edge over its foreign competitors.

The US Air Force Academy class of 2016 enters Falcon Stadium in Colorado. USAF hopes to increase manpower levels.

Recognizing that it will take quite some time just to recruit and train another 33,000 people, Disbrow said USAF is looking at ways to get more out of the people and authorizations the service already has.

"We're looking at how automation and robotics could free up manpower to be repurposed in other areas. We always look at the mix of civilian, reserve, … [and] Active Duty ... and … where can we make those kinds of shifts."

Money may appear in unexpected ways. The cost of space launch is declining, Disbrow said, and new "contract types" as well as new manufacturing techniques, particularly 3-D or "additive" methods, drive prices down. The saved money can be used to reinvest in people and modernization.

"Overall, the top amount doesn't necessarily increase, but what you're getting for that amount is so much more," Disbrow asserted.

Goldfein told reporters that the Air Force is going to be old and new, manned and unmanned, conventional and unconventional, attributable and unattributable. He wants tools to strike enemies, both kinetically and nonkinetically, that force them to "guess" what is happening to them. He said he's "really interested in 'silent sabotage.'"

Service leaders asserted that their best chance to keep the Air Force's edge, even as foreign competitors close the technology gap, is through robust, multidomain command and control, integrating and distributing the fantastic amounts of information the US military collects during peace and war. By turning intelligence into information commanders can readily use—and doing so faster than any competitor—the Air Force should be able to prevail in any conflict.

"The fundamental question is not what do I have; it's how does it connect?" Goldfein explained. "It's how do I … make this so that one-plus-one always equals three? Because I'm never going to send a single platform into combat. I'm always going to send a family of systems that connects together." That family, he said, will not be just Air Force, but the joint US military team and coalition or alliance partners.

THE NEXT GAME CHANGER

Gen. Herbert J. "Hawk" Carlisle, the head of Air Combat Command who retired shortly after the symposium, said multidomain command and control will be the next "game changer" for the Air Force.

"If we can continue to know information better and control, get feedback, put the sensing grid ... with the effects grid, ... we will always win," he stated. The biggest challenge to achieving it will be resolving the "Tower of Babel" of software languages used throughout the service. "We need to get off that and move to true fusion" of sensors, collectors, and interpreters of intelligence and combat platforms, Carlisle insisted.

In his speech, Goldfein said the way to "overwhelm" any enemy will be to present that adversary with too many "dilemmas" coming from multiple directions, so he can't grasp the whole of the threat and can't make decisions timely enough to blunt it. "That," said

SrA. Luke Hill/USAF; Capt. Justin Brockhoff/USAF; Mark Watkins/USAF

Goldfein "equates to deterrence in the 21st century."

OLD-SCHOOL DETERRENCE

The previous week, Goldfein had said the nation must modernize its nuclear arsenal. The land-based ICBM leg of the nuclear triad is "cost-imposing" on an enemy, who must target each of the 450 silo-based missiles, probably with multiple warheads, to have any chance of defeating that leg of the triad. The weapons needed to hit all those targets could easily be redirected at a much-smaller number of submarine pens and bomber bases if the ICBM silos were taken out of service, and this would be disruptive to the balance of power, Goldfein had asserted.

He had earlier also argued for the bomber force as "the most flexible" part of the deterrent, as it can be recalled. The existing force's age is making it less credible as a nuclear threat, however.

As demands have multiplied and the amount of people and machines has either stayed the same or come down in the last few years, the Air Force has been talking more about the building readiness problem—and specifically for the high-end fight. Asked whether this focus has helped get USAF more ready for a conflict against a near-peer, Disbrow said, "I don't think the needle has moved that much, unfortunately, because the demands are still high and we do have an availability issue with the aging fleet."

One potential way to relieve some of the stress is through the possibility of USAF acquiring a new light attack aircraft. The idea would be that in "permissive environments," where aircraft face little in the way of air-to-air or surface-to-air challenges, a light, turboprop-type airplane with modest ordnance, inexpensive to operate, could "free up" more sophisticated, more expensive to operate jets. This would allow them "to train for the higher threat missions" and increase their availability to cover other contingenies, Disbrow said.

Goldfein and Disbrow said there have been some experiments with such platforms in theater already, using OV-10 Broncos that were used in the Vietnam War, and the results have been promising. There's no program of record yet, though, and USAF will do more experiments—dubbed Combat Dragon II—this summer at Holloman AFB, N.M., to verify the concept and, as Disbrow said, "the business case."

US Air Force F-35s on a flight back from the UK in July 2016. USAF intends to buy 1,763 F-35s. Eleven nations will also fly the advanced fighter.

> A KEY FOCUS AREA WILL BE INCREASING THE SPEED AT WHICH THE AIR FORCE BUYS F-35S.

If a decision is made to pursue a light attack aircraft, USAF is only interested in "off the shelf" or "shovel ready" aircraft, Goldfein insisted, saying that the service doesn't want to start any kind of research and development program. He also said the program could be a pathfinder for allies that need a similar capability and could get in on a buy, training, and operating program with USAF.

Carlisle has offered skepticism about such an aircraft, telling *Air Force Magazine* that by the time the Air Force decided to buy such an airplane, held a competition, and fielded it, there may no longer be such a thing as a permissive environment. Given the proliferation of man-portable surface-to-air missiles, radars, and internet-enabled aircraft location, stealth may become a necessity. Carlisle questioned whether USAF will be able to find enough pilots for the advanced aircraft it has or is planning—let alone crew for a new category of light attack airplanes.

Disbrow said such concerns are precisely why the service is doing "the exploration and the analysis." Goldfein said such a program won't be started until the service first decides if this is "worth pursuing or not."

Elaborating on the future combat aircraft "mix," Disbrow said USAF will submit, in its Fiscal 2018 budget, a "refresh and upgrade [of] aircraft we have on the ramp," with capability upgrades largely mirroring those that have appeared in the annual unfunded priorities list USAF has given at Congress' request in years past.

The planned goal of buying 1,763 F-35 fighters remains intact, she said, though "it's doubtful we'd have 1,763 aircraft [operational] at any one time … because of the length ... of the program." By the time the later lots are bought, early aircraft may well have retired.

Goldfein said a key focus area will be the "possibilities of increasing the

Four inert GBU-31 bombs are ready for loading onto F-35As at Mountain Home AFB, Idaho, during testing. The Air Force would like to purchase 60 F-35s a year and hopes to bring the overall unit price down to $80 million per plane.

SSgt. Madelyn Brown/USAF; J. M. Eddins Jr./USAF

speed of procurement" of the F-35. The service would like to get up to 60 F-35s a year "as quickly as we can. And part of that is getting the overall costs down. And so we're working aggressively with [the] contractor," Lockheed Martin, to accomplish that. He said speeding up the buy increases volume, which in turn lowers costs, and as that happens, "retrofit costs" of bringing earlier models up to the configuration of later ones "become less and less a challenge."

Getting the buy rate of the F-35 up "will be our top priority" in acquisition, Disbrow said. Having more F-35s in the inventory obviates the need to upgrade older, fourth generation aircraft, with their limited relevant lifespan and which break so often, because of their age, that they pose an additional tax on maintainer ranks and time.

"It's very, very much driven by ... this defense strategy review," she said. The number of aircraft has to match "the number of conflicts and the response time that's going to be required for those conflicts," and Goldfein said USAF will "make [its] case" in the strategy review for a faster F-35 buy.

Disbrow said the goal of the F-35 program for several years has been to achieve a unit cost of $85 million a plane by Fiscal 2018 but USAF wants to get it even lower, below $80 million per copy—"as low as we can go and still get a quality product." The airplane's design has finally reached a point where it is relatively stable.

Asked about President Trump's involvement in F-35 negotiations, she said that "to have the President interested in defense programs is a good thing," and he's asked Mattis to review the program with an eye toward "getting quality at the best price."

Goldfein said he's concerned that Congress' taste for never really voting on a defense budget but simply enacting a series of continuing resolutions is having a corrosive effect on industry and USAF's relations with it.

"I'm very concerned about industry's ability to sustain a sophisticated workforce," he said, because USAF needs industry's ability to "produce the capabilities that we need, … should we actually go into a high-end conflict." The workers required for the enterprise are engineers or they need "increasingly … sophisticated" skills and can't be hired quickly. To industry, he said, "I really need you to keep the capacity in case I need it." He urged industry to "figure out how to keep that sophisticated workforce on the books" during the uncertain periods.

The biggest problem confronting the nation, militarily, is "complacency" about readiness, Disbrow said. "Every single airman needs to be coming into work every day saying, 'What have I done to make us ready?'"

Goldfein said readiness has become his focusing thought. "If I'm not treating every week like it's the last week of peace, I'm not doing my job as a service Chief," he said. ✪

By **Brian W. Everstine,** Pentagon Editor

Lt. Col. John Harbour and Capt. Timothy Gaumer take off in a KC-135 Stratotanker from Al Udeid AB, Qatar, Nov. 29, 2016. In the fight against ISIS, tankers extend the reach of USAF aircraft.

MOBILITY MACHINATIONS

The Air Force's air mobility fleet is meeting a huge and unrelenting need for fuel and airlift capability that is not expected to let up. Answering this demand signal is forcing Air Mobility Command (AMC) to think differently about how it plans, maintains its fleet, and even practices and exercises.

"There's an insatiable appetite for air mobility," Gen. Carlton D. Everhart II, AMC commander, told *Air Force Magazine*. "If you want to do an operation, you have to set the table before you can do it. Who sets the table? Air Mobility Command."

When the hammer came down in 2013 under budget cuts called for by sequestration, AMC was forced to cut its main training exercise and competition: the Air Mobility Rodeo. This left the command without its premiere training event and competition, one that all of its mission sets could take part in. But it gave AMC a chance to completely rethink its exercise, and what it came up with is a reinvention of the concept. The first iteration of the rodeo's replacement is now set to happen this summer and is called Mobility Guardian.

Scheduled for July at JB Lewis-McChord, Wash., the massive exercise will include thousands of airmen and hundreds of aircraft—both US and international.

AMC plans to practice all its missions, including not just air refueling and airlift, but airfield seizure and setup, aeromedical evacuation, ground support, port operations, nuclear bomber support, parachute drops, and more, Everhart said. Twenty-three nations have been invited to either participate or watch, and international aircraft will take part, including C-17s, C-130s, A-400Ms, and tankers from allies. Those countries that can't afford to bring their own aircraft will be able to observe "the way we do things," Everhart said.

Air Mobility Command has for years supported other Air Force commands' major exercises, such as Red Flag and

A B-52 refuels from a KC-135 during Operation Inherent Resolve on Feb. 15. In 2016, KC-10s and KC-135s completed the vast majority of the coalition's aircraft refuelings.

SrA. Jordan Castelan/USAF

AMC is working hard to keep USAF's airlift and tanker capabilities healthy.

Green Flag, and those of other combatant commands, for example Foal Eagle and Cope North in the Pacific. For the first time, AMC will be the supported command and the focal point, with other commands and services coming in to help mobility crews train. More than 1,000 paratroopers are expected to jump and set up an airfield at the Yakima Training Center, with Army Multiple Launch Rocket Systems loaded on AMC aircraft to "shoot and scoot" in the training, Everhart said.

"Washington state becomes a power projection platform," he said.

AMC has gotten good at what it does: taking off from the East Coast, stopping at a major hub in Europe, and then flying "down the boulevard" to mission locations in the Middle East. But the command has not been able to completely practice all its capabilities, from setting the table for future operations to carrying out its missions to cleaning everything up at the end.

"We don't practice that. This exercise allows us to [be the joint force air component commander] and run a theater of operations," Everhart said at the symposium. "This exercises a lot of pieces of the puzzle."

This is not to say that today's US Central Command-centric operations are routine, and the pace of activity has been staggering. An AMC aircraft takes off once every 2.8 minutes for a mission around the globe. While air strikes against ISIS get headlines, AMC jets are flying what commanders call a "tanker war" over Iraq and Syria.

In 2016, the Air Force's aging KC-10 Extenders and KC-135 Stratotankers flew the vast majority of the coalition's 13,064 tanker sorties, with 80,912 aircraft refuelings. The massive air war against ISIS has been a huge mobility operation. Almost 45 percent of sorties in the mission have been flown by USAF tankers.

In Everhart's experience, his fleet will be tasked about every two weeks to add another mission to its plate—such as humanitarian relief or other contingency operations.

SSgt. Nicholas Otos marshals a C-17 Globemaster III into a spot on the flight line for inspection and servicing at Kadena AB, Japan, in September 2014. The air war against ISIS generates headlines, but AMC is busy worldwide.

"When you call, we're the first ones into the fight," Everhart said at the AFA's Air Warfare Symposium in Orlando, Fla., in early March. "And in joint coalition warfare, we're the last ones out."

Since 2010, the number of Total Force tankers has dropped from some 500 to 455 and from 112 C-5 Galaxys to 52. Two C-17 squadrons have closed: the 17th Airlift Squadron, JB Charleston, S.C., in 2015 and the 10th Airlift Squadron, JB Lewis-McChord, Wash., last year. While the operations tempo has dropped, from 1,200 daily sorties in 2010 to 600 today, the force structure changes have made the command's job difficult.

"We've made a lot of adjustments. We're just as busy as we were back then in the 2010 time frame," Everhart said. "Just because of the budget constraints we had."

To move forward, the command is taking large-scale steps to address the health of its people, the AMC deployment process, and its fleet itself.

SHIFTING THE FLEET

The bulk of the command's airlift missions has come on the wings of its workhorse C-17 Globemaster III, the Air Force's "new" airlifter that is out of production, with the oldest pushing 25 years old. The command needs to think about how to extend the life of this fleet and is about ready to "slap the table," Everhart said, and go forward on the new plan, the Mobility Air Forces Enterprise Fleet Management concept.

In early 2017, the command notified its units, Air Education and Training Command, Congress, and other stakeholders about its intent to move C-17s across units in a strategic manner to keep the fleet healthy and flying longer. For example, AMC is identifying units that, for one reason or another, are flying more than others and will rotate C-17s so aircraft that have been flying intensively will be able to fly less in another unit. Similarly, a unit that flies in the Pacific often may face problems with corrosion that could limit the life of the aircraft, so the command will systematically shift such assets to areas where they will face less humidity and salt air.

The command is "trying to make it fair and impartial" and look at long-term savings by keeping its fleet mission capable.

"It's not instant gratification," Everhart said. "The big data will come in over time."

The first base seeing the impact of this concept will be Altus AFB, Okla., the home of training for the C-17. The aircraft that reach the top five percent of the fleet's flight hours will be rotated out of Altus, with less-used aircraft

"WASHINGTON STATE BECOMES A POWER PROJECTION PLATFORM."

AMC COMMANDER GEN. CARLTON EVERHART

Airmen from Travis AFB, Calif., race to their aircraft at JB Lewis-McChord, Wash., during Air Mobility Rodeo 2011. AMC's biennial readiness competition was canceled because of sequestration and other pressures in 2013 and 2015. Its replacement, Mobility Guardian, will commence this summer.

coming in. This model will later be applied elsewhere. The high-usage Altus aircraft will be switched out as they come out of depot maintenance and are fresh for their next mission, Everhart said.

"Aircraft swapouts are not new," AMC spokesman Col. Christopher P. Karns said. "What makes this newsworthy is that the current plan involves the total Air Reserve Component and offers a Total Force solution."

AMC expects that 15 to 18 of the Total Force's 222 C-17s will reach the end of their service life—42,750 equivalent flight hours—by 2040. But by managing its fleet, the command expects it could extend service life by an additional 10 to 20 years.

"The ultimate goal is to give me flexibility," Everhart said. "Now I can build in a timetable [for the fleet's retirement]. There's still going to be a drop off the cliff, but this allows us to manage it."

The command is also working within the confines laid out in the Fiscal 2016 National Defense Authorization Act that seeks to protect the Air National Guard by stipulating that an aircraft move "does not degrade the capability" of the Guard.

"This practice will actually ensure the collective capacity of the entire fleet remains strong and promises benefits to all," Karns said. "Fleet management aims to maximize service life, capacity, and done effectively, enables recapitalization space."

The C-17 is just the start; the command is planning similar moves for its C-130, KC-10, KC-135, and even future KC-46 aircraft.

"The objective for the entire AMC fleet is to mitigate the effects of aging and aircraft wear-and-tear and to take measures to extend the service life of AMC platforms and maintain the health of the fleet," Karns said.

BIG DATA FOR DEPLOYMENTS

Fleet maintenance isn't the only area where Air Mobility Command wants to change how it operates. The command is now using emerging software and a Silicon Valley-esque approach to how it plans future operations and deployments.

It is working alongside industry and the military's new startup—the Defense Innovation Unit Experimental—to use big data. AMC will study how it has been flying tanker operations to try to use predictive modeling to plan what its future commitments will be, Everhart said.

By using software that analyzes air tasking orders for operations—looking at how many flights are flown and how much fuel is being used in refueling operations—the command hopes to predict a more precise number of aircraft and aircrews.

"We have 455 tankers, but the world needs 479," Everhart said. "Every combatant commander wants to touch those tankers."

For example, the command might not need to deploy 100 tankers for some operations and instead, based on the predictive modeling and the way the sorties have been flown before, the same job could get done with just 30 tankers.

"That's a shock to the system," Everhart said.

The idea is to both effectively use the tankers the command already has and to work better with the Air National Guard and Air Force Reserve. The command depends on citizen airmen heavily for its deployed operations, and if it can more accurately forecast what will be needed in the future, those reservists can in turn better plan their schedules for their employer.

While the idea came out of the need for tankers in US Central Command, AMC will drive the same models into its Tanker Airlift Control Center and all of its air and space operations centers to predict future deployments, home-base training, and other operations inside the country.

"It allows us to have more reachback and more deliberate planning for each of our precious assets," Everhart said. This will become increasingly important over time as AMC's fleet is expected to further shrink and age, even as it continues to be tasked extraordinarily heavily. ✪

A1C Zackary A. Henry/USAF; TSgt. Elizabeth Concepcion/USAF

WIDENING THE C2 HIGHWAY

As the nature of war changes, the Air Force needs its systems to provide better, faster, more useful information.

Support elements, enabling capabilities, and behind-the-scenes assets simply do not garner the same level of attention as the Air Force's high-profile weapons, aircraft, and exercises. Bombs will probably always get more attention than loaders, acquisition draws more scrutiny than sustainment, and kinetic operations generate more interest than the command and control (C2) networks that enable them.

On that last point, at least, USAF's top leadership is trying to change the conversation and bring more attention to the critical role C2 and fusion warfare play in winning today's wars. The criticality of the C2 "highway" was, in fact, one of the hottest issues at AFA's 2017 Air Warfare Symposium held in early March in Orlando, Fla.

"We're going to be old and new, we're going to be manned and unmanned, we're going to be conventional and unconventional," Air Force Chief of Staff Gen. David L. Goldfein said in an AWS meeting with reporters.

At the March 3 roundtable, Goldfein argued the challenge at hand is "how we actually focus not so much on the trucks and the cargo, right, the aircraft or the satellites or the ships or the trucks or the sensors or the munitions, but focus first on the highway they ride on, which is the network and how we connect it together."

I WAS LOST IN THE CITIES

"The volume of data we collect [today] is far greater than anyone can actually analyze," said Goldfein in his symposium address. "How do we create a common operating picture and present it in a way that leaders can then act and make decisions?"

This has been a sticky problem for years, as new aircraft, spacecraft, and processing systems bring in a torrent of data to analyze and exploit. Still, Brig. Gen. Peter J. Lambert, Air Combat Command's director of intelligence, said at the symposium that ACC is making progress in this area "faster

By Gideon Grudo,
Digital Platforms Editor

SrA. Gene Kellenberger, a cyber systems operations journeyman, reconnects cables at Dover Air Force Base in Delaware. Gen. David Goldfein, USAF Chief of Staff, says the volume of data collected outpaces the capacity for analysis.

than anticipated." He listed improvements through open architecture, better software, and open source intelligence as the main tenets of the progress.

To cope with the ever expanding information influx, ACC is hiring what it's calling "chief data officers." Lambert said it's a pilot program to address "the data problem."

"We're awash in data," he said, and it's impeding airmen from focusing on "things that are important to them."

But the Air Force and, by extension the US, isn't the only contender vying for an advantage through data. The Russian military is testing fusion capabilities in Syria—much like Americans experimented with similar technology during Desert Storm—but they're "absolutely not" where USAF is with regard to C2 and fusion warfare, Lambert said.

He cited three other areas presenting information challenges: ISIS, Russia in Crimea, and the Pacific.

On the counterterrorism front, harvesting and understanding data is one way to counter ISIS' "very adept" utilization of social media. Lambert said big data manipulation and analysis could have predicted the Russian move into Crimea. And in the Pacific, the information domain is a "contested domain."

Lambert said USAF is at the "inflection point" in achieving the C2 and fusion warfare capabilities needed to succeed in an increasingly data-centric battlefield. He cited a 2015 AFA Mitchell Institute for Aerospace Studies paper, "An ISR Perspective on Fusion Warfare," which highlights the service's C2 challenges. Lambert said the Air Force has made "significant progress" since the paper came out two years ago.

Shortly after the symposium, Goldfein released a white paper placing multidomain command and control (MDC2) front and center. In the March 10 document, the Chief argues that the national security environment "requires us to examine how we sense, decide, and act rapidly and in concert across all domains."

"Our adversaries have invested heavily in technologies to deny us the superiority we have come to rely upon," Goldfein wrote in a letter to airmen released with the paper. He argued that MDC2 requires more than connecting multiple domains and more than connecting operations in one domain to operations in another. It's really about enabling "joint and coalition capabilities across all military operations."

Freepik; Roland Balik/USAF

David Hall, a crisis action team director, conducts command and control operations at Hill AFB, Utah, in November 2016. The war-winning importance of C2 and fusion warfare is gaining more attention from USAF.

Goldfein outlined three "elements" that will make command and control work better for the Air Force.

Situational awareness, the first element, is USAF's ability to acquire and distribute data, which Goldfein wrote is "robust." But to better present leaders with information they can understand—information that, despite its complex nature, can be simplified—the Air Force needs to better integrate "nontraditional sources of information."

To make more sense of these large and growing swaths of data, Goldfein wrote that USAF will need "common architectures, standardized data formatting, increased machine-to-machine and artificial learning systems, and better integration." With this, leaders will be able to make decisions faster.

Rapid decision-making is Goldfein's second element. Whether tactical, operational, or strategic, calling the shots "at the needed operational tempo" is challenging both technically and in a human sense. From "empowering airmen" to leveraging the aforementioned situational awareness, USAF needs people and technologies that can engage situations holistically.

Lastly, Goldfein argued that commanders should be able to direct forces across domains and missions using all the MDC2 capabilities they have. While the leader in charge needs to be able to communicate efficiently with the right set of boots, that same leader should be consuming incoming data from the battlefield in real time.

DECEPTION IN THE DATA

One of the biggest challenges to information networks is outside actors aiming to infiltrate these channels and steal data or, conversely, inundate these channels with false information.

The human component of information warfare could make this challenge a dangerous one, said Lani Kass, CACI's corporate strategic advisor and a former senior Air Force and DOD official.

"It is ultimately the young operator who has to act upon this data," she said. "The technology enables what remains a contest between human brains." Citing the pilot's "speed is life" mantra and the political "information is power" mantra, Kass emphasized the significance of fusion: "If you can indeed fuse speed and information, you do have a winning combination, because you truly combine life and power."

But Kass said she doubted information could ever "completely lift the fog of war."

"All the information on the planet won't make war fully open to anticipation," she said. One of the reasons for this is what Kass called "deliberately deceptive data."

"The only thing worse than being a victim of deception is not knowing you just fell victim and sharing deceptive data," she said, adding that "at the speed in which we operate, it is almost humanly impossible to sort the wheat from the chaff."

So on top of sifting through data to find worthy information, analysts must be wary of, and keep an eye out for, information that was intentionally injected into their feeds by the enemy.

Kass urged caution and vigilance in response to Lambert's assertion that the Russians are behind the Americans in the information arms race. Kass said the US must take care "not to underestimate the adversary," and "what we see in Syria is what Russia wants us to see. Do not assume that's all they [have]."

"They are a nation of mathematicians, chess players, and engineers," Kass said, and China is the same. ✪

> USAF NEEDS PEOPLE AND TECHNOLOGIES THAT CAN ENGAGE SITUATIONS HOLISTICALLY.

R. Nial Bradshaw/USAF

May 20, 2017

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AIR FORCE ASSOCIATION

Equipment & Innovation

To dominate future rivals, the Air Force will lean on new equipment and the innovative strength of its airmen.

The global threat environment the United States faces today requires a unique blend of high-tech military solutions and airman-based innovation. In March, USAF's senior leaders laid out an approach for striking this balance at AFA's 2017 Air Warfare Symposium in Orlando, Fla. Top Air Force officials said advanced capabilities and creative thinking must work together for the

SSgt. Chris Hayes and SSgt. Lucas Woods manually redirect an antenna at Al Udeid AB, Qatar, Jan. 30. These antennas help locate electromagnetic interference in the US Central Command area.

US to stay ahead of a complex field of adversaries.

This parallel approach, making full use of the new and the old, will be key in training airmen for today's battles, in revitalizing the health of the squadron as a building block of Air Force power, and in fully integrating space operations into the joint combat effort.

By Wilson Brissett, Senior Editor

SrA. Richard Sorensen and Maj. Aaron Milledge, GPS denial operators, set up high-power GPS electromagnetic interference training equipment at Schriever AFB, Colo.

The training challenges ahead for the Air Force require both an orientation to high-end technology and an embrace of low-tech ingenuity. The multidomain command and control Chief of Staff Gen. David L. Goldfein has placed at the center of the future air battlespace requires the most advanced capabilities.

Goldfein

Foremost among them is the F-35. The fifth generation fighter is "a difference maker in how we can carry out command and control and fuse all the components of warfighting for future conflicts," said Lt. Gen. Darryl L. Roberson, commander of Air Education and Training Command. The Lightning II, he said, is "our key to ensure air superiority in the United States."

As such, training needs to keep up with technology. For Roberson, this means the T-X trainer is key to "bridging the technological gap between our current trainers and that fifth generation capability."

A big part of what's new here is that pilots will learn to see offensive craft—fighters and bombers—as command and control (C2) and intelligence, surveillance, and reconnaissance (ISR) platforms. In this regard, the F-35 is "more like an AWACS than an individual fighter," Roberson said, referring to the E-3 Airborne Warning and Control System C2 aircraft.

This requires new thinking, and Air Force Global Strike Command's Gen. Robin Rand recounted the advice he recently gave bomber pilots: "Frankly, the least important thing you might do is drop a bomb. The most important thing you might do is provide a critical piece of ISR that's going to save someone's life."

Carlisle

Rand celebrated the refurbished B-52s that "delivered a bunch of whup-ass on some really bad guys" in support of Operation Inherent Resolve in Iraq.

Getting up to speed on fifth generation capabilities is not enough, Roberson insisted. Yes, USAF needs to

SrA. Miles Wilson/USAF; Maj. Jessica D'Ambrosio/USAF; Scott M. Ash/USAF; SSgt. Whitney Stanfield/USAF

SUPERIORITY WILL BE DEFINED IN TERMS OF "NOT WHAT DO I HAVE, BUT HOW DO THEY CONNECT?"

USAF CHIEF OF STAFF GEN. DAVID GOLDFEIN

An F-35A pilot and crew chief from Hill AFB, Utah, prepare for a sortie Feb. 7 at Nellis AFB, Nev., during Red Flag 17-1.

An F-22 Raptor launches for a mission supporting Operation Inherent Resolve in Southwest Asia Feb. 14. China and Russia will soon have similarly capable fifth generation fighters.

"expose airmen to the network-fused operations" of the air and space operations centers earlier and more often in their training, but in the realm of anti-access, area-denial warfare (A2/AD), airmen also need to learn to be "proficient at fighting in the dark and with little or no technology," Roberson said.

For Air Combat Command chief Gen. Herbert J. "Hawk" Carlisle, speaking just before his retirement, the long-term development of "stovepiped capabilities" that were built with only one service—and not joint battles—in mind have hamstrung the US military's ability to prepare for an A2/AD environment.

This is what Gen. Carlton D. Everhart II, boss of Air Mobility Command, called the problem of "enclaving." When an adversary is intent on eliminating the advantage the US gains from advanced capabilities, part of the answer is to reorganize the fight in America's favor.

This shift can touch on technology. Carlisle said that "open mission systems" and "open architecture" can allow communication and control systems to adapt within an A2/AD environment and enable more flexible joint operations.

The ultimate goal, Goldfein told reporters, is to create a "family of systems" that can work together to outpace a rival. In this sense, superiority will be defined in terms of "not what do I have, but how do they connect?"

Some see this as a fundamental change that marks "the advancing of the character of war." That's the view of Lt. Gen. VeraLinn "Dash" Jamieson, deputy chief of staff for ISR.

An engine maintainer completes a postflight inspection on an E-3 Sentry AWACS in Southwest Asia Feb. 1. The E-3 fleet has completed more than 1,500 hours of flight time for Operation Inherent Resolve.

But like Roberson, Jamieson resists the idea that technological advances alone will address the challenge. She anticipates, in the near future, adversaries who "probably will be at parity with us or even exceed us in many areas." China and Russia will also soon have fifth generation capabilities, comparable to those offered by the US F-22 and F-35.

2014 WAS THE YEAR

Goldfein told reporters that, in 2014, "the world changed" when state actors began engaging in "adversarial competition below the level of armed conflict."

This is not quite a Cold War. Russia's adventurism in Ukraine and Syria and China's expansion in the South China Sea represent real strategic challenges, but they feel more like lukewarm war—partly by design.

However we name it, the threat of high-end conflict is back, but the solution in 2017 is not another arms race. "What technology has given us," Jamieson said, "is the means to integrate the multidomain capabilities." The family of systems, when they harmonize well, gives USAF a pace of operations that can defeat even a high-end adversary. But crucial to achieving this speed is the human element. "What our airmen have given us through critical thinking," she said, "is the advancement and the speed of decision-making from the data" gathered by new ISR platforms and shared through a fused C2 system.


Davis

So it's more than just boosterism when Carlisle insists that "our advantage over time has always been the way we think." The open systems and open architecture he called for would give the US a battlespace edge only when our combatants devise "better ways to use what we give them." That's why Carlisle said the most important training question facing the force right now is: "How do we unleash that thought potential" of airmen to capitalize on what Air Force leaders see as a personnel advantage?

SQUADRON MATTERS

Goldfein's decision to focus on squadron revitalization and multidomain command and control at the same time addresses the continual need to give airmen top-notch tools and the freedom to put them to work.

What the squadron effort will do exactly remains unclear. Goldfein said the lack of specificity from the outset was intentional, but he also laid out a framework for the future. Effective leadership, he said, requires "a single person in charge," a clear "concept of operations," and a "calendar with milestones and objectives."

Goldfein has put Brig. Gen. Stephen L. Davis, director of manpower, organization, and resources, in charge. The concept of operations and the milestones is still unfolding, in part, because of the wide variety of squadrons in the service. Goldfein said the Air Force

R. Nial Bradshaw/USAF; SrA. Tyler Woodward/USAF; SrA. Tyler Woodward/USAF; Andy Morataya/USAF

The B-52H "Ghost Rider" at Minot AFB, N.D., Sept. 27, 2016. After more than seven years in the "Boneyard," it was the first B-52 to be retrieved from storage, restored, and returned to active status. Gen. Robin Rand praised the contributions of upgraded BUFFs to Operation Inherent Resolve in Iraq.

has more than 3,400 squadrons, and they range in size from 40 to several hundred airmen. Clearly he doesn't want a one-size-fits-all program.

What unifies squadrons, despite their differences, Goldfein said, is that they are the place where "we inculcate the culture of being an airman." Because it is the most formative experience of airmanship, the squadron is the place "where innovation occurs" and where a shift in operations can have the "most impact."

In his speech, Goldfein said revitalizing squadrons is less about building a new program than working to "remove the barriers ... to getting [the] mission done." He said a "reduction in additional duties" announced in August 2016 was a result of the squadron effort. Task-force leader Davis is overseeing a "comprehensive review of Air Force instructions," the rule books that govern day-to-day operations.

The AFI review process is aimed at eliminating red tape and empowering the force at the smallest unit level. Goldfein said he wants to "push decision authority down to the right level."

"I don't want them all waiting around for me to solve it," he said, recounting for reporters what he said at a meeting with the Air Force's wing commanders. "Don't wait for me to come to you with the big program," he told them. He wants to motivate ownership and initiative at the grassroots level to generate exactly the kind of thought leadership Carlisle said marks the decisive American advantage. "I trust you" is the most important message he has for wing commanders, Goldfein said.

The personnel model of squadron revitalization resists the bureaucratic inefficiencies of top-down leadership. Goldfein joked with reporters that "when I was a squadron commander, I couldn't pick the Chief of Staff of the Air Force out of a lineup." The comment was facetious—he later apologized for it—but articulates the driving principle of the effort, which is to give as much freedom as possible to the lowest possible level. Goldfein hopes to liberate airmen to see more clearly what is required in their own areas of responsibility and develop new tactics, techniques, and procedures that will help them make the most innovative use of fifth generation ISR and C2 capabilities. By pairing organizational smarts with technological advances, the Air Force plans to keep a fighting edge over adversaries who may challenge or exceed them in some capabilities.

OWNERSHIP FOR THE SERVICE

A similarly blended model has been driving the Air Force message on space in 2017. Goldfein stressed USAF's preeminence in the domain as clearly as he could. "We own space," he told the audience. He explained it was "not about [the Air Force] taking control" of space but rather "fulfilling our obligation to the joint force" by stepping up to the service's role as the "space coordinating authority." As Air Force Chief of Staff, Goldfein said he is "the joint chief responsible for the preponderance of the space force." This is simply fact.

Gen. John W. "Jay" Raymond, chief of Air Force Space Command, elaborated on this point. USAF "has been the steward of space for the last 54 years," he told reporters, and "today the Air Force is leading the way in being able to protect and defend" US space assets. He also said the 2016 National Defense Authorization Act directed the Department of Defense to "push acquisitions programs back down to the services."

Raymond has taken that as a directive to take "current programs" and "programs in development" that today are "held at the [Office of the Secretary of Defense] level" and place them "under the Air Force acquisitions authorities."

Doing so would be a strategy for streamlining space acquisition, which is notoriously slow. There are a large number of services and organizations—Rep. Mike Rogers (R-Ala.) has said the number is 60—whose assent is required for space acquisition decisions to advance.

In this case, as in the squadron initiative, the Air Force is advocating for a certain kind of stove-piping to gain much-needed flexibility and efficiency. Clarifying the authority of a single service in charge of the space domain could have the same effect as putting "a single person in charge" of a squadron.

This is not the old stove-piping of interservice competition, but specialization for the joint mission. Raymond compared space capabilities to a light switch that the joint force can turn on whenever operations in any domain are required. It's the Air Force's responsibility to have that switch ready for all the services, 24/7. He wants to "ensure that we can provide the capabilities" the other services need to be successful in the domains they dominate.

Giving acquisition authority to the Air Force is not a cure-all for space acquisition, which often involves buying small numbers of exquisite capabilities over long time frames. Raymond said the Air Force needs to "develop and capitalize on" the rapid acquisition authority it already has vested in its Operationally Responsive Space (ORS) office at Kirtland AFB, N.M., and use rapid acquisition authority more broadly.

Advanced abilities alone cannot keep the Air Force ahead of its state and nonstate competitors. The service's leadership says the right blend of high-end capabilities and airman-based solutions such as innovation, authority, and training will produce what is needed for the future. ✪

A1C J. T. Armstrong/USAF

Happy 70th Birthday US Air Force

70

U.S. AIR FORCE

BREAKING BARRIERS

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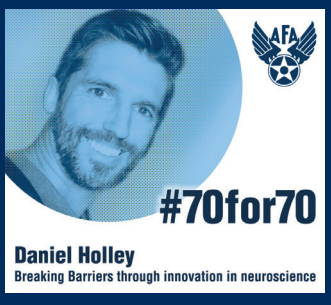

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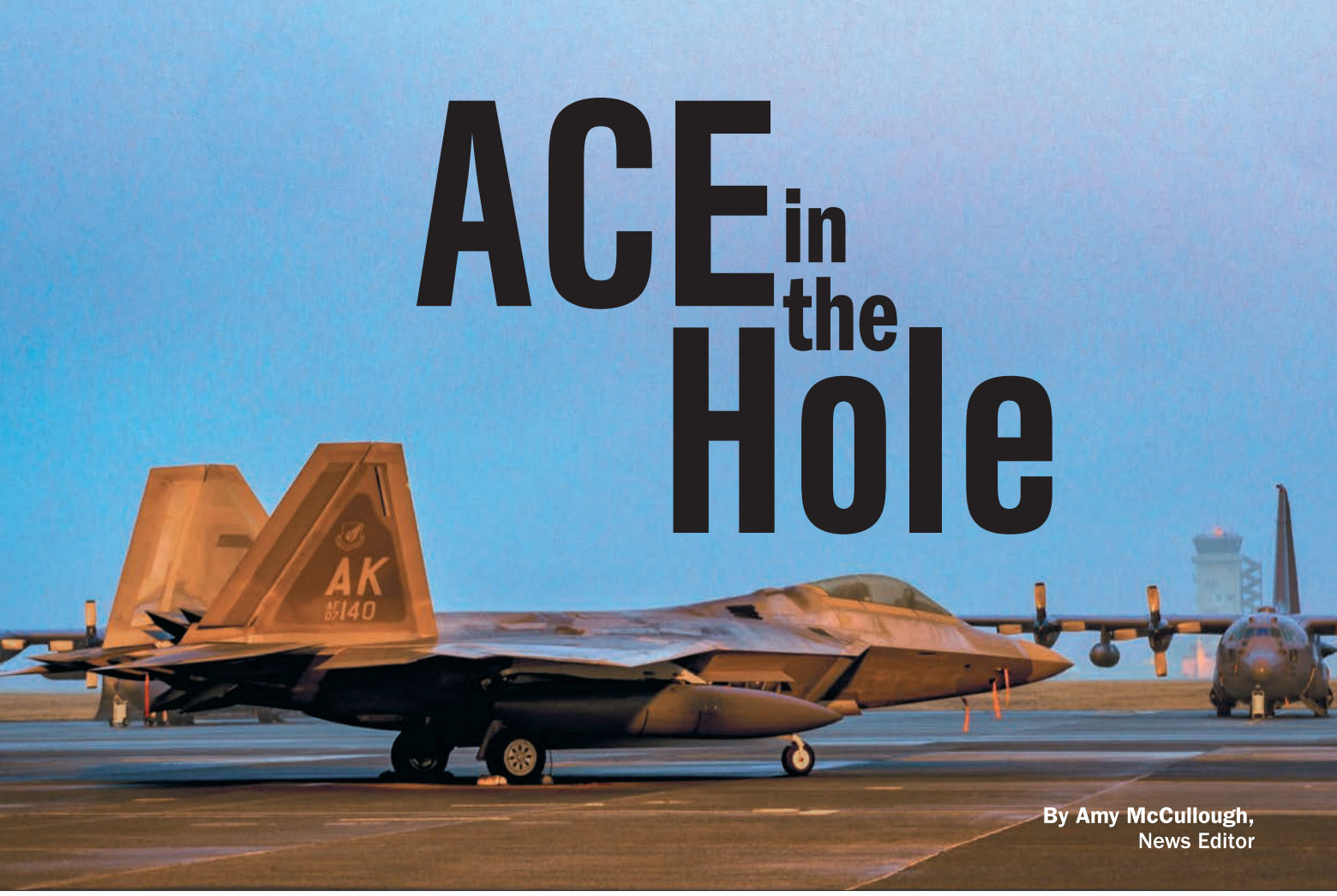


By Amy McCullough,
News Editor

PACAF's new validated concept—Agile Combat Employment—has changed the front lines in the Pacific Theater.

The threats and operational environment in the Pacific Theater have been evolving rapidly. China is ramping up military activity in the South and East China seas, North Korea is growing more aggressive with its ballistic missile launches and development program, and Russia is deploying more long-range aviation assets to the area and flying them in a more aggressive manner.

That's why Pacific Air Forces recently validated a new concept called Agile Combat Employment, or ACE. It is intended to ensure all forward deployed forces are ready for a potential contingency with little notice.

"As we continue to focus on our readiness and credibility of forces deployed forward, we see our adversaries and potential adversaries changing," said Pacific Air Forces Commander Gen. Terrence J. O'Shaughnessy at AFA's Air Warfare Symposium in Orlando, Fla., in March. "We see they have potentially shrunk the theater. For example, folks in Alaska and Guam are now on the front lines."

As of early March, North Korean leader Kim Jong Un had already fired 117 ballistic missiles in just five years of rule. That's an enormous increase from his father, Kim Jong Il, who fired 34 ballistic missiles over the course of 17 years. On March 6, the rogue regime fired off a salvo of five missiles toward Japan, in what North Korea described as "practice" for an attack on US bases in Japan. Four of the missiles landed in the sea near Japan; one failed to leave the launch area.

China continues to build up runways and military facilities on three man-made islands of dubious legality in the South China Sea. In response, Vietnam is extending a runway on one of the islands it claims in the South China Sea, with some think tanks estimating the runway could be extended from less than 2,500 feet to more than 4,000 feet. This would enable maritime surveillance aircraft, transport planes, and combat aircraft to operate from the island.

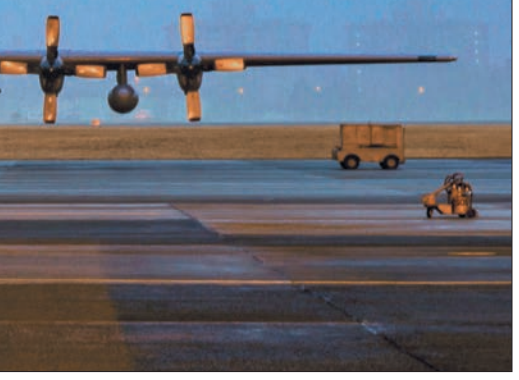
AGILITY WORK

Russia, too, is expanding its presence in the region. The Russian Defense Ministry announced last year the formation of a new heavy bomber air division, to be located in the country's far east and made up of Tu-95MS strategic missile carriers and Tu-22M3 long-range bombers. Russian state media reported the aircraft would be tasked with patrolling the Pacific near Japan, Hawaii, and Guam. Russia also is conducting military exercises with China.

Considering these operational developments, "the risk of tactical miscalculations that result in a strategic situation that's adverse to the United States is becoming more and more real," O'Shaughnessy said.

The Air Force continues to work on its agility so it can meet these new

A1C Nicholas Hendrickson, left, and SSgt. Alyse Denittis guide a Tunner 60K aircraft cargo loader during Rapid Raptor training at JB Elmendorf-Richardson.



An Air Force F-22 (left) from the 90th Fighter Squadron at JB Elmendorf-Richardson, Alaska, on the flight line at Yokota AB, Japan, Feb. 10. Twelve F-22s stopped at Yokota before traveling on to RAAF Base Tindal, Australia. PACAF is spreading the Rapid Raptor concept to make other systems more responsive.

challenges and it is changing the way its forces operate. Instead of sending a whole squadron of F-22s, USAF may now deploy a smaller cadre of F-22s along with a smaller logistics tail.

That was the thinking behind the Rapid Raptor concept, which was first introduced in 2013. The Air Force has tested that concept several times since then, but is now looking to take it a step further.

Agile Combat Employment builds on Rapid Raptor, which focused mostly on logistics and fuel. "Now we're taking it to the larger concept of, 'How do we operationally maneuver that? How do we work the command and control for that? How do we make sure that the aircraft that are out, potentially in smaller locations, still tie into the bigger picture?'" O'Shaughnessy said.

The command tested pieces of ACE with the recent deployment of F-22 Raptors to Australia in February for the Avalon Airshow in Geelong.

Twelve F-22s from the 90th Fighter Squadron at JB Elmendorf-Richardson, Alaska, flew to RAAF Base Tindal, Australia, a typical forward operating base. From there, two F-22s proceeded to the much smaller RAAF Base Townsville, where they conducted a bare-base operation, said O'Shaughnessy. The goal was to exercise the ACE concept of operations "by concurrently conducting fifth generation fighter operations from a main operating base and a forward, austere operating base," according to PACAF.

STAYING CONNECTED

The fifth generation fighters brought just one C-17 and one KC-135 with them. After landing, however, as a support team established mobile secure communications with the 613th Air and Space Operations Center (AOC) at JB Pearl Harbor-Hickam, Hawaii, maintainers refueled the F-22s on the ground from the C-17's wing tanks. O'Shaughnessy said under ACE it is possible the Navy or Army might provide fuel bladders to refuel the fighters, noting the concept also can be applied to F-15s, F-16s, or allied aircraft.

In addition to carrying the necessary equipment for the Raptors, the C-17 can be used for command and control, ensuring a mission commander is always connected. During the recent deployment to Australia, O'Shaughnessy said an F-22 pilot rode on the C-17 and remained in constant contact with the 613th AOC. At one point, the pilot received a retasking order from the AOC and relayed that information to the Raptors.

The C-17 also carried missiles that were unloaded once the contingent landed, and crews practiced loading them onto the F-22s. "The pilots used the secure communications to finalize mission planning and launched again in less than three hours to return to RAAF Base Tindal," according to an ACE fact sheet provided to *Air Force Magazine*.

O'Shaughnessy said PACAF can take advantage of pre-positioned stock or it could land a joint force, such as Marine Corps or USAF F-35s.

BRINGING IN THE F-35

Brig. Gen. Craig D. Wills, Pacific Air Forces director of strategic plans, requirements, and programs, said USAF has tested the ACE concept on a "very limited basis with F-35s" assigned to Hill AFB, Utah—the Air Force's first operational unit—during a deployment to Mountain Home AFB, Idaho. Although the service is currently focused primarily on introducing the F-35 in to the fleet, Wills said the command intends to expand the "scope and scale" of the F-35's participation in ACE in the coming months and years.

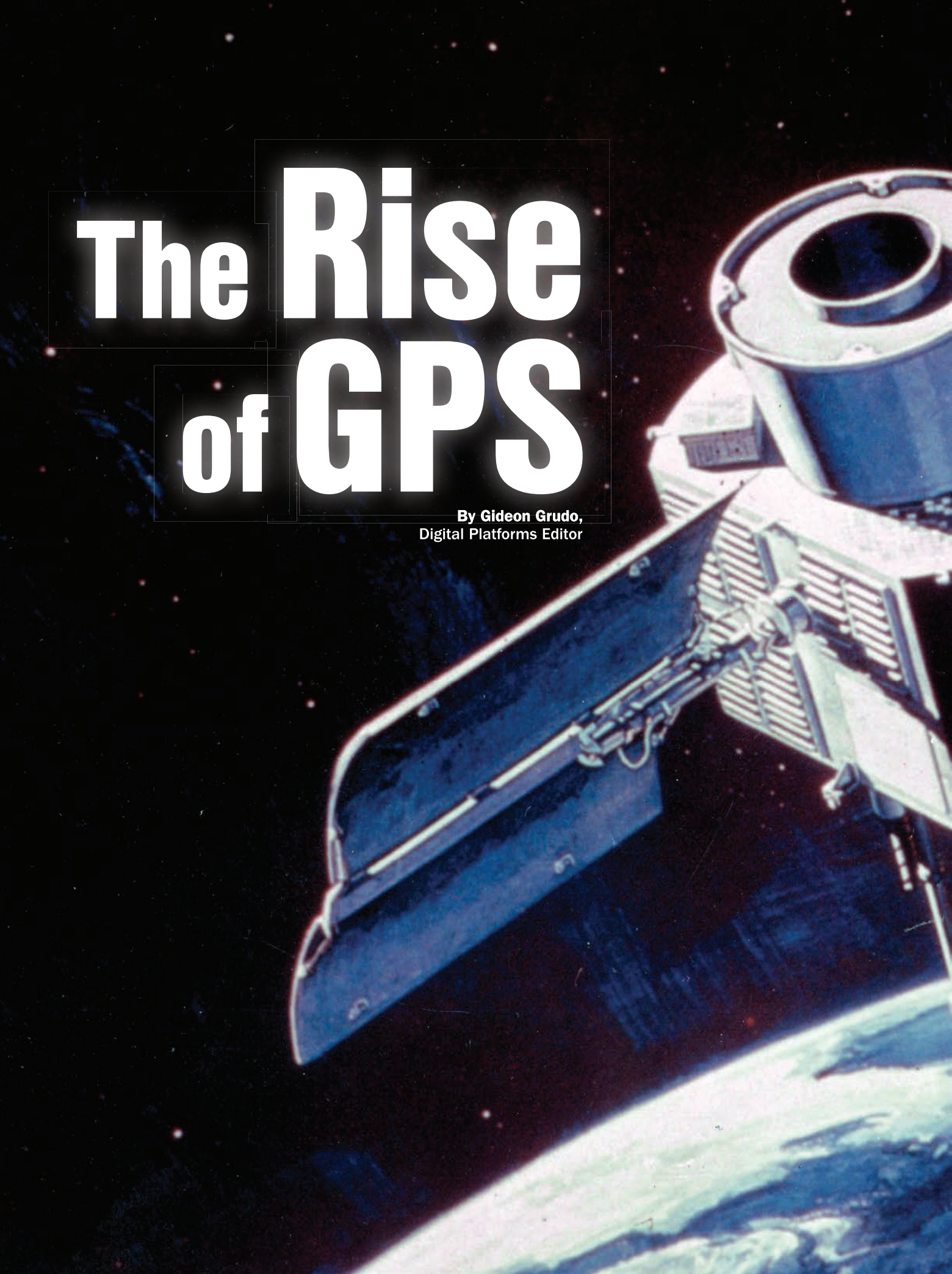
ACE provides more flexibility by enabling US forces to operate just about anywhere in the Indo-Asia-Pacific, even though there may not be a lot of established infrastructure or the environment may be contested.

"We're looking to find things like air superiority. … In recent history we've always been able to get that relatively [easily]. That won't always be the case in the future," said O'Shaughnessy. "We have to make sure we have the ability to project power within the Pacific. We have to make sure we're able, through operational maneuver, … to maintain air superiority even though our adversaries may be trying to set up an A2/AD [anti-access, area denial] type environment." ✪

A1C Donald Hudson/USAF; Alejandro Pena/USAF

The Rise of GPS

By Gideon Grudo,
Digital Platforms Editor



The Air Force's Global Positioning System has quickly revolutionized military accuracy —and civilian life.

The Air Force's Global Positioning System—known worldwide simply as GPS—affects the lives of billions of people every second.

It's how Uber drivers find you; how your automatic teller transactions are timed; and how ships at sea fix their location. It is a global timing and location utility that the Air Force offers for free to the entire world.

GPS is also how USAF delivers precise combat power and exercises precision warfare. In fact, virtually every weapon the Air Force drops in the Middle East today is guided by GPS. Its military worth has been proved in conflicts spanning from Operation Desert Storm in 1991 to Operation Inherent Resolve.

GPS, fully operational for 22 years, traces its roots to the Cold War. The system's genesis came with Sputnik, the Soviet Union's first satellite, which was lofted in 1957.

Massachusetts Institute of Technology scientists, following Sputnik's radio beeps, noticed they increased in frequency as the satellite approached and decreased as it flew away—a classic example of the Doppler effect. The MIT scientists reasoned that they could use this principle, using future satellites, to determine data such as location, speed, and elevation. By 1959, the Navy had launched its Transit system, the forerunner of GPS.

This system, according to GPS World, was based on solar-powered satellites. It provided position data to ballistic missile-carrying submarines every few hours, but it was only accurate to within 25 meters, or about 82 feet.

In 1963, the Aerospace Corp. proposed a system of satellites to provide precise location information to vehicles, especially those moving really fast.

More satellite development programs emerged, including the Naval Research Laboratory's Time and Navigation (TIMATION) program and USAF's Project 621B.

In 1973, Pentagon leaders recognized that separate service programs aimed at a satellite navigation system would create problems and proposed a unified military approach.

Air Force Col. Bradford Parkinson, director of the NAVSTAR/GPS Joint Program Office, "assembled about a dozen members of the JPO over Labor Day weekend in 1973 and directed them to synthesize the design for a new satellite navigation system," according to Air Force historian Rick W. Sturdevant in 2007's Societal Impact of Spaceflight.

The result, in 1974, was the NAVSTAR system, which, according to Sturdevant was "the first satellite navigation system that enabled users to determine precisely their location in three dimensions and time within billionths of a second."

Good as it was, military users wanted better. The drivers of "GPS development were the need to deliver weapons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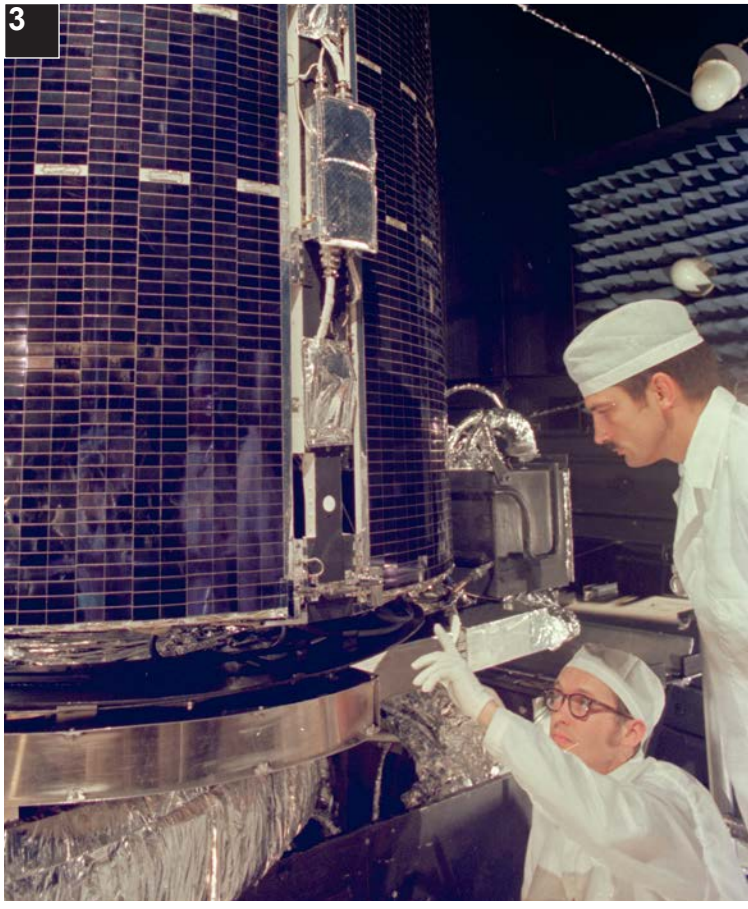
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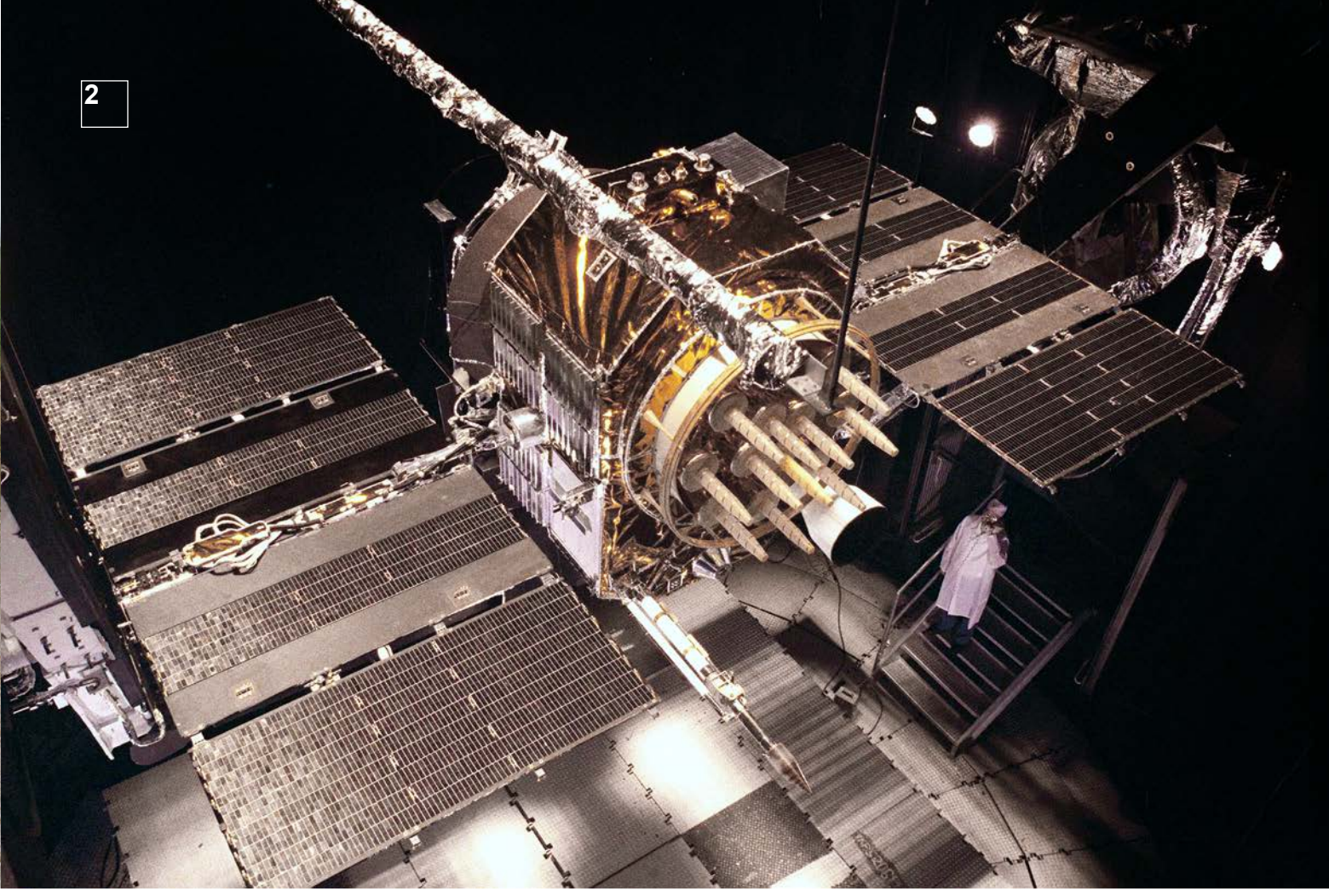
Previous pages: Rockwell Space Division illustration. These pages: DOD via National Archives; USAF; USAF; SSgt. Scott Stewart/USAF via National Archives; Rockwell International; GPS.gov

Previous pages: An illustration of a NAVSTAR Global Positioning System Block I satellite. This was the GPS demonstration system, and it was followed by the GPS II operational system. In 1974, Rockwell International won a contract to build the first eight GPS Block I satellites. /1/ Soldiers wearing backpack receivers plot their position using NAVSTAR GPS satellites in 1979. /2/ A GPS II satellite undergoes testing in the Mark I Space Chamber at Arnold AFB, Tenn., in 1985. /3/ Personnel at the Mark I Space Chamber take a close look at the stowed solar array panels of a NAVSTAR GPS I satellite. /4/ Sgt. Darrell Harrison, 1002nd Space Systems Support Squadron at Falcon AFS, Colo., loads a magnetic tape reel onto a drive in the NAVSTAR main computer room. /5/ A GPS Block I satellite is prepared for a test at Rockwell International's Thermal Vacuum Chamber in Seal Beach, Calif. /6/ An illustration of a GPS Block II satellite. The first full-scale operational GPS satellites, these were designed to provide 14 days of operation without any contact from controllers. In 1983 Rockwell International was awarded an additional contract to build 28 GPS Block II and Block IIA satellites.



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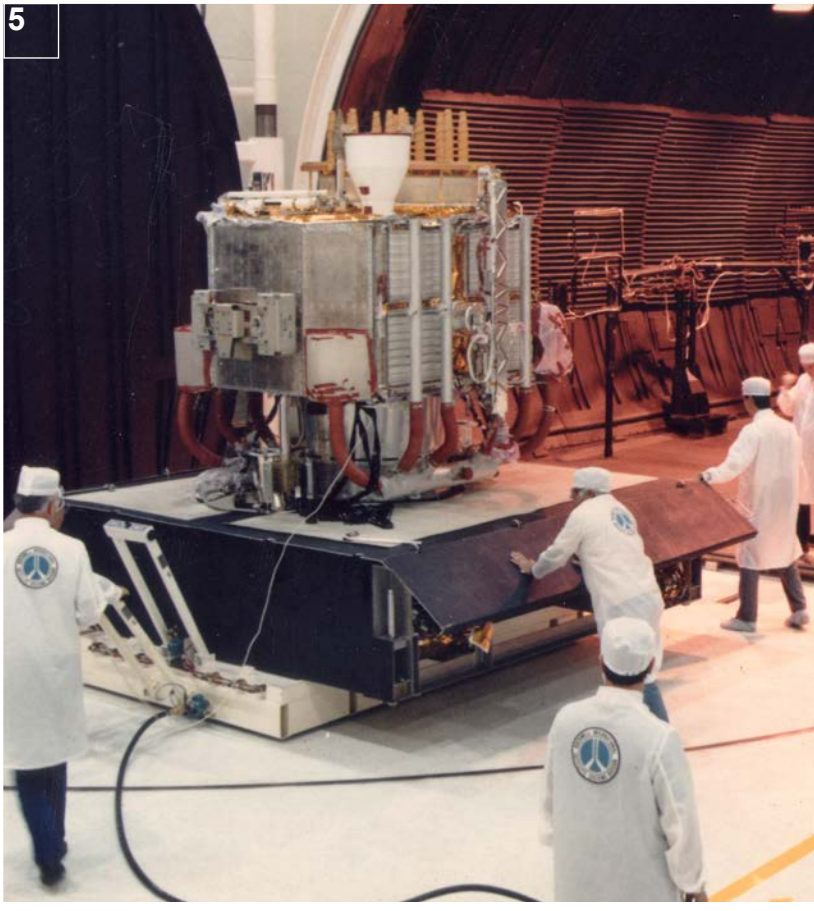

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precisely on target and to reverse the proliferation of navigation systems in the US military," wrote Sturdevant.

However, from the very start, "the Department of Defense (DOD) recognized the usefulness of GPS to the worldwide civilian community."

A GPS prototype launched in 1978. The system worked when a surface or air unit interrogated the satellite for location and timing information. The more satellites that are within line-of-sight to the user, the more accurate the information.

The danger of a nonstop satellite broadcast, though, was that hostile users would be able to take advantage of it. The Air Force designed into GPS a feature called "selective availability," which allowed US and approved allied military users a stronger and more precise GPS signal than that available to commercial entities.

In 1983, GPS became even more broadly available. The tragedy of Korean Airline Flight 007, shot down by Soviet interceptors after straying off course, provided the impetus for making the signal broadly available.

After the Korean Airline incident,"President Ronald Reagan reassured the world that the coarser signal would remain continually and universally available at no cost once GPS became fully operational," Sturdevant wrote. This took another 12 years.

Desert Storm saw the first heavy use of GPS in combat, offering unprecedented precision and changing the way

/1/ B-52G bombers from the 1708th Bomb Wing prepare for a mission during Desert Storm on Feb. 26, 1991. Historians sometimes call it "the first space war" due to the extensive use of space-based satellites. /2/ F-16CJs from the 157th Expeditionary Fighting Squadron wait for a load of 1,000-pound GBU-31A Joint Direct Attack Munitions (JDAMs) during Operation Iraqi Freedom on April 8, 2003. JDAM-equipped bombs are coupled to a GPS receiver, giving them near-precision accuracy. /3/ A soldier holds a GPS receiver used during Desert Storm. /4/ Technicians from Hughes Space and Communications monitor a GPS II satellite during assembly in the 1990s. /5/ TSgt. C. J. McClain, 36th Airlift Squadron, uses a GPS unit during a 2005 exercise at Yokota AB, Japan. /6/ The fifth GPS Block IIR-M satellite is launched in 2007 from Cape Canaveral AFS, Fla. /7/ An illustration of a GPS IIF satellite. Built by Boeing, GPS II consists of 12 satellites featuring enhanced accuracy and robustness. The final satellite was launched on Feb. 5, 2016.

TSgt. Donald McMichael/USAF via National Archives (NA); SMSgt. Edward E. Snyder/USAF (via NA); USAF; Hughes Space & Communications; MSgt. Val Gempis/USAF; GPS.gov; NASA

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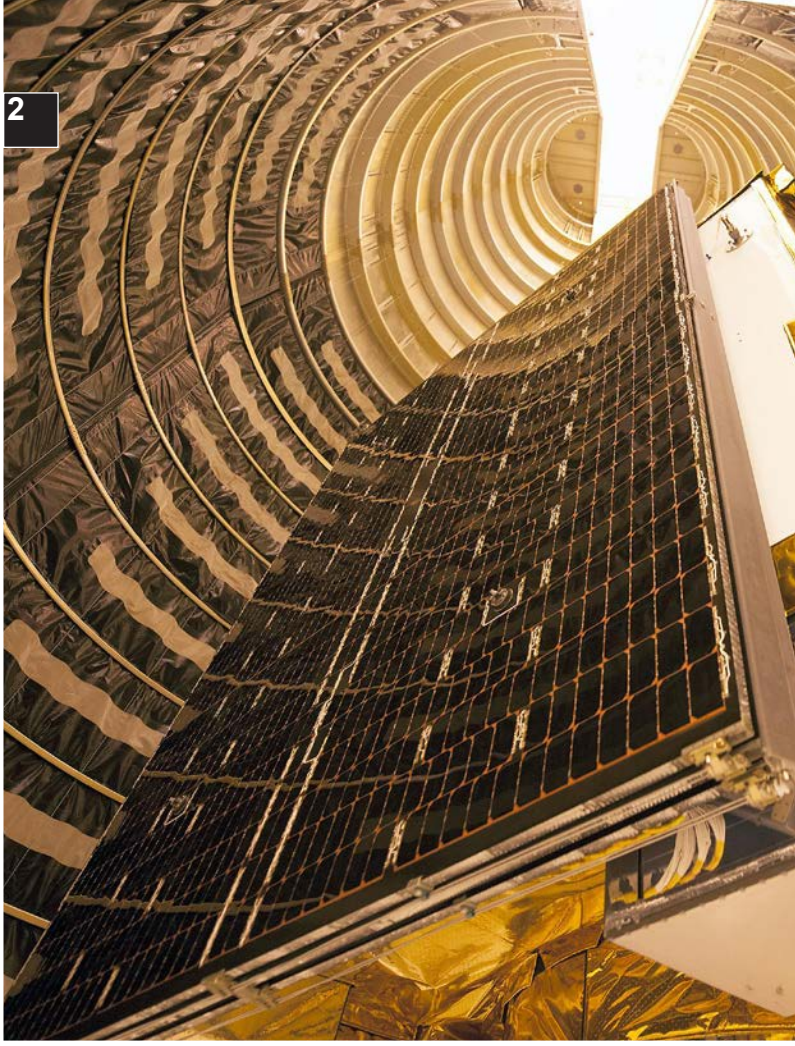
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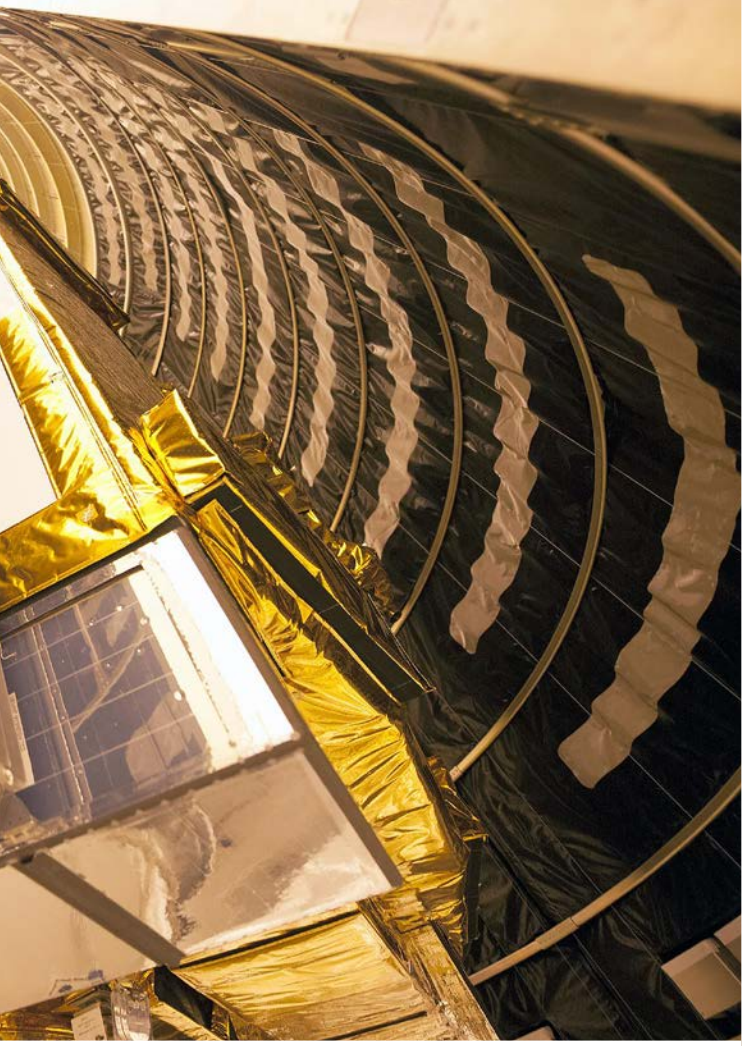


/1/ The third USAF GPS IIF satellite blasts off in 2012 on a United Launch Alliance Delta IV rocket at Cape Canaveral. /2/ A GPS IIF undergoes final encapsulation before launch at Cape Canaveral in 2015. /3/ Avionics technician SSgt. Josh Mitchell, 158th Fighter Wing, Burlington Arpt., Vt., performs a GPS operations check on an F-16 during Red Flag 15-1 at Nellis AFB, Nev., in 2015. /4/ SSgt. Brian Collins (left) and SrA. Travis Mackey, both with the 775th Civil Engineering Squadron, enter coordinates into a GPS receiver during training near the Utah Test and Training Range in 2014. /5/ TSgt. William Henry, 527th Space Aggressor Squadron, demonstrates the capabilities of his handheld GPS unit at Red Flag-Alaska at Eielson AFB, Alaska, in 2016.

wars are fought. Desert Storm also highlighted the critical importance of space contributions to airpower.

"Precision navigation and timing, GPS. That was the dawn of criticality of GPS to military operations," Maj. Gen. Paul T. "PJ" Johnson, who earned an Air Force Cross for his role in Desert Storm, told Air Force Magazine. (See "Perspectives on the Storm," April 2016.)

Desert Storm also saw the debut of the JSTARS aircraft, which gave the coalition the capability to see, track, and target enemy ground formations in any weather, day or night. With all the attack packages airborne, "we saw the ability to dynamically … detect, … characterize, and … target" ground formations, Johnson said.

During Desert Storm, the GPS constellation was limited, with 19 satellites of various generations: GPS I, GPS II, and GPS IIA. These only allowed for 19 to 20 daily hours of 3-D coverage.

Shortly after the war, the Air Force used GPS to position the airdrop of food in Somalia during 1993's Operation Restore Hope. It was used in various peacekeeping operations across the planet, from the Haitian crisis in 1994 to the Balkan crisis in the mid-90s.

On April 27, 1995, GPS became fully operational, with a complete constellation of 24 operational Block II/IIA satellites. It provided information to both military and civilian users.

The new technology allowed the proliferation of what would eventually become the GPS our phones and com-

United Launch Alliance; USAF; SrA. Thomas Spangler/USAF; Amn. Taylor Queen/USAF; SSgt. Shawn Nickel/USAF

puters use. Those satellites are the ones civilians still use today for these purposes.

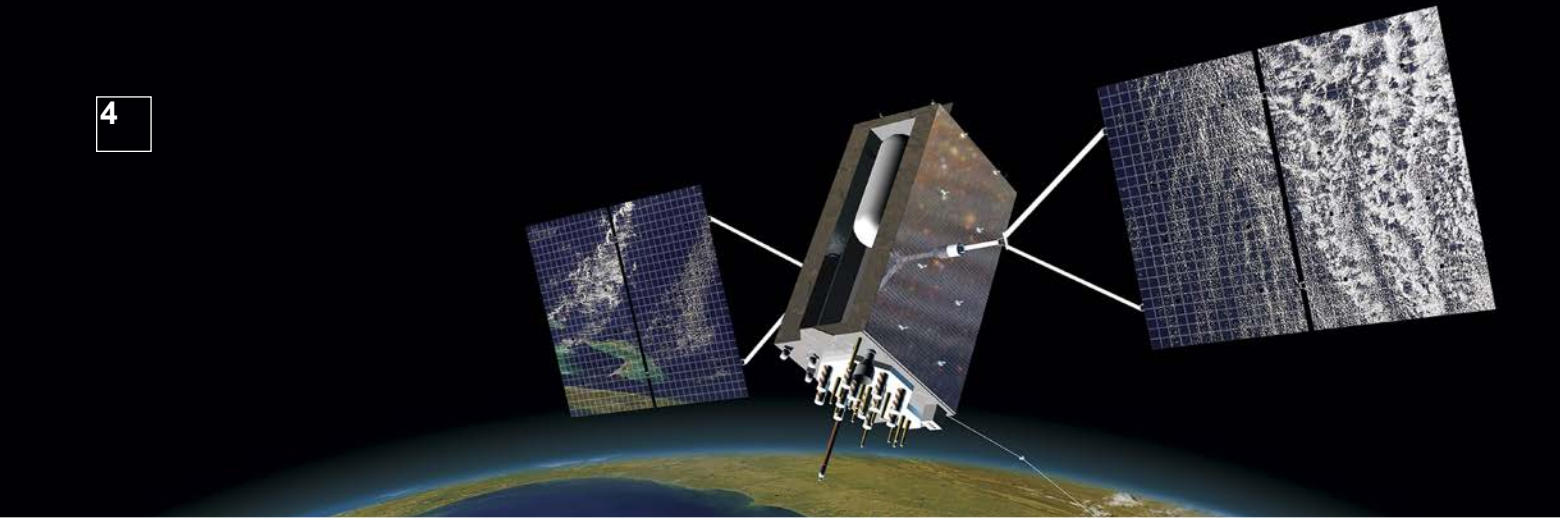
In 1998, Vice President Al Gore said he wanted to see improvements to the GPS system, and Congress obliged with a program christened GPS III. It was approved for development in 2000.

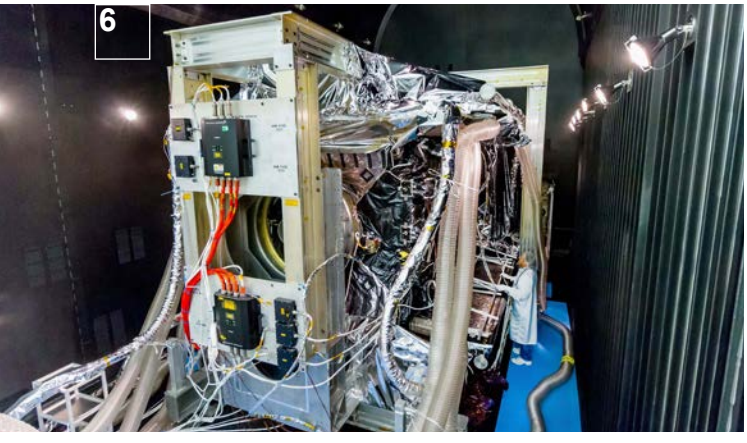
In 2000, President Bill Clinton ordered the end of selective availability, which had offered civilian users slightly degraded accuracy relative to the military signal. Later, in 2007, President George W. Bush agreed to drop the ability to reinstate selective availability from the GPS III requirements.

In recent years, adversaries have experimented with jamming of GPS signals, persuading the Air Force to have "day without space" exercises in which participants don't have access to GPS signals and must resort to more old-fashioned methods of navigation and target identification.

In 2008, Lockheed Martin was awarded the contract to develop the GPS III satellites. According to the company, once these satellites are launched and operating, they will provide signals three times more accurate than current GPS spacecraft, improve the anti-jamming capabilities for military users by eight times, and greatly enhance global connectivity for civilian users.

The first batch of GPS III satellites is expected to reach orbit in spring 2018. ✪





/1/ An illustration of a GPS IIF satellite in orbit. The satellites have allowed a proliferation of technology, bringing GPS to USAF weapon systems, computers, and phones. /2/ Technicians at the Lockheed Martin Anechoic Test Facility in Denver prepare a GPS III satellite in May 2016. /3/ An artist's illustration of a GPS III satellite. /4/ In this artist's concept, a GPS III satellite is shown above the Earth. The first GPS III satellite is expected to launch in 2018. /5/ TSgt. Matt Gerrits, a 307th Aircraft Maintenance Squadron armament specialist, loads a 500-pound JDAM under the wing of a B-52 at Barksdale AFB, La., on Feb. 1, 2017. The JDAM kit converts unguided free-fall bombs into accurate smart munitions by using a GPS receiver to steer the weapon after release. /6/ A technician works on Lockheed Martin's first GPS III satellite for the Air Force. It successfully completed system-level thermal vacuum testing, validating the satellite design. The test confirmed the satellite's integrity and capabilities by exposing it to a long cycle of simulated space temperature extremes in a depressurized chamber.

Boeing; Patrick H. Corkery/Lockheed Martin; Lockheed Martin illustration; Lockheed Martin illustration; TSgt. Ted Daigle/USAF; Lockheed Martin

By Laura Malloy

Wall of HONOR

The wing created a memorial for seven heroes who served in Vietnam.

Laura Malloy

Retired Col. James Fleming (left) stands before the Medal of Honor Wall where a painting shows him rescuing a US Army patrol near Duc Co, South Vietnam. Retired Col. Joe Jackson (right) is shown landing under fire to rescue a combat control team at Kham Duc.

Two Medal of Honor recipients recently paid tribute to their Vietnam War special operations and search and rescue brethren.

Retired Air Force Col. James P. Fleming and retired Col. Joe M. Jackson traveled to the 58th Special Operations Wing, Kirtland AFB, N.M., to formally dedicate the unit's Medal of Honor Wall display featuring seven of these heroes.

This generated great media interest, with a report from the Associated Press reprinted in several news outlets and newspapers.

Fleming is an AFA Life Member from the San Jacinto Chapter in Texas. He told guests at the dedication, "This is humbling."

A Life Member of the Greater Seattle Chapter, Jackson told the crowd he was equally moved.

DESIGN ELEMENTS

The 58th's new special operations and search and rescue Medal of Honor Wall is located in the front hall of wing headquarters, a place of prominence.

It was Col. Dagvin Anderson, the 58th's commander, who in 2015 came up with the idea: Create a lasting memorial to capture the heritage of the Air Force's Vietnam War Medal of Honor recipients who have ties to special operations and search and rescue.

It took 18 months to work out the details before the new wing commander, AFA Life Member Col. Brenda P. Cartier, dedicated the memorial last fall.

At the top of the display, a 17-foot-long brushed aluminum cap piece is engraved with words that are part of Medal of Honor citations: "For conspicuous gallantry and intrepidity in action at the risk of his life above and beyond the call of duty."

A long velvet-lined case below contains the name plates of 59 fallen airmen from the 58th Special Operations Wing (SOW).

LEATHER BOUND

The last element of the memorial wall is a leather-bound book containing the "Valor" series from *Air Force Magazine,* featuring the story of each Medal of Honor recipient. The series is at http://bit.ly/2j7O4KD. The full list of 60 USAF Medal of Honor recipients appears in the annual Almanac issue.

The 58th SOW created the Medal of Honor Wall because these airmen inspire others and humble us all by their deeds. ✪

Laura Malloy is the 58th SOW historian and a member of the Albuquerque Chapter (N.M.). Col. Brenda P. Cartier belongs to the Nation's Capital Chapter in Washington, D.C.

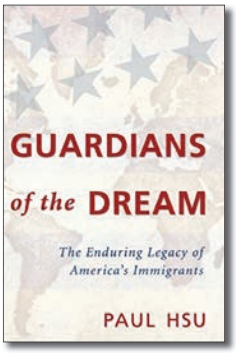
MAGNIFICENT SEVEN

The 58th SOW's display wall features paintings of seven special ops and search and rescue airmen who received the Medal of Honor for actions in Vietnam:

- **Lt. Col. Joe M. Jackson,** 311th Air Commando Squadron
- **Lt. Col. William A. Jones III,** 602nd Special Operations Squadron
- **Maj. Bernard F. Fisher,** 1st Air Commando Squadron
- **Capt. Gerald O. Young,** 37th Aerospace Rescue and Recovery Squadron
- **1st Lt. James P. Fleming,** 20th Special Operations Squadron
- **A1C John L. Levitow,** 3rd Special Operations Squadron
- **A1C William H. Pitsenbarger,** 38th Aerospace Rescue and Recovery Squadron

By Amanda Gold

Supporting the Dream



He arrived in the US with $500 to his name.

A few years ago Paul S. Hsu decided to give back to Florida's Eglin Chapter by creating a $5,000 scholarship to honor his wife, Maggie.

In 2016 he established a second $5,000 scholarship in the name of his friend, retired Air Force Gen. William L. Kirk, the former commander of US Air Forces in Europe and founder of the chapter's education foundation.

Each year, a high school student is awarded one of these scholarships. It's how Hsu's American dream lives on.

JUST ONE STEP

In 1976, at the age of 24, engineer Hsu left his native Taiwan with only $500. He had decided to immigrate to the US because he believed that in this country, anything was possible.

In his 2014 book, *Guardians of the Dream: The Enduring Legacy of America's Immigrants,* Hsu writes of the experience: "We didn't think our struggle was unfair because my wife and I knew that it was only one step along the road."

Within eight years, he founded an avionics and battlefield electronics company, with DOD as its primary customer.

Hsu went on to start three more companies in the fields of electronic component research services and data management; electronic medical device manufacturing; and aerospace and technology.

In 2007, President George W. Bush appointed Hsu as the associate administrator of the Small Business Administration's Office of Government Contracting and Business Development. President Barack Obama later appointed him to the Commerce Department's National Advisory Council on Minority Business Enterprises. Today, Hsu holds a senior fellow position at the Harvard University Asia Center.

TEAMS FOR STEM

Along with the Eglin Chapter scholarships, Hsu has always sought opportunities to contribute at the national and community level and recently turned his attention to improving high school students' performance in science, technology, engineering, and math (STEM).

He has guided development of a program called TEAMS (Teaching Excellence Awards in Math and Science) to recognize STEM teachers from three public high schools in north Okaloosa County. Hsu focused on them because he anticipates a future high-tech expansion for the area, and he believes teachers prepare students for success in fields of growing demand.

Paul Hsu, here with his Schnoodle Lai-Fu—"Prosperity" in Chinese—supports STEM education through the Eglin Chapter.

Courtesy photo

A panel of community members selects two teachers each year, through a rigorous application process. The top two TEAMS winners receive $5,000 each. Four other teachers each receive $500 merit prizes.

IMMIGRANT NATION

Hsu says that America, at its heart, has always been an immigrant nation—and he knows this firsthand.

"It took some time," he wrote in his book, "but we succeeded. We had a belief that America had great opportunities, and that if we made sacrifices and stayed motivated, we wouldn't be held back because of class, race, or because we weren't born here. That is a unique aspect of America's character." ✪

Amanda Gold is the Eglin Chapter's VP for communications.

CHAPTER NEWS

By June L. Kim, Associate Editor

MEL HARMON CHAPTER

The Mel Harmon Chapter (Colo.) recently hosted three school tours at the Pueblo Weisbrod Aircraft Museum in Pueblo, Colo., according to Chapter President Margaret E. Eichman.

In January, the chapter held two tours for students from Youth & Family Academy Charter in Pueblo and AIM Global Academy, an online school.

"We had three presentations featuring the Doolittle Raid, black military history, the STEM lab, and a tour of the aircraft museum," said Eichman in a chapter newsletter.

The following month, the chapter hosted students from Vineland Elementary School from the same town. On this tour, students were treated to additional presentations on the Vietnam War and Britain during World War II, she said. They also got to tour both of the museum's hangars.

Chapter VPs for Aerospace Education Ryan and Joni Mandarich set up the tour and coordinated with teachers and chaperones, said Eichman. "We've been sponsoring tours for years."

Many of the chapter members are also museum members, she said, and they acted as tour guides.

"We may be small but we are mighty," said Eichman. "Our funding of educational tours for the youth in our area is invaluable. All of this could not be accomplished without the dedication and work of our members."

Clockwise from top: Royal Air Force veteran Edna Simmons talks about life in England during World War II to students from Vineland Elementary School, Pueblo, Colo. Vietnam veteran Ray Brown presents on black military history. Students from AIM Global Academy look at the nozzle of a rocket booster motor during a tour of the museum led by Vietnam veteran Henry Eichman.

DAN CALLAHAN, 1923-2016

AFA National Director Emeritus Dr. Dan Callahan of Centerville, Ga., passed away Dec. 3, 2016. He was 93 years old.

Callahan was born in Georgia and graduated from Emory University in Atlanta and the Medical College of Georgia in Augusta. He practiced family medicine for more than 50 years.

Callahan served as a medic in the Army during World War II. He volunteered as a physician during the Vietnam War and received citations for his efforts from the State Department, South Vietnam, and the American Medical Association.

Callahan served as AFA Southeast Region vice president, a former chapter president, and a national committee member. He was elected a national director in 1972.

RICHMOND CHAPTER

Richmond Chapter President Harper Alford recently represented AFA at two events. He attended a Veterans Day service at the Virginia War Memorial in Richmond and a Pearl Harbor/WW II veterans memorial service at University of Richmond.

More than 60 veterans shared their WWII experiences during the latter ceremony, Alford said. "It was a very moving occasion that I will not forget." Both events praised the services and sacrifices of US veterans.

NORTHEAST TEXAS CHAPTER

City officials of Greenville, Texas, named Northeast Texas Chapter VP for Community Partners J. Terry Thomas the "2016 Worthy Citizen of Greenville" in January. The news reached Chapter President Vance Clarke who praised his achievements and said Thomas has given "longstanding support to AFA" from the chapter level to the national level.

"He has been a stalwart and has made more happen than most will in a lifetime of work," said Clarke. ✪

Merv and Mary Ann Blair

AFA EMERGING LEADER

Rachel C. Samples
Home State: Georgia
Chapter: Alamo Chapter (Texas)
Joined AFA: 2012
AFA Offices: Vice President, Alamo Chapter; Executive Committee Member, Donald W. Steele Sr. Memorial Chapter
Military Service: Civilian
Occupation: Analyst
Education: B.A., political science, LaGrange College; M.S., space management, International Space University

Rachel Samples in front of a Boeing T-X trainer model at the Air Warfare Symposium tech exposition in Orlando in March.

Courtesy photo

What compelled you to join the Air Force Association?

What really convinced me to join AFA was the mentorship. ... AFA's "Daily Report" helps me stay ahead of the curve with what is happening on a strategic Air Force level. Then AFA conferences and meetings help connect me with others passionate about serving.

What do you enjoy most about your membership?

AFA is making a difference. Recently I was asked by the JROTC CyberPatriot Team I mentor: What was my favorite part about the program? ... It was really just the opportunity to help them succeed. I love my Air Force and AFA and I want nothing more than to serve.

How do we build awareness about AFA?

One of the biggest needs I've noticed is the ability to coordinate and advocate at the local level. While email lists and standardized forms are great to advertise scholarship opportunities and presentation matters, they fail to truly connect our beneficiaries with the opportunities available.

A dynamically updated website, run at the local level, would help form this critical and missing connection hub with the ability to link to social networking sites such as Facebook or Twitter. Ideally I wish we had the manpower and ability to host local AFA websites for every chapter in order to coordinate community military functions and schedules to even include non-AFA items. ... We can be the centralized program in military support for local needs.

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Become a FLIGHT LEADER in AFA's Operation Enduring Support!

Make a Monthly Gift and help AFA promote a dominant US Air Force…

Receive this fleece blanket when you sign up for $15+ Monthly Gift.

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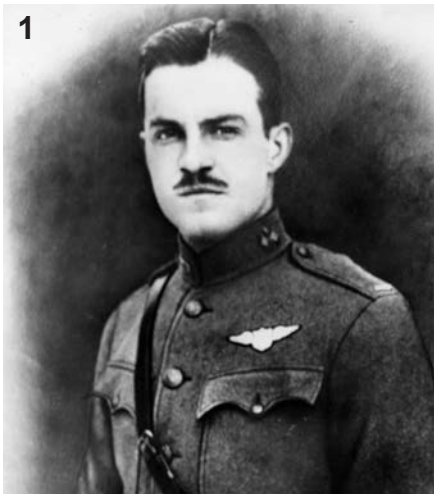

RICHARDS-GEBAUR

Tale of the Kansas City Heroes

For 37 years, Missouri was home to a major facility named Richards-Gebaur Air Force Base, near Kansas City. USAF in 1994 shut it down—an action that somewhat dimmed the public's memory of two brave military aviators for whom the base was named.

The pair were Kansas City natives. They were born 35 years apart and died on opposite sides of the world. Both were decorated war heroes. The first went east to France and died in World War I. The second went west to Asia; he fell in the Korean War.

One part of the base's name referred to 1st Lt. John Francisco Richards II, a US Air Service pilot. Richards, scion of a prominent Kansas City family, graduated from Yale in mid-1917, shortly after the US declared war on Imperial Germany.

Despite his wealth and social standing, Richards enlisted in the US Army, hoping for "aerial work." He got his wish. He attended ground school at San Marcos, Texas, and flight school at Chanute Field, Ill. By August 1917, he was in France. He trained at Tours, Avord, and Issoudun, and became a first lieutenant on Nov. 20, 1917.

Richards fought in air battles at the Marne, St. Mihiel, and Meuse-Argonne. On Sept. 26, 1918—the first day of the Meuse-Argonne Offensive—Richards crossed German lines on a dangerous surveillance mission. His worn-out Salmson 2A2 biplane was shot down and he was killed. His body was found near Varennes.

Richards received the Silver Star, awarded posthumously, for gallantry in the World War.

The second part of the base's name honored Lt. Col. Arthur William Gebaur Jr., a USAF F-84 fighter pilot in the Korean War. Gebaur was shot down on his 99th mission and was listed as Missing in Action but he was eventually presumed dead.

Gebaur in 1936 graduated from Kansas City's Northeast High School, where he was active in the Reserve Officer Training Corps. He became a career Air Force officer and deployed to Korea with the 7th Fighter-Bomber Squadron, 49th Fighter-Bomber Wing.

On Aug. 29, 1952, Gebaur led a series of ground attacks on communist positions. During one bomb run, Gebaur's fighter was hit by an 85 mm explosive shell. He pressed on and bombed his original target, then turned and spotted eight quadruple .50-cal gun positions. He re-attacked and silenced the guns, but his fighter crashed.

Gebaur was awarded, posthumously, the Distinguished Service Cross (Air Force) "for extraordinary heroism" on that day.

These two Kansas City heroes were forever linked when on April 27, 1957, USAF bestowed the name Richards-Gebaur on the old Grandview Air Force Base in Missouri. In its early years, the base was home to F-102 Delta Daggers. In 1980, control passed to the Air Force Reserve, which ran the base until 1994.

Today, the base is being redeveloped by the city of Kansas City and a private Chicago firm.

JOHN FRANCISCO RICHARDS II

Born: July 31, 1884, Kansas City, Mo.
Died: Sept. 26, 1918, Varennes, France
College: Yale University
Occupation: US military officer
Service: United States Army Air Service
Main Era: World War I
Years Active: 1917-18
Combat: Western Front
Final Grade: 1st Lieutenant
Honors: Silver Star, posthumous

ARTHUR WILLIAM GEBAUR JR.

Born: Feb. 22, 1919, Kansas City, Mo.
Died: Aug. 29, 1952 (MIA, presumed dead), North Korea
Occupation: US military officer
Service: United States Air Force
Main Era: Korean War
Years Active: 1941-52
Combat: Korean Peninsula
Final Grade: Lieutenant Colonel
Honors: Distinguished Service Cross, posthumous

RICHARDS-GEBAUR AFB

State: Missouri
Nearest City: Kansas City
Area: 2.25 sq mi / 1,440 acres
Status: Closed
Opened: (as Grandview Airport) 1941
Acquired: (by USAF) January 1952
Renamed: Grandview AFB, Oct. 1, 1952
Renamed: Richards-Gebaur AFB, April 27, 1957
Renamed: Richards-Gebaur ARS, Oct. 1, 1980
Closed: June 12, 1994
Current owner: Private developer
Former owners: Troop Carrier Command, Continental Air Forces, Air/Aerospace Defense Command, Air Force Communications Service, Military Airlift Command, Air Force Reserve

1. John Francisco Richards II **2.** Arthur William Gebaur Jr. **3.** C-124 lands at R-G AFB, mid-1960s. **4.** F-106 being armed at Richards-Gebaur AFB in 1967.

File photo; USAF photo; USAF photo

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Do You Have *Enough* to Take Care of Them?

As an AFA member, you understand the meaning of commitment to the needs of your family. But stop and think for a moment . . .

- **Would you feel confident about your family's financial future in the event that something happens to you and you're not around to fulfill that commitment?**
- **Would you have enough life insurance to take care of them?**

Life insurance can offer peace of mind to help your loved ones with the burden of extra expenses, as well as the taxes and debt you may leave behind. And it's the assurance that your dreams for your family can live on after you're gone.

At AFA, we mirror that commitment to our members. That's why we offer the **AFA Group Term Life Insurance Plan** to our members, with no military exclusions and protection 24 hours a day, 365 days a year. And that includes if you're flying military aircraft.

The AFA Group Term Life Insurance Plan offers:

- **COMPETITIVE GROUP RATES** — no higher premiums for flying personnel
- **VALUABLE COVERAGE** — with an "accelerated benefit" to help loved ones immediately if you are diagnosed with a terminal illness
- **NO MILITARY EXCLUSIONS** — even when flying military aircraft
- **PREMIUMS WAIVED** — if a sickness or injury leads to a Total Disability
- **FAMILY COVERAGE AVAILABLE FOR SPOUSE AND DEPENDENT CHILDREN**

Learn more* about the AFA Term Life Insurance Plan.

Call 1-800-291-8480
or visit www.afainsure.com

NEW YORK LIFE

Underwritten by: New York Life Insurance Company
51 Madison Avenue, New York, NY 10010 on Policy Form
GMR-FACE/G-30290-0 Under Group Policy N. G-30290-0

* Including features, costs, eligibility, renewability, limitations and exclusions.

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