

January 2014/\$5

# **AIR FORCE** *Journal of the Air Force Association*

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## **MAGAZINE**

## **The Pacific Abhors a Vacuum**

**New Tanker  
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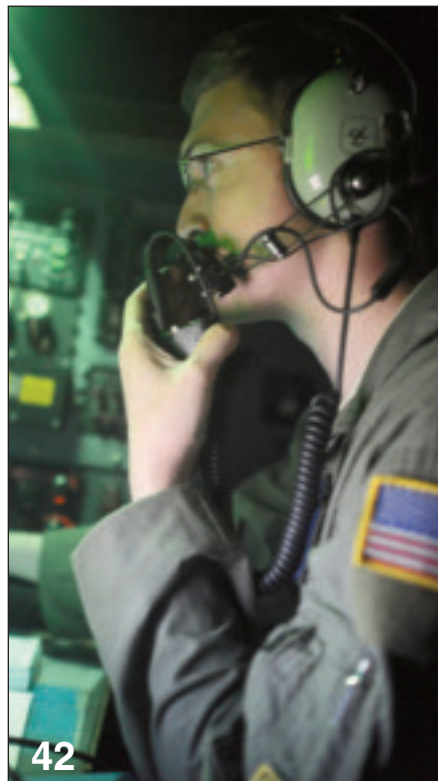


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**About the cover:** A B-52H flies a training mission from Andersen AFB, Guam. See "The Pacific Abhors a Vacuum," p. 20. Photo by Jim Haseltine.



# AIR FORCE Journal of the Air Force Association

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## MAGAZINE



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## Speaking Softly and Carrying a Big Stick

**I**N LATE September, Gen. Mark A. Welsh III visited China—the first Air Force Chief of Staff to visit the communist nation in 15 years. When he gave his first extensive comments about the trip to the press Nov. 13, Welsh said he and his party were “beneficiaries, I think, of a charm offensive.”

There were a long series of high-level military-to-military meetings between top US and Chinese officials in 2013, and Welsh saw the opportunity for greater communication going forward.

Still, Welsh bluntly said, “I don’t know what their ambitions are.”

Ten days later, the Chinese government abruptly and unexpectedly instituted a new air defense identification zone (ADIZ) over a vast swath of the East China Sea, angering the US, Japan, Taiwan, and South Korea in one fell swoop.

Air defense identification zones are not unusual. The United States has them, and they are used internationally as a defensive precaution. Aircraft approaching a nation’s airspace (but still over international waters) are typically required to remain in contact with the destination nation’s air traffic control network so governments know what aircraft plan on entering their airspace.

Although the Chinese government claimed its zone followed international norms, it is problematic for several reasons. The ADIZ was announced the same day it took effect.

The Chinese expect all aircraft traversing the heavily trafficked airspace of the East China Sea to submit flight plans and obey air traffic controllers, even if the aircraft have no intention of approaching China. According to the announcement, aircraft that fail to follow instructions are subject to unspecified “defensive emergency measures.”

The implied threat, of course, is that if aircraft do not comply, China might shoot them down. The ADIZ also overlaps with existing Japanese, Taiwanese, and South Korean air defense identification zones. One problem is that when military aircraft enter an ADIZ, a nation is likely to scramble its own aircraft to intercept the “intruders.” When ADIZs overlap, multiple nations may feel their sovereignty is being challenged.

There has been much talk about how China’s unknown military intentions increase the risk of “miscalculation.” Overlapping air defense zones clearly increase this risk.

China has some history here.

In April 2001, a series of increasingly aggressive aerial intercepts ended when a Chinese J-8 fighter jet collided with a US Navy EP-3 surveillance aircraft over international waters. The Chinese pilot was killed as his aircraft crashed, and the damaged EP-3 was

### **Bombers allow the US to defend its allies without going to war.**

forced to make an emergency landing on China’s Hainan Island. The 24 US crewmembers were held and interrogated by the Chinese government for 11 days.

China’s new ADIZ extends east beyond Taiwan and much of South Korea. In fact, aircraft flying a direct line from Taipei to Tokyo—heading away from China—will be in the ADIZ for a major portion of the trip. The direct path from Seoul to Taipei essentially bisects China’s new zone.

The Chinese carefully drew their zone to include the disputed Senkaku Islands, which are administered by Japan but also claimed by China, which calls them Diaoyu. The move is an attempt to bolster China’s claim to the islands, and may be a precursor to attempts to similarly seize authority in the South China Sea. In a statement, the Chinese government said it will “establish other air defense identification zones at the right moment after necessary preparations are completed.”

Defense Secretary Chuck Hagel issued a clear statement the day the zone was announced, saying, “We view this development as a destabilizing attempt to alter the status quo in the region.”

The status quo, in this case, is Japan’s control of the Senkaku Islands. The US takes no position on which nation is the rightful owner of the islands, but recognizes Japanese administration of them.

To stave off any miscalculation on China’s part, Hagel emphasized this point: “The United States reaffirms its long-standing policy that Article V of the US-Japan mutual defense treaty applies to the Senkaku Islands.”

But the US was not limited to words. It carries a “big stick” in the form of its military forces in the Western Pacific, specifically, in this case, B-52 bombers staging out of Andersen Air Force Base on Guam.

Two days after China announced its ADIZ, the US flew two B-52s into the zone on a routine training mission. The bomber crews did not ask China’s permission for the flight, and China wisely did not attempt to stop them.

This was actually the second time in 2013 the US engaged in high-profile bomber diplomacy. Back in March, two B-2 stealth bombers flew a very public mission to South Korea. North Korea was the intended recipient of that message, and the message was received. The DPRK quickly scaled back what had been increasingly bellicose and provocative behavior.

On Nov. 29, two US and 10 Japanese aircraft, including Japanese F-15 fighters, flew through the ADIZ unannounced. China scrambled aircraft in response, but was unable to prevent the offended democracies from proving the impotence of China’s attempt to expand its territorial claims and intimidate its neighbors.

The US will continue to support freedom of navigation in the air and on the high seas, as it should, and the Air Force will continue to fly through the East China Sea without China’s permission.

“These flights are consistent with long-standing and well-known US freedom of navigation policies,” a Pentagon spokesman told Reuters. “The US has and will continue to operate in the area as normal.”

China may technically have the right to establish this zone, but it went about it in the wrong way. Bullying, intimidation, and military surprises are in no one’s best interest. China should immediately find a face-saving way to abandon its new ADIZ.

The US will defend its allies, and with the Air Force in the Pacific it can do so without ever having to go to war. ■



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## Eyes Wide Open

I want to thank Mr. Armstrong, NORAD, the 113th Fighter Wing, and Mr. John Tirpak for November's article "Noble Eagle Flies On" [p. 52], and I would like to expand upon the in-depth information presented.

The Continental United States NORAD Region (CONR) is one of three regional commands, subordinate to NORAD, that defend the skies of North America and execute Operation Noble Eagle. We provide the operational command and control structure, sustainment of the aerospace control alert (ACA) forces, and continually focus our efforts to both reduce tracks of interest (TOIs) and streamline any required response. The 601st air operations center at Tyndall AFB, Fla., is CONR's key command and control node, integrated with the Eastern and Western Air Defense Sectors, which acts in conjunction with the Federal Aviation Administration to safely integrate military aviation response with civilian airspace. The goal is to defend North America from air attack but balance that no-fail mission against the efficient and effective use of resources the American people provide. We have instituted TOI reduction efforts through outreach programs to airfields that operate next to both permanent and temporary flight-restricted airspace. The National Capital Region (NCR) airspace and the airspace surrounding the venues of national special security events (NSSE) are key areas to focus our air defense efficiency and effectiveness efforts.

While the 113th FW and ground-based air defense batteries provide the eyes and ears as well as response in the NCR, the use of the USCG MH-65 helicopters have proven to be a key asset that has effectively reduced the number of 113th's F-16 scrambles. The number of F-16 scrambles has not only dropped over the years due to NORAD's effective initiatives, but we typically see a reduction in scrambles

after an election year when NSSEs decrease. Although scrambles and other tactical actions fluctuate due to TOI mitigation initiatives and quantity of NSSEs, they do not directly correlate with a threat reduction.

Defending the skies of North America is an ongoing, no-fail mission. As potential threats evolve, acquiring the right resources to outpace that threat is a commitment our nation has chosen to make, and it is our responsibility to make the most effective and efficient use of those resources. The air defense of North America, its people, and critical assets is a military, civilian, and bi-national team effort subject to constant improvement. We take this responsibility to execute with the utmost pride and professionalism. America's Airmen ... on the Watch!

Lt. Gen. William H. Etter,  
Commander, 1st Air Force  
(CONR-AFNORTH)  
Tyndall AFB, Fla.

## Ranch Hand

The pictorial article was good, but the effects of Agent Orange on the Reserve units wasn't addressed and simply is not well-known in military and veterans' circles [*"Ranch Hand in Vietnam,"* October, p. 56].

The UC-123Ks, once reconfigured back to standard C-123Ks, were assigned to four Air Force Reserve tactical airlift squadrons—two at Rickenbacker ARB, the 901st at the Pittsburgh Airport, and the 731st TAS initially at Hanscom AFB and later Westover ARB. The 901st and 731st were parts of the 439th Tactical Airlift Wing. With the exception of one squadron at Rickenbacker, the squadrons were used chiefly for standard airlift support, Army exercises, and airlift support of US SOUTHCOM.

Air Force Reservists who were not deployed to Southeast Asia are excluded from any VA benefits for medical problems typically related to Agent Orange (AO). VA benefits are restricted to those who were "boots

on the ground" in SEA. Many of these individuals flew/maintained their C-123s for the 10 years they had the airplanes. They were exposed to the AO that the Air Force itself confirmed as contaminating their C-123s despite Air Force and VA assurances that the dioxin did not remain in the airplanes. "Heavily contaminated on all test surfaces," read the reports. "A danger to public health" was the testimony of the military toxicologists.

Nevertheless, many of these personnel—pilots, navigators, flight mechanics, loadmasters, and aeromedical evacuation flight crews—are now exhibiting the medical AO problems covered by law for those of us who were "boots on the ground."

As a C-123B/J/K pilot/instructor pilot for 16 years/6,600 hours, I do know a little about the airplane. I took the first Mule Train rotational flight to Saigon in March 1962. During our orientation, I was ordered to take my crews to the Ranch Hand area for a briefing on the AO equipment and use, as we were to be backup for Ranch Hand if their crews were overscheduled. We were told to never get the AO on our skin or to let it spill on the airplane floor—no one knew what the effects would be on either. We were required to smell the AO so we'd recognize the smell if there was a leak.

In 1972, I was assigned as the Active Duty C-123 advisor to the Air Force Reserve's 731st TAS. The squadron had

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several ex-spray airplanes, including the famous "Patches," AKA tail #362. During my four-and-a-half years with the 731st, I had many flights that I had to terminate early due to crew illness. These flights were either after a heavy rain or during periods of high humidity—those occasions seemed to draw the AO dioxin out of the airplane metal. The crew members in the airplane became nauseous due to the smell that I recognized from my 1962 introduction to AO.

When Patches was assigned to the Air Force Museum in 1980, it eventually had to be cleaned by commercial decontamination personnel wearing HAZMAT suits. The first workers had become ill trying to clean the airplane for display. Entry even now is restricted to special events. The decontamination resulted in the reduction in hazardous levels to just 1/54th of the toxicity before decontamination—and the Reserve crews flew for years at the higher, extremely hazardous level.

The Air Force, after surveys of the airplanes, decided to get rid of the remaining 19 airplanes at Davis-Monthan as toxic waste. Acting in 2010, the airplanes were melted down into scrap aluminum ingots due to the lingering dioxin. But the VA still refuses to acknowledge that individuals who flew/maintained the airplanes—eight to 10 times longer than those who were actually in SEA—are worthy of AO benefits.

Ranch Hand is not over!

Lt. Col. Roger D. Haneline,  
USAF (Ret.)  
Savannah, Ga.

Thank you for your article on this unique combat operation. While informative, I must tell you there are several misleading statements. Additionally, I must consider your article incomplete because you omitted mention of the most significant element of the ongoing controversy surrounding the Ranch Hand mission.

That omission concerns the Air Force Health Study (AFHS). This distinguished study was conducted from 1982 until 2003 at two of the best civilian research clinics in the country. The study involved 1,150 volunteers from the total 1,269 Ranch Hand veterans who flew these missions from 1962 until 1971. This group, including pilots, navigators, flight mechanics, ground servicing, and aircraft maintainers, all had direct daily exposure to all of the tactical herbicides without benefit of any protective gear other than a flak vest and purple scarf. One pilot flew this mission daily for 42 months. Over 50 percent had one to three Purple Hearts in my year as commander.

This 20-year, double-blind cohort study, with 15,000 Vietnam veterans serving as comparisons with no known exposure to Agent Orange, is considered by the Institute of Medicine as the premier epidemiological study of the potential effects of Agent Orange and its associated dioxin contaminant. In the final AFHS report, the analysis of over 300 health-related end points in 12 clinical areas was assessed and reported. An appraisal of the study, including scientific peer review, indicated that the results of the AFHS did not provide evidence of disease in the group with the most documented exposure, the Ranch Hand veterans caused by their elevated exposure to Agent Orange and the associated dioxin.

This was a great iconic study, but the scientific/medical findings are viewed to be contrary to the agenda of some veteran groups. That agenda of ignoring scientific results led Congress to enact the Agent Orange Act of 1991 and the "presumed exposure" dilemma. The Department of Veterans Affairs has acknowledged that the Agent Orange Act of 1991 remains a compromise between the desire for scientific certainty and the need to address the legitimate health concerns of veterans. However, the standard of "cause and effect" established by the scientific community has been replaced by a far less stringent standard, namely that of an association and, hence, a presumption. Without a presumptive service connection, Vietnam veterans would find it difficult if not impossible to receive any such compensation. This political decision meant to help the Vietnam veterans is now "out of control" when we see that more than 1.1 million VA claims for Agent Orange exposure have been filed!

Many groups are now lobbying to be included in this largesse including: "Blue Water" Navy veterans, veterans' spouses, children, grandchildren, and Vietnamese civilians. Moreover, I have never heard that the "US government admitted the long-term toxic effect of the chemical" as stated in your article without explanation.

"Patches" was one of the original UC-123Bs sent to Ranch Hand in 1962. It flew daily defoliation and crop destruction until about October 1968 when it was converted to a UC-123K. It was then decamouflaged and dedicated to the insecticide mission over cities and troop areas—ours and theirs—to control malaria. These missions using only the insecticide Malathion caused many to falsely claim exposure to Agent Orange. The red and yellow stripes and white star seen on Patches' side were the ROE required VNAF markings for crop destruction targets.

Thanks for the opportunity to tell "the rest of the story."

Col. Ralph C. Dresser,  
USAF (Ret.)  
San Antonio

### The Value of Humint

"Focusing ISR," by Maggie Ybarra, October [p. 46], was an excellent summary of where Air Force ISR is at currently and where it needs to be 10 years from now. She notes that "AF must decide, however, whether it wants the system (Distributed Common Ground System/DCGS) to be all-source—meaning inclusive of space, cyber, and airborne technology—and if so, how to best achieve that goal in an organized and streamlined way." Actually, "all-source" also implies the integration and use of human intelligence (Humint), whether it is collected by the Air Force, other US forces, other government agencies or coalition forces. A viable tactical wartime Humint capability can provide eyes on the ground to identify or verify targets, such as weapons, forces, or warfighting supplies under cover, in movement, or in encampments. Humint sources would include friendly forces in contact, displaced civilians, legal travelers, private business people, contracted collectors, and captured enemy forces. The Air Force needs to develop Humint collectors, collection managers, and all-source analysts who can rapidly integrate and use Humint within the DCGS.

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

### No Offense Taken. I Guess.

I am responding to the letter in the November 2013 issue, "No Offense Intended, Ladies" by Lieutenant Colonel Lupa [*Letters*, p. 10]. I wasn't exactly offended—disgusted is more apt.

There are legitimate concerns about opening certain combat career fields to women, but the debate needs to be limited to real problems, namely physical capability and managing social complications. It's unfortunate that this is an emotional issue for so many people, but the promotion of personal views as facts is counterproductive. Lieutenant Colonel Lupa states, "Women are by nature nonviolent, caring, loving, life-giving, and nurturing" and bases this statement on his "undergraduate studies at a Catholic university, where [he] minored in the philosophy of human nature, ethics, morality, human sexuality, and the psychology between the sexes." For readers who might be inclined to think that this background qualifies as expertise, let me point out that philosophy is not a science and that a minor in any field doesn't mean much.

I am a physicist, not a psychologist, but I try to stay reasonably informed about research in other fields. I'm pretty sure one would have a hard time finding much peer-reviewed scientific research to support Lieutenant Colonel Lupa's assertion. Regarding human personality, I think it's safe to say that there's far more variation within the sexes than there is between the sexes, and no one has yet answered the nature vs. nurture question. Also, in science it only takes one counterexample to disprove a theory: I will put myself forward as empirical evidence that not all women are, by nature, nonviolent, caring, etc., and will add that I'm hardly unique.

Also, as a product of the Catholic educational system from preschool through my undergraduate degree, I am very concerned that readers might think all Catholic schools promote outdated views as currently relevant. My education was broad and solid, both the Victorian era and Freud were kept in perspective, and my teachers did nothing but encourage and support my desire to become a scientist and an Air Force pilot. Please do not be afraid to send your kids to a Catholic school.

Finally, for those who are dead set against women in combat roles, let me point out that the pool of eligible male candidates is declining precipitously. If the statistics aren't bad enough for you, try to find a kid to help you with farm work. It's an uncommon teenage boy who is physically fit, can follow directions, can think for himself if necessary, is willing to work in uncomfortable conditions, and is in the least bit attentive to detail. Can you imagine a 19-year-old-male unashamed that a woman in her mid-30s can carry more and work harder, better, and longer? I've seen it, and the situation didn't make me feel proud of myself: It made me fear for the future of our nation. Automatically disqualifying women from some or all of the positions in question might be a luxury we can no longer afford. This isn't just an issue of fairness to women who have both the desire and the capability to perform in these positions, it's a manpower issue. Which—if any—jobs and under what conditions? I don't have enough information to enter the debate, but I do know that the decision can't be made based on how some men wish all women to be.

Lt. Col. Catherine A. Newell,  
ANG  
Frankfort, Ky.

**You Think the C-17 Is a Bad Boy?**

I found this article very interesting, as I have seen the "end of the line" for a few of the Air Force's inventory [*"The C-17 Reaches the End of the*

*Line," November, p. 58]. However, here is where I take some exception to the article citing the merits of the C-17.*

"The C-17 was being asked to do things a giant airlifter had never done before, such as land on unimproved airstrips, land on short fields, taxi in a tight space and even back up on a runway, all while delivering superheavy, outsize cargo at strategic distances."

Before the first C-141A rolled off the assembly line at Lockheed over 50 years ago, the aircraft was designed to operate from unimproved runways. The Engineers Flight Manual C141A-1-1 has specific charts for calculating the acceptable landing and takeoff distances and tire pressures for "unimproved taxiways and runways." The general rule for short field landing and takeoff was 3,500 feet, based, as any engineer will tell you on your gross weight and the atmospheric conditions (pressure altitude and temperature). Taxing the aircraft in tight places (Guam, Clark, Kadena, with all the B-52s and their KC-135 tankers nose to tail) was always tricky, but with the second engineer as scanner, with a little help from the loadmaster, it always got through. These crowded conditions almost always included a back up to hang the tail out over the grass as much as possible but still clear the loading ramp. Many times at Guam we backed our C-141A up as close as we could to the tail of a waiting B-52 and offloaded our cargo of iron bombs right into the armorer's inspection and arming lines for loading onto the B-52. Three-engine takeoffs due to small-arms fire cutting holes in the cowling and the pneumatic engine start valve were common at Da Nang and other low approach bases.

There is probably not a record of this feat but I was present at an unfortunate situation at Clark AB where a C-141 had inadvertently taxied off the taxiway in a torrential downpour and got its nose wheel stuck in the Philippine mud. The ramp tractor could not get enough traction in front of the aircraft with the tow bar hooked up to the nose wheel to move the plane back onto the taxiway. The tail of the aircraft was sticking out over the taxiway and the tower was screaming for it to be moved before another aircraft ran into it. The solution was to taxi another C-141 up to the rear of the one stuck in the mud, connect cables to both aircraft main gears, and back up the aircraft, pulling the stuck airplane out of the mud and back on the runway.

Needless to say there were beers all around at the stag bar that day.

MSgt. Bob Stackhouse,  
USAF (Ret.)  
Lincoln, Calif.



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## Ignoring China's ADIZ; Senkakus in the spotlight; A worst-case budget pays off; Too many bases ....

### CHINA GRABS AIR

DEC. 5, 2013

Soon after China startled its Pacific neighbors by unilaterally declaring most of the airspace over the East China Sea now under its control, Air Force B-52s delivered Washington's initial response. Just days after the Chinese announcement that it had created an air defense zone over thousands of square miles of international waters, two B-52 bombers flew into the new air defense identification zone without making any of the notifications demanded by China.

The B-52s were forward deployed to Andersen AFB, Guam, for US Pacific Command's ongoing rotational bomber presence mission.

The US State and Defense departments announced US aircraft would continue to operate in the Pacific as they always had. The US will not heed China's insistence that any aircraft wishing to transit the area file flight plans, declare (and display visually) their nationality, squawk with transponders, and stay in radio contact with Chinese controllers or face "defensive emergency measures."

China's Xinhua news agency announced the zone and said it became effective as of Nov. 23.

Since the B-52 flights, further, unspecified flights have been made into the area by US military aircraft daily, Pentagon officials said. Japan and South Korea also sent military aircraft into the zone. The Japanese press said F-15Js had entered the ADIZ and that E-2C airborne warning and control aircraft had been deployed to Naha, Okinawa, near Kadena Air Base.

Xinhua said China detected two US surveillance aircraft and as many as 10 Japanese fighters in the ADIZ in the days after the announcement. While some of these flights were apparently intercepted at a distance by Chinese Su-30 and J-11 fighters, there were no reports of targeting radars being used or shots fired.

### BROUHAHA OVER THE SENKAKUS

The Chinese announcement of the ADIZ was met with a swift policy response from Defense Secretary Chuck Hagel. In a terse, same-day statement, Hagel said the US considered the ADIZ declaration "a destabilizing attempt to alter the status quo in the region" and presented an increased "risk of misunderstanding and miscalculations." He pledged, though, that the US would "not in any way change" the way it operates in the region.

The zone encompasses the Senkaku Islands—which China calls the Diaoyu Islands—which are claimed by China, Japan, and Taiwan. Located off the northeastern tip of Taiwan, the eight islands—uninhabited steep rocky pinnacles—sit astride rich fisheries and energy reserves. Held by the US after World War II, the islands were returned to Japanese control in the early 1970s and are now administered by the Japanese prefecture that includes Okinawa, where the US has its largest East Asian base at Kadena.

Though Japan has not permitted any development of the Senkakus, it did buy some land among them last year from a

private owner, a move Chinese state-controlled media railed against.

Japan has not previously acknowledged any dispute over ownership of the islands, but said China was trying to intimidate its way to changing the status quo. South Korean officials also voiced displeasure and said their nation may have to extend its own ADIZ in response.

Hagel's statement was unambiguous about the US position: "We remain steadfast in our commitments to our allies and our partners," he said. The US "reaffirms its long-standing policy that Article V of the US-Japan Mutual Defense Treaty applies to the Senkaku Islands."

In other words, any attempt to seize the islands from Japan would invite a military response from the US.

The State Department said, "Freedom of overflight and other internationally lawful uses of sea and airspace are essential to prosperity, stability, and security in the Pacific," adding that the US remains "deeply concerned" about the situation.

Hagel's message was seemingly a departure from previous signals sent by Washington that it takes no position on the various regional territorial disputes between China, Japan, Korea, the Philippines, Taiwan, and some other countries in the region. However, the ADIZ was a challenge to unfettered US ability to operate in the area and demanded a US response.

In early December, Hagel told reporters that the chief US concern isn't with the ADIZ per se—the US, Japan, and Korea all have their own air identification zones off their coasts—but with "how it was done so unilaterally, and so immediately, without any consultation. ... That's not a wise course of action to take for any country."

Joint Chiefs of Staff Chairman Army Gen. Martin E. Dempsey, at the same press conference, said the zone is destabilizing because it offers a new wrinkle versus other ADIZs around the world: China wants these notifications even if China is not the intended destination of the aircraft.

### FILE UNDER "WHAT?"

Adding to the confusion, while the Japanese government advised its commercial airlines not to comply with the notifications, the US and South Korea told their airlines they should, and United Airlines said it would, in any case, continue its long-standing policy of filing flight plans with China.

Vice President Joe Biden made a long-planned visit to the region in December, with stops in Japan, China, and South Korea. The ADIZ was among the issues he discussed with Chinese President Xi Jinping, but in a post-meeting press appearance, he made no direct comments about it, and there was no indication that Biden had asked China to withdraw the ADIZ. Xi said simply that the region is seeing "profound and complex changes."

Biden met in Tokyo a day before with Japanese Prime Minister Shinzo Abe, but press reports afterward suggested Abe had not asked Biden to demand Chinese rescission of the ADIZ.

In a later speech to US business executives in Beijing, Biden said he had been "very direct about our firm position and our

expectations” with Xi. Officials traveling with Biden told reporters that it’s now up to China what happens next.

Chinese media with a nationalistic bent urged the government to vigorously enforce the zone, and settle the issue of the Senkakus with force if necessary, while other elements of the Chinese media said unannounced US operations within the ADIZ could be tolerated if they were not provocative.

Two painful incidents from the region inform and haunt the situation. One occurred in September 1983, when a Korean Air Lines 747 was shot down by Soviet fighters after the airliner deviated from its flight plan and overflew Sakhalin Island. All 269 on board, including a US congressman, were killed.

In a 2001 incident, a Chinese J-8II fighter, aggressively shadowing a US Navy EP-3 electronic surveillance airplane, collided with it off the coast of China. The fighter pilot was killed, and the damaged EP-3 landed on China’s Hainan Island. The 24 crew members were seized and held for 11 days before being released, and China shipped the EP-3 home in pieces after dismantling and presumably exploiting it for secrets.

The situation was resolved when the US sent a letter, which it called an “expression of regret,” to China for the pilot’s death. China described it as an “apology.”

## DEVOURING THE SEED CORN

If the ongoing budget sequestration continues, the Air Force will not see any new program starts in the next three years. There will be more cuts in end strength and force structure. And in a move that would certainly gain congressional attention, USAF may even be driven to try putting some bases in a legally unprecedented mothball status, acting Air Force Secretary Eric Fanning said in late November.

Fanning offered a candid peek into the details of USAF’s upcoming Fiscal 2015 budget proposal to attendees at an Air Force Association-sponsored Air Force breakfast in November. “It’s going to be very hard to do new starts” out to about Fiscal 2018 because of the continuing sequester—and maybe even if sequester is lifted, he said.

Because of the uncertainty, the Air Force built two budgets for Fiscal 2015. The first assumed sequestration will roll on into Fiscal 2014.

The second budget projects somewhat more money available, based on President Obama’s Fiscal 2014 defense budget request. Congress moved in December to approve something in between, with some small sequester relief.

Fanning said USAF was trying to be realistic and plan for the worst.

“The money just isn’t there” for anything but the programs USAF has identified as its top priorities—the F-35 fighter, KC-46 tanker, and Long-Range Strike Bomber—Fanning explained, and funding these will squeeze out anything new.

Sequester demands “instantaneous” savings that can’t be achieved fast enough by reducing people or cutting force structure, so initially, USAF must also loot its modernization programs—recapitalization accounts, research and development—to pay the sequestration bill.

To keep up with the furious ongoing pace of cuts, force structure and end strength also will be cut as soon as possible, to the tune of 25,000 Air Force personnel and perhaps 500 aircraft. All of this is in addition to reductions already taken over the last few years. Fanning told reporters he thinks the personnel reductions can be largely achieved through voluntary measures and incentives.

Fanning said that classified programs—typically those promising the greatest technological leaps—will take a “relatively proportional reduction” along with everything else.

The other services are in for a rude awakening, he predicted, since they seem to have planned for higher budget amounts. The Army, Navy, and Marine Corps will be scrambling to find sufficient funds if sequester rolls on, he said.

The sequester took 10 percent off the top of all USAF programs, with only personnel compensation accounts exempt. That immunity means acquisition, R&D, and other investment accounts actually will have to cough up more savings, making the procurement cuts deeper than face value.

Even with some sequester relief, USAF would be able to “buy back” some of the capabilities it will have to give up in 2014, but not all of them, because of the cost of implementing the cuts, Fanning noted.

Among the reductions, USAF would have to surrender “up to 24” F-35s—more than a squadron—from the next few years of production, even though it’s a priority program. “When I say ‘protected,’ I don’t mean 100 percent,” he said.

## INFRASTRUCTURE INCREASINGLY OFF BASE

Voicing a common USAF leadership theme of the past several years, Fanning pleaded for the authority to close bases, saying that the service in all likelihood has about 20 percent more base structure than it needs. However, the Air Force is actually prohibited by law from studying the problem. Further, Congress has flatly refused to consider any base closures in the next couple of budget cycles.

Because it is wildly inefficient to spread small numbers of airplanes around too many bases, Fanning said USAF is “exploring” what it can legally do to put bases in “warm” or “cold” status. Its authority in this regard is limited, Fanning admitted, saying that even small realignments of people or aircraft can violate laws Congress has made to block such downsizing. Still, the service simply can’t afford to maintain a base at full capability if it has no weapon systems or personnel to put there.

“Cold” basing would be all but “padlocking” the facility, Fanning said, while a “warm” base might continue some functions but without the main mission.

The situation as it stands is the “worst of all possible worlds,” he observed, because a diminished base function means fewer people stationed there, and that would hurt a local economy. At the same time, keeping a base in a semi-closed status means its surrounding community wouldn’t have the chance to repurpose the land and facilities in some economically reinvigorating way.

The situation also torpedoes the work of two commissions trying to find a deliberate and rational way forward for the service through the shrinkage.

The National Commission on the Structure of the Air Force and the internal Total Force Task Force were meant to inform the Fiscal 2016 budget process, Fanning said. However, the instant cuts demanded by sequester means people, force structure, and facilities will be affected right away, long before the two panels finish their work, he pointed out.

Despite the scary news, Fanning said he’s pleased to see the contributions of airpower are being recognized by the other services in budget debates, and they have offered strong support for certain USAF capabilities they can’t do without.

He noted, for example, that Army Chief of Staff Gen. Raymond T. Odierno argued that while common sense suggests that with fewer ground forces, less strategic airlift is needed to move them, the opposite is true.

“If I have fewer soldiers,” Fanning quoted Odierno as saying in one meeting, “I’ve got to move them around with more agility. I need more Air Force lift.” ■

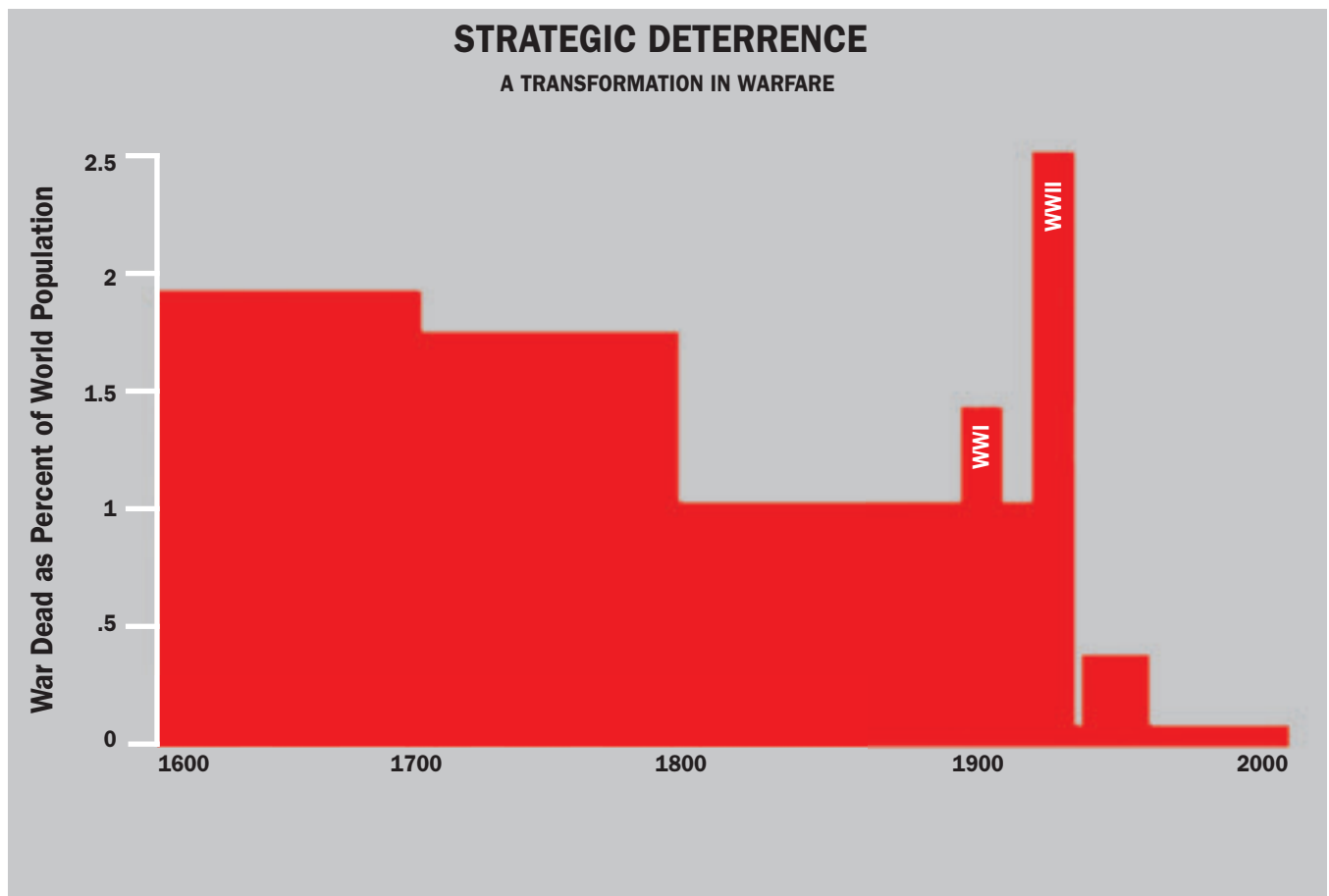


## Is “Zero” Really a Great Idea?

President Obama in 2009 pledged to seek “a world without nuclear weapons.” However, if “nuclear zero” actually could be achieved, would that be such a good thing? Deterrence, after all, tends to tamp appetites for major war. Some warn that ridding the world of nukes would make

the world safe—again—for conventional war. As seen here, the world before the advent of nuclear weapons was awash in the blood of conventional conflict. In the seven-decade nuclear era, however, there have been no wars between major powers.

### Worldwide Trend in Wartime Fatalities



Source: "Strategic Deterrence in the 21st Century," by Adm. Richard W. Mies, US Navy (Ret.), in *Undersea Warfare*, spring 2012 issue, Washington, D.C.

## Operational Homes for F-35A

Burlington Arpt., Vt., and Hill AFB, Utah, will serve as the first operational homes for the Air Force's combat-ready F-35 strike fighters, announced USAF officials.

The decision comes more than three years after the service first announced its preferred initial basing sites for the fifth generation fighters.

Burlington was selected after a lengthy analysis of operational considerations, installation attributes, and economic and environmental factors, according to a Dec. 3 USAF statement.

Timothy K. Bridges, deputy assistant secretary of the Air Force for installations, noted Burlington's airspace and ranges can support projected F-35A operational training requirements while offering joint training opportunities with F-15Cs from the Massachusetts Air National Guard and Canadian CF-18s in Quebec.

The Vermont ANG will receive 18 F-35s, scheduled to arrive in 2020. The location also has a "mature and highly successful" active associate arrangement with the Air Force for its F-16s; they will transition elsewhere with the arrival of the F-35.

For the Active Duty, Hill's location near the Utah Test and Training Range provides access to one of the largest and most diverse ranges in the Air Force, Bridges said. Hill also is home to the F-35 maintenance depot.

Construction will begin immediately on facilities, and the first of 72 aircraft will arrive at Hill starting in 2015.

## Haney Takes Charge of STRATCOM

Air Force Gen. C. Robert "Bob" Kehler relinquished command of US Strategic Command to Adm. Cecil D. Haney during a ceremony at Offutt AFB, Neb., in November.

"I intend to work diligently with this team of professionals to ensure the effectiveness of the global operations Strategic Command conducts," said Haney, who previously led US Pacific Fleet, during the Nov. 15 ceremony.

Defense Secretary Chuck Hagel presided over the ceremony and praised Kehler, who had led the command since January 2011.

"For the past three years, you have had a remarkable leader in General Bob Kehler," said Hagel.

Kehler retired officially Jan. 1.

## Syria Peace Talks

United Nations Secretary-General Ban Ki-moon will bring the Syrian government and opposition forces to the negotiating table on Jan. 22, marking the first time the two parties have tried to work out their differences diplomatically since fighting began in March 2011, according to a Nov. 25 UN release.

The hope is that the conference—known as Geneva II—will lead to a "political solution to the conflict through a comprehensive agreement," stated the release. "I expect all partners and parties to demonstrate their support for constructive negotiations," said Ban.

More than 100,000 people have died in the conflict and nearly nine million have been displaced from their homes, stated the release. As of early December, the list of conference invitees was still being finalized, though Iran and Saudi Arabia could provide delegations. Representatives from Damascus and the opposition might also attend, according to the release.

## A-10 Pilot Receives DFC

The Air Force awarded Maj. Michael J. Stock, an A-10 pilot, the Distinguished Flying Cross for his actions during a December 2010 deployment to Afghanistan.

Stock, who was attached to the 75th Fighter Squadron at Moody AFB, Ga., at the time, distinguished himself when he

## ✚ screenshot





spotted enemy forces nearby while providing close air support for 75 embattled US and coalition forces, according to an Air Force release. Enemy combatants ambushed the coalition forces with rocket propelled grenades and machine gun fire from multiple locations, sometimes as close as 98 feet away.

Stock coordinated with the joint terminal attack controller for multiple strafing attacks and engaged the enemy from a low altitude, rendering himself more vulnerable to attack. His actions saved the lives of 75 individuals, stated the Nov. 1 release.

"We were just doing our jobs on that particular day, and there are many close air support aircrew downrange doing this work day in and day out, and for that I'm proud of them," said Stock.

Stock is a combat Air Force programmer for the Air National Guard Readiness Center at JB Andrews, Md., where he was awarded the medal on Oct. 31.

#### **Guard Pilots Awarded DFC**

Lt. Col. Paul Zurkowski and Maj. Christopher Cisneros, both A-10 pilots assigned to the Maryland Air National Guard's 104th Fighter Squadron, were awarded the Distinguished Flying Cross with Valor for their heroic actions during a firefight in Afghanistan. The pilots are credited with saving the lives of 90 US soldiers, according to a Dec. 11 release.

Zurkowski and Cisneros continued to provide close air support to ground troops, including some danger-close strafing runs, even as weather conditions worsened and the enemy fired at their aircraft. "I had a difficult time seeing the friendlies because of the weather. There [were] lightning strikes and these guys really needed my assistance," said Cisneros. "Eventually two other A-10s joined the fight and we were able to execute coordinated 30 mm attacks to neutralize the enemy and provide cover to HH-60 Pave Hawk casualty evacuation helicopters." It wasn't until the A-10s landed back at Bagram

## 12.6.2013

*Capt. Andrew King, an HH-60 rescue squadron pilot, steps away from his aircraft to begin desert and coastline combat survival skills training in Djibouti. The survival, escape, rescue, and evasion exercise was a refresher course designed to hone airmen survival skills.*



## Philippines Relief Efforts

Following the devastating super typhoon Haiyan that swept through the Philippines, killing more than 3,000 people in early November, the US military sprang into action in Operation Damayan.

In total, US military assets delivered 2,495 tons of relief supplies and equipment, according to Lt. Col. Wesley T. Hayes, spokesman for the joint task force activated to conduct the humanitarian assistance operations. In addition, US military aircraft logged some 2,700 flight hours in 1,304 flights and evacuated 21,402 people from the affected areas, Hayes said.

As part of the immediate relief efforts, personnel and five C-130s assigned to Yokota AB, Japan, deployed to Clark AB, Philippines. Most of the airmen and three of the Hercs were on their way back to Japan after participating in Exercise Cope South—a humanitarian assistance and disaster relief exercise in Bangladesh—when they were rerouted to the Philippines.

“This is exactly the kind of mission we train for,” said Lt. Col. Jeff Menasco, 36th Airlift Squadron commander, in a Nov. 17 news release.

The Air Force’s 353rd Special Operations Group opened airfields at Ormoc, Guiuan, and Borongan on Samar Island, located among the Philippines’ central islands—making it possible for the delivery of food and supplies and for Philippine citizens to be airlifted.

Airmen from Kadena AB, Japan, also provided support as they received a C-17 from JB Pearl Harbor-Hickam, Hawaii, which carried a water purification unit to Tacloban—one of the hardest hit areas, stated a Nov. 16 Kadena news release.

Pacific Air Forces prepared its 36th Contingency Response Group at Andersen AFB, Guam, which includes communications assets, runway repair capabilities, and RED HORSE engineers. PACAF officials proceeded to help the Philippine armed forces with air-tasking and airlift operations. Special operations U-28 aircraft were called in.

By the first week of December, the US military was out of the Philippines, Hayes said. At the operation’s height, he added, 13,446 personnel from all services were involved.

Airfield that Zurkowski realized his airplane had been hit twice. “I saw tracer fire and I knew I was getting shot at but I went right back into supporting the ground troops,” said Zurkowski, the squadron commander. The DFC ceremony was held Dec. 8 at Warfield ANGB, Md.

### STO Receives Bronze Star With Valor

Air Force Special Operations Command boss Lt. Gen. Eric E. Fiel presented the Bronze Star Medal with valor device to Maj.

F. Damon Friedman, an AFSOC special tactics officer, on Nov. 13 during a ceremony at Hurlburt Field, Fla. Fiel recognized Friedman for his gallant actions during an April 2010 mission in Afghanistan.

Friedman, then a captain with the 23rd Special Tactics Squadron, was the lead joint terminal attack controller for a mission in Korengal Valley, complex terrain nicknamed “Valley of Death,” in northeast Afghanistan, according to AFSOC officials. He was tasked with directing strikes to clear the area of enemy forces.

“When we came in, there were about 100 enemy forces in the area,” Friedman said, recalling the event. “I was up for three days without a second of sleep, conducting close air support with numerous aircraft overhead.”

Friedman coordinated and deconflicted more than 200 attack aircraft for a total of seven days while frequently coming under hostile fire. Friedman was credited with 40 enemies killed and wounded, stated the Nov. 14 release.

### Battling Procurement Fraud

The Air Force Office of Special Investigations recently activated its first-ever Office of Procurement Fraud to consolidate and bolster its counterfraud efforts. The office is located at JB Anacostia-Bolling, D.C., according to OSI’s Nov. 20 release.

“We have consolidated our procurement fraud mission under one centralized command and control element ... to better streamline the investigative process from beginning to end,” said Brig. Gen. Kevin J. Jacobsen, OSI commander.

The office “offers the Air Force a better means of ensuring sustainment of our existing fleet and facilities as well as proper acquisition of new equipment,” said Jacobsen during the Oct. 17 activation ceremony.

**A Hover Craft Lands:** *The Air Force’s oldest CV-22 Osprey arrived at the National Museum of the US Air Force on Dec. 12. Originally built as a preproduction aircraft for the Navy, it was modified into a CV-22B and became a test asset at Edwards AFB, Calif., was transferred to USAF, assigned to Hurlburt Field, Fla., and completed more than 400 test missions. The Osprey will stay in storage pending the museum’s completion of a new building. Plans call for it to be displayed as part of the Cold War Gallery.*

USAF photo by Don Popp





Since 2001, OSI fraud investigators have recovered nearly \$1.9 billion for the Air Force, stated the release.

### DOD's First Arctic Strategy

The Defense Department issued its first Arctic strategy, laying out how the US military will work to promote security, stewardship, and international cooperation in the region.

"This strategy identifies the department's desired end-state for the Arctic: a secure and stable region where US national interests are safeguarded, the US homeland is protected, and nations work cooperatively to address challenges," read the executive summary of the document, released by DOD Nov. 22.

The strategy, based on the Obama Administration's broader 2013 National Strategy for the Arctic Region, noted: "The Arctic is at a strategic inflection point as its ice cap is diminishing more rapidly than projected and human activity, driven by economic opportunity, ... is increasing in response to the growing accessibility."

These developments "present a compelling opportunity" for DOD to work with allies to promote human and environmental security in the region, stated the summary.

Find out more about the new strategy on [www.airforcemag.com](http://www.airforcemag.com). Search "First Arctic Strategy."

### Next Generation GPS Satellite

Lockheed Martin's Global Positioning System III satellite prototype successfully communicated with the existing GPS constellation already in orbit during recent testing, announced company officials.

The testing of the GPS III nonflight satellite test bed—a full-size, functioning prototype—concluded mid-October at Cape Canaveral AFS, Fla. It demonstrated the ability of an Air Force receiver to track navigation signals transmitted by the next generation satellite, stated a Nov. 21 release.

"These tests represent the first time ... the GNST's flight-like hardware has communicated with flight-like hardware from the rest of the GPS constellation and with a navigation receiver," explained Paul Miller, Lockheed Martin's director for GPS III development. "This provides early confidence in the GPS III's design to bring advanced capabilities to our nation, while also being backward-compatible."



Staff map by Zaur Eylanbekov

**Mine, Mine, ALL MINE!** China abruptly claimed a vast swath of East China Sea airspace in November as part of its new air defense identification zone. The Chinese now demand that all aircraft traversing the area submit flight plans and remain in contact with Chinese air traffic controllers, even if the aircraft has no intention of landing in China. The new ADIZ overlaps with existing Japanese, Taiwanese, and South Korean air defense identification zones, greatly increasing the risk of conflict or an "accidental" shutdown of military or civilian aircraft in the region.

### Missileer Burnout?

An unpublished RAND study commissioned by the Air Force and obtained by the Associated Press found that members of the nuclear missile force have low job satisfaction and often feel job-related "burnout," according to the AP report published Nov. 20.

During the three-month study, RAND conducted confidential interviews with some 100 launch control officers, security forces, missile maintenance workers, and others in the missile field, stated the report.

Chaitra M. Hardison, lead author of the study, told the AP participants rated their work experience on a scale of one to seven—an average of four or more was considered burnout. The 13 launch officers interviewed and 20 junior enlisted airmen assigned to the missile security forces scored a 4.4, according to the article.

The study also found that courts-martial in the ICBM force were 129 percent higher than the Air Force as a whole in 2011, on a per capita basis, and 145 percent higher in 2012.

An Air Force Global Strike Command spokesman told *Air Force Magazine* the AP article failed to mention that those percentages are not only trending down, "in fact,

the numbers of nonjudicial punishment in 20th Air Force are actually below [that of] the Air Force for 2013."

The spokesman acknowledged the study is "useful for commanders." However, he said it also must be considered in the context of other studies with much larger sample pools, such as the Unit Climate Assessments (3,500-plus participants), the Air Force Culture Assessments Safety Tool (7,000-plus participants), as well as senior leader visits with airmen and commanders.

He said the Air Force has been "100 percent effective from an operational perspective," though he said the ICBM mission can be stressful.

Chief of Staff Gen. Mark A. Welsh III told the AP there is no evidence of fundamental problems in the ICBM community.

"There are issues like there are in every other mission area we have in the United States military, and we deal with the issues as they come up, and we deal with them aggressively. But, as far as getting the job done, they're getting the job done. They do a great job of that every single day," said Welsh.

—Amy McCullough

## Competing Amendments

Lawmakers considered a host of competing amendments aimed at curbing sexual assaults in the military as they worked to finalize the Fiscal 2014 defense authorization bill by the end of the year.

Sen. Kirsten Gillibrand (D-N.Y.) and a bipartisan team of senators released a letter Nov. 19, signed by 26 retired generals, admirals, and other military leaders supporting an amendment that if approved would remove a commander's power to make decisions about cases involving sexual assault and instead give that authority to an independent prosecutor.

Senate Majority Leader Harry Reid (D-Nev.) tweeted Nov. 19 that he publicly supports the legislation.


However, Defense Department spokeswoman Army Lt. Col. Catherine Wilkinson told *Air Force Magazine* there are several "misperceptions about the role of the commander." For example, she said, "Commanders do not investigate [military sexual assault crimes]; that is the job of independent military criminal investigators." She added that it is the commanders who are "responsible" for setting and enforcing standards. "They lead by example. We need to have commanders more involved, not less involved, in this process," she said.

Wilkinson said the independent panel set up by Congress to study how US allies combat military sexual assault found no evidence that removing a commander from the decision-making process had any effect on the reporting of sexual assaults.

The Air Force Association sent a letter to Sen. Carl Levin (R-Mich.), the head of the Senate Armed Services Committee, and other committee members. The letter, which opposed Gillibrand's bill, was signed by 112 generals and USAF Chiefs of Staff.

Meanwhile, Sen. Claire McCaskill (D-Mo.) continued to push for a competing amendment that would remove the commander's ability to change or dismiss court-martial convictions in cases of sexual assault. However, McCaskill's amendment does not completely remove commanders' authority over sexual assault cases.

In June 2013, Sen. Kelly Ayotte (R-N.H.) authored, along with Sen. Patty Murray (D-Wash.), legislation that would provide sexual assault victims a trained military lawyer to guide them throughout the legal process.

 Read more coverage on sexual assault in the military at [www.airforcemag.com](http://www.airforcemag.com). Search "sexual assault."

The GPS III will provide three times better accuracy; up to eight times greater anti-jamming capabilities; and extended life expectancy of 25 percent, stated the release. The Air Force is expected to receive the first GPS III in 2014 in time for a 2015 launch.

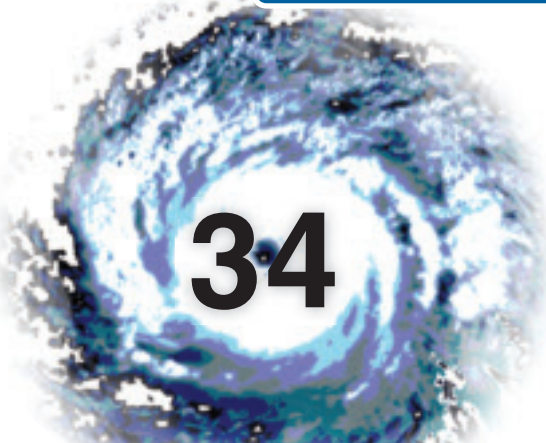
### Red Flag's Back

Red Flag, the Air Force's top air combat exercise, is back on the books for 2014 after sequestration forced officials to cancel such exercises at Nellis AFB, Nev., and Eielson AFB, Alaska, earlier this year. "That cannot continue," Air Force Chief of Staff Gen. Mark A. Welsh III told reporters at the Pentagon on Dec. 13. Welsh said the \$63 billion in sequester relief, included in the two-year budget deal that passed the House Dec. 12, "will help us make sure that doesn't happen again."

Officials at Nellis already are halfway done planning for Red Flag 14-1, which will be held Jan. 27-Feb. 14, and have started work on 14-2 to be held in March. They also expect to announce a third exercise early next year, Nellis spokeswoman A1C Monet Villacorte told the *Air Force Magazine*.

Welsh said the difference between the USAF and other air forces is "not just size. It's also capability." He added, "The difference in the US Air Force is the way we train, the level of sophistication in our training, the difficulty of our training. Red Flag is integral to that." More than 125 aircraft, including

## By the Numbers



The total number of flights for the National Hurricane Center in 2013 by the 403rd Wing's 53rd Weather Reconnaissance Squadron—better known as the "Hurricane Hunters"—based at Keesler AFB, Miss. According to Lt. Col. Jon Talbot, 53rd WRS chief meteorologist, the 2013 hurricane season was the mildest since 1996.

USAF F-22s, F-16s, B-2s, F-15s, RC-135s, HH-60s, HC-130Js, KC-135s, and HC-130Js, are slated to participate in January's exercise. Allied participation includes fighters and AWACS from both the Royal Australian Air Force and the British Royal Air Force, according to Nellis' release.

### Lockheed Martin Completes 100th F-35

Lockheed Martin celebrated the completion of the 100th F-35 strike fighter during a Dec. 13 ceremony at its Fort Worth, Tex., facility. The aircraft, the first training-coded F-35A, will be delivered to the Air Force in the first quarter of 2014. It will be assigned to the 56th Wing at Luke AFB, Ariz., where USAF pilots and foreign F-35A users will learn to employ the aircraft.

Training is set to begin in mid-2015 with 17 aircraft, said



**Senator Patty Murray** @PattyMurray  
Murray: I am hopeful #budgetdeal can rebuild some trust, bring Dems & GOP together & demonstrate government can work.



**Kelly Ayotte** @KellyAyotte  
We have servicemembers now in Afghanistan, many of whom served mult tours, and we're sending them a msg that your benefits will be cut.



### Operation Enduring Freedom

By Dec. 17, a total of 2,289 Americans had died in Operation Enduring Freedom. The total includes 2,286 troops and three Department of Defense civilians. Of these deaths, 1,798 were killed in action with the enemy while 491 died in noncombatant incidents.


There have been 19,526 troops wounded during OEF.

### Solidifying Afghan Progress

Afghan security forces have taken on the overwhelming majority of military operations in the country; however, gaps still exist in capabilities and logistics operations, according to the Defense Department's twice-yearly report on security and stability in Afghanistan.

The Afghan National Security Forces conduct 95 percent of conventional military operations and 98 percent of special operations in Afghanistan, stated the November report. The only unilateral operations the International Security Assistance Force conducts are force protection, route clearance, and redeployment activities. However, the ANSF still will require "substantial train, advise, and assist (TAA) mentoring—as well as financial support" following the 2014 withdraw of US and coalition combat forces, stated the report.

Afghan air capabilities also lag behind other developments, according to the document. The Afghan Air Force has reached initial operational capability for its Mi-17, Mi-35, and C-208 aircraft, but IOC for the C-130 and the A-29 is not expected until 2016. The AAF can execute operations and disaster relief, but its ability to generate sorties is affected by maintenance backlogs. Logistics and maintenance continue to be a "major challenge" for the AAF, stated the report.

 Locate the full DOD report on [airforcemag.com](http://airforcemag.com). Search "Solidifying Afghan Progress."

—Marc V. Schanz

### AAF Takes On Instructor Roles

Afghan Air Force flight instructors are now teaching air mission planning courses, a major milestone for the country as its forces take on more control of their own security.

According to a Nov. 25 Air Forces Central Command news release, the AAF this past fall began taking on instructor roles in their unit's air assault planning certification course that had been previously taught by advisors with the US Army's 10th Combat Aviation Brigade.

"Afghans are now teaching Afghans," said Air Force Lt. Col. Brandon Deacon, commander of the 438th Air Expeditionary Advisory Squadron. "Now that they have the initial capability, we can move on to ensuring they have trained instructors who can assess their ability to train themselves."

The 438th AEAS consists of USAF and Czech Republic advisors, who mentor Mi-17 and Mi-35 helicopter pilots, stated the release. The 10th CAB augments the overall 438th AEAS mission.

Students undergo a three-week course that aims to increase the effectiveness of air operations, including a week each of classroom instruction, simulator training, and actual flying, stated the release.


### Post-2014 Afghan Ops in Limbo

As of mid-December, Afghan President Hamid Karzai had refused to sign a bilateral security agreement that would allow thousands of US troops to remain in country as trainers and advisors to Afghan security forces following the end of NATO combat operations in 2014.

A grand assembly of thousands of Afghan delegates approved the draft bilateral security agreement, but in a surprising move, Karzai called for delaying its signing until after the Afghan presidential election in April, reported Britain's *Guardian* on Nov. 24.

"If I sign and there is no security, then who is going to be blamed for it?" asked Karzai in addressing the delegates.

Secretary of State John F. Kerry said "the critical next step" in a long-term partnership with the United States "must be to get the BSA signed in short order," according to a Nov. 24 statement.

 Read more about the bilateral security agreement on [www.airforcemag.com](http://www.airforcemag.com). Search "Afghanistan Bilateral Security Pact."

Gen. Robin Rand, head of Air Education and Training Command, at the ceremony. Rand said the Air Force will "rethink" the number of simulators used "because the fidelity is so high" allowing them to take on more of the training mission as funding pressure mounts on flying hours.

During a briefing with Pentagon reporters the same day, Chief of Staff Gen. Mark A. Welsh III praised the company for the progress the program has made in recent years. "We're at a point in the F-35 program right now where production rates are going up. Production costs are coming down. I am confident the company knows what it costs to build an airplane now and our program office is fully confident in that," said Welsh.

"Since 2011, the program has met milestones consistently. Now, the 100th airplane coming off the production line is not a minor thing," he said.

### T-X Still in Limbo

Despite a push from industry to keep the T-X program alive, Air Education and Training Command boss Gen. Robin Rand said there is no funding for a new trainer in Fiscal 2014 or Fiscal 2015.

Rand told the Air Force Association's *Daily Report* on Dec. 13 he hopes to begin discussions with Chief of Staff Gen. Mark A. Welsh III in February during Corona—a periodic powwow of top Air Force leaders—on the way forward for the T-X. He said the program may also replace T-38s used as companion trainers for the F-22 Raptor and B-2 bomber.

Several members of industry met at Wright-Patterson AFB, Ohio, in January 2012 to discuss options available for the T-X. Boeing earlier announced it would partner with Sweden's Saab Group to bid on the T-X.

### Air Force Announces Force Management Initiatives

The Air Force recently announced a series of voluntary and involuntary force management programs intended to help it reduce its overall end strength by as much as 25,000 over the next five years—a necessary step under the sequester. "The difference from years past is that we announced voluntary programs first, then involuntary," said Lt. Gen. Samuel D. Cox, deputy chief of staff for manpower, personnel, and services.

"This year, due to the limited time frame, we're announcing all programs at once to allow airmen time to consider their



**Boom Shaka Laka:** A B-52H gets a starting boost from starter cartridges during a minimum interval aircraft takeoff exercise at Barksdale AFB, La. B-52 crews use the “cart start” maneuver to get the bird in the air as fast as possible. Eight starter cartridges filled with gunpowder—one per engine—explode, jump-starting the engines faster than a normal takeoff does.

options and ensure their personnel records are up-to-date,” he said.

For enlisted airmen, programming includes the chief master sergeant retention board and the quality force review board. Officer initiatives include force shaping boards and the enhanced selective early retirement board. Officers and enlisted airmen in overmanned career fields with more than 15 years but less than 20 years also will be eligible for the temporary early retirement authority. Some airmen, both officer and enlisted, may qualify for voluntary separation pay, states the release.

**Plan for Civilian Workforce Reductions**

The Air Force rolled out a series of voluntary force shaping measures on Dec. 11 that will help it reach its goal of cutting about 900 civilian positions and leaving some 7,000 vacancies unfilled in Fiscal 2014, according to a release. Although specific positions have not been identified, civilian force shaping measures will “maximize” use of voluntary early retirement authority, which allows agencies undergoing reshaping to temporarily lower requirements to increase the number of employees eligible for retirement, and voluntary separation incentive pay, stated the release.

“Over the last couple of years the Air Force has gone through significant civilian pay budget challenges,” said Brig. Gen. Gina M. Grosso, director of USAF force management policy. “By implementing voluntary programs now we hope to mitigate future involuntary losses to the civilian workforce.” Despite the ongoing fiscal constraints, Grosso said the Air Force’s strategy does not include furloughs at this time.

**Thunderbirds Are Back**

The Thunderbirds are back after a one-year hiatus due to sequestration. The demonstration team was to kick off its 2014 season with a Jan. 1 flyover of the Tournament of Roses Parade in Pasadena, Calif.

Other planned high-profile events include a Feb. 23 flyover at the Daytona 500 in Daytona Beach, Fla., and a March 9 flyover during the NASCAR Sprint Cup Series in Las Vegas. A Dec. 11 release states that the annual show will wrap up in November at Nellis AFB, Nev.—home of the Thunderbirds.

The Air Force canceled the 2013 season due to budget constraints, but “we’re glad to be back,” said Thunderbirds commander and lead pilot Lt. Col. Greg Moseley. “Right now, we’re focused on training. While we’re excited to know we’ll be able to tell the Air Force story on the road, we’re completely focused on ensuring we have a safe show season,” he said.

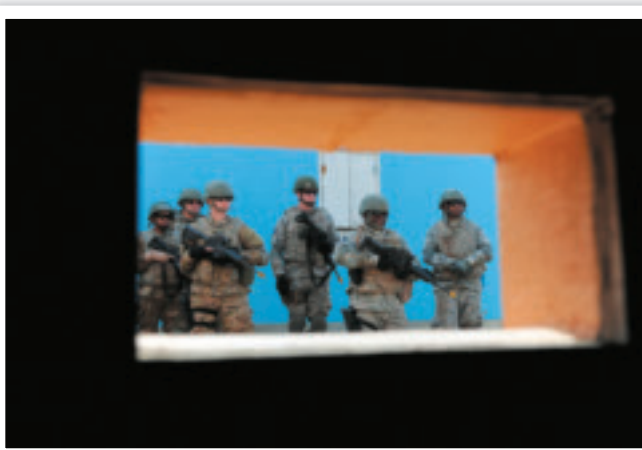
The 2014 season marks the team’s 32nd year. ■

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USAF photo by A1C David R. Cooper



**Another Brick From the Wall:** Combat airmen skills training students await orders after completing an urban operations exercise on JBSA-Camp Bullis, Tex. CAST was designed to standardize predeployment combat training across the force.



## Announcement

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# The Pacific



**At AFA's Pacific Air & Space Symposium, top USAF officials touted the increasing need for engagement across the Asia-Pacific region.**

**T**HE Pentagon is adjusting to the reality that the budget sequester mandated by the 2011 Budget Control Act—with perhaps some minor changes—will roll right on into 2014 and quite possibly continue for the remainder of the 10-year law.

Given all the rapidly evolving parts of US military strategy, the timing couldn't be worse.

The military services are grappling with how to shift away from counterinsurgency operations in Afghanistan to a renewed focus on the Asia-Pacific region. That shift demands close cooperation with allies, but funds for joint exercises and partnership activities are evaporating. Longtime US military strengths are being challenged or denied by emerging and re-emerging powers in the region, and the potential is rising that a number of long-simmering territorial or political disputes there could boil over into armed conflict.

These warnings, issued by Air Force officials at the vanguard of the “rebalance,” as well as senior space and cyber officials and industry representatives, resonated throughout the Air Force As-

sociation's Pacific Air & Space Symposium in Los Angeles, held in November.

Speakers at the symposium noted that the US shift to the Pacific, toward fulfilling the 2012 Defense Strategic Guidance, parallels rising tensions between some Asian countries. China's increasing military capabilities worry American allies and potential partners, as the People's Liberation Army openly challenges key US advantages in air, space, and cyberspace.

### **New and Creative Models Needed**

Missile technology is proliferating across the region, sparking heightened US interest in integrated air and missile defenses in the theater. China and others are pursuing counterspace capabilities, such as jammers and even anti-satellite programs, and many state-sanctioned hackers are aggressively probing US networks daily, senior space officials said.

“Some of the most active of [cyberspace actors], frankly, are in the Pacific,” said Gen. William L. Shelton, commander of Air Force Space Command.

USAF is adopting a “defense-in-depth” strategy, consolidating its network and adopting more safeguards

and process improvement tools, but in cyberspace, the target is always moving.

“The price of admission in the cyber domain is so low; it's a laptop, an Internet connection, and you are a rifleman,” Shelton said. “We are good in the cyber domain. But so are others.”

In the aviation arena, senior leaders stressed staying power and presence—especially regarding the rotation of US forces in and out of the region.

Pacific Air Forces officials insisted no more major garrisons will be established to support US forces in Asia for the foreseeable future. Continuing fiscal pressure on force structure demands that new and creative models for military presence must be explored with allies both old and new.

PACAF speakers drew a dour distinction between physical engagement and presence versus “virtual presence,” arguing that real-life coalition exercises of everything from high-intensity air combat to humanitarian relief operations pave the way for future success.

Eric Fanning, then acting Secretary of the Air Force, said USAF is facing extraordinary circumstances in the next few fiscal years as it adjusts its posture, but

# Abhors a Vacuum

By Marc V. Schanz, Senior Editor

*An F-22 from JB Elmendorf-Richardson, Alaska, flies off the wing of a KC-135 from Kadena AB, Japan, during Red Flag-Alaska in August.*

USAF photo by SrA. Zachary Perras

doesn't yet know how much it will have to spend, or on what, or when such authorization might come.

"We won't be able to finalize that until we have a number," Fanning said. USAF and the other services have assembled budget building blocks ranging from the low option of a sequester budget and a high option based on President Barack Obama's submitted Fiscal 2014 budget. While Fanning doesn't think either extreme will end up as the agreed solution, the budget drills necessary to accommodate them have produced ugly choices. The Air Force is facing the possibility of cutting its ranks by an additional 25,000 airmen and divesting another 500 aircraft from its fleet.

Despite the near-paralysis of operating in what Fanning called a "quarterly execution loop" rather than an orderly appropriations process, he said discussions between the Office of the Secretary of Defense and USAF for the next five-year plan do offer some heartening trends. After the Air Force offered issue papers on the budget and the programs, a

number of core positions on key capabilities survived the review process between OSD, the other services, and the combatant commanders.

"I take it as a signal as to how strong we are" in the process, Fanning said. As the bills for unmet aviation needs stack up from across the COCOMs, he said it is clear the larger military recognizes how important airpower is.

Given the anti-access, area-denial issues in the Pacific and challenges that are "different from the conflicts we are in now, and the massive geographic spread of that region," Fanning said, "it's clear that our ability to see what's going on, through space, through cyber and [intelligence, surveillance, and reconnaissance], and our ability to move

quickly and great distances is very valuable in this rebalance."

Recent events clearly demonstrated the importance of airpower for the US and its allies. The US quickly responded to the catastrophic Typhoon Haiyan with disaster relief to the Philippines, chiefly by air. It also seemingly quelled North Korea's mounting bellicosity of early 2013 with the long-range flight of B-2





USAF photo by TSgt. Kristine Dreyer

bombers from Whiteman AFB, Mo., to South Korea. Both high-visibility events demonstrated USAF's ability to move quickly and influence events beyond kinetic operations, showing how frequently USAF is called to act in crisis—and to avert escalation.

According to speakers, the US Pacific Command chief, Adm. Samuel J. Locklear III, is pushing his component commanders toward a more operational footing, to prepare for operations ranging from nonconflict scenarios to continuous coalition action from the Korean Peninsula to a potential crisis in the Taiwan Strait.

Lt. Col. David A. Williamson, a B-2 and F-15C pilot and branch chief for operations force management on PACAF's staff, told attendees the command is taking a holistic approach to power projection in the theater, examining Phase Zero operations—those that shape the situation, or preconflict activities—and tracking how airpower is used to achieve PACOM's objectives and the effects it produces.

"Power projection is about intentionally influencing the theater," he said, noting that as he spoke, USAF C-130s and C-17s were ferrying relief supplies to the Philippines and transporting evacuees from the Leyte region.

Last summer, USAF tankers supporting South Korean and Japanese aircraft making their way to Alaska for Red Flag exercises combined several PACAF activities at once. "It is sometimes difficult to see where one

line of operation begins and another ends," Williamson observed, as the Red Flag example showed how theater security cooperation and power projection activities folded into one another.

Collaboration and innovation are common threads tying US and allied power projection capabilities in the coming years, several speakers said.

"Even the Navy guys will tell you, you can't do anything in a naval campaign without Air Force airpower," said PACAF chief Gen. Herbert J. "Hawk" Carlisle, calling out the examples of air refueling, long-range ISR support, and anti-submarine scenarios.

"It really is a team; you have to have both," he said.

*Above: Airmen offload an MC-130H in November at Ormoc Arpt., Philippines. They were deployed there on a humanitarian mission in the aftermath of Typhoon Haiyan. Below: A USAF F-15C from Kadena AB, Japan, conducts tactical flight operations near Korat RTAB, Thailand, during Cope Tiger, a military-to-military exercise with Thailand and Singapore. Right: Technicians prepare USAF's third Advanced Extremely High Frequency satellite for launch in September. China and others are pursuing counterspace capabilities.*







Lockheed Martin photo



USAF photo by Capt. Joshua Gunderson

Carlisle praised the new US Pacific Fleet commander, Adm. Harry B. Harris Jr., for looking at new ways to meld allied militaries, USAF, and naval power across the theater.

“We’re looking from subs to [Japanese F-2 fighters] to space-based capabilities,” Carlisle said. “We are evolving AirSea Battle, putting it into operational use. . . . It’s a collaboration that really works.”

### Rotating Through the Theater

Small innovations at the unit level are paying off. TSgt. Matthew Woodward, a maintainer at Andersen AFB, Guam, came up with a new approach to managing equipment for B-52 bomber rotations. His innovations helped shrink the footprint of the support deployment package from four C-17s to one, saving

the Air Force more than \$1.5 million a year.

Carlisle highlighted USAF Reservist Lt. Col. Kevin Sutterfield, who thought up the concept that became PACAF’s “Rapid Raptor” expeditionary F-22 package: a four-ship of Raptors paired with a C-17, a forward air refueling point (FARP) kit, some munitions, and crew. The result is a tailored, flexible, and responsive fighter package that can move quickly across the theater, can land, rearm, and get back in the air in less than an hour.

“Think of an adversary out there thinking, ‘Oh, they’re at Andersen; oh, now they’re at Kadena; oh, now they’re at Chitose [AB, Japan],” Carlisle said. The demonstrated capability gives the PACOM commander another arrow in his quiver—useful for complicating a potential enemy’s targeting and decision-making cycle.

The continuous bomber presence on Guam, one of PACOM’s core power projection deployments, is approaching its 10th anniversary, Williamson said. (Within days of his comment, B-52s assigned to the mission carried out a training sortie in China’s newly declared air defense identification zone—ADIZ—over international waters in the Pacific).

PACAF also provides the bulk of air-breathing ISR equipment rotating through the theater. These include Cobra Ball, Combat Sent, and Rivet Joint RC-135s, RQ-4 Global Hawks, U-2s, E-8 JSTARS, and other assets involved in a variety of exercises and engagements, he said. PACAF focuses these ISR rotations to be collaborative with its treaty allies in the Pacific—specifically, Australia, Japan, and South Korea—that are aiming to make better use of ISR in their own operations.

PACAF released a new strategic plan last summer, Carlisle said. It outlined three core objectives in the theater: expand engagement, increase combat capability, and improve combat fighter integration. To execute these tasks, PACAF is focused on refining roadmaps and plans in five key “lines of operations”: theater security cooperation, integrated air and missile defense activity, power projection, “agile and flexible” command and control, and resilient airmen.

Chinese power projection and influence—and reactions to it—are creating sensitive problems for PACOM, from the South China Sea to the disputed Senkaku/Diaoyu Islands in the East China Sea. These scenarios demand more command and control, especially after years of operating in an environment where



USAF photo by A1C Ashley J. Thum

access and connectivity were deemed less important.

PACAF officials said they have a lot of work to do on flexible command and control—one of the reasons why it’s a central feature of the command’s new strategic plan.

“How do we solve the problem of an adversary actively attacking C2?” Carlisle asked.

“We want to be able to execute the commander’s intent, even if it is in a degraded environment for comms,” said Col. Douglas James, PACAF’s deputy assistant director of operations. Success in a coalition—in scenarios where integrated air and missile defense could come into play—means C2 processes must be exercised. Next month, PACAF will host a theaterwide conference in Hawaii to discuss some of the hard questions surrounding command and execution, James added.

Potential flashpoints in the Asia-Pacific region demand that USAF think hard about survivability, resiliency, and attrition, even on orbit, Shelton said. The US is heavily dependent on space navigation, early warning, and other core capabilities, and no viable replacement will be available any time soon. Rather than give up and build “terrestrial options” based on land, Shelton said USAF should apply the same thinking to space challenges as it did to integrated air defenses.

To address that challenge, “what we did was build stealth, develop [electronic warfare],” Shelton said. “We looked at the problem from all sorts of different angles. ... We need that kind of thinking—what I would call fifth generation thinking—in the space business” and need to add “resiliency” to the mix.

America’s allies in the Asia-Pacific are watching China’s actions closely and adjusting their own security posture

accordingly. PACAF officials noted that cooperation with Japan—ranging from air defense coordination to renewed discussions of missile defense—has grown sharply in the last two years.

“I think they are better able to engage today, and be more assertive about engaging with other countries,” Brig. Gen. Jeffrey R. McDaniels, PACAF’s director of operations, said of increasing US-Japan cooperation.

Col. Daniel Wolf, chief of PACAF’s Advanced and Warfighter Integration Division, said PACAF’s cooperation with Japan has increased “significantly” in the last year, as the longtime US treaty ally adapts its defense and security activities to a more regional focus and seeks better day-to-day interoperability with US forces.

### Expanding Bilateral Collaborations

Australia is also expanding its welcome of US rotational force visits to its facilities and is improving its infrastructure to accommodate them. In space, Shelton said AFSPC would move C-band radar from Antigua to Australia, to help upgrade Asia-Pacific monitoring capability and increase partnership opportunities with Australia. There are other opportunities to partner in space situational awareness activity, he added, and the Defense Advanced Research Projects Agency will soon move a telescope from New Mexico to Australia to help improve monitoring of geosynchronous orbit, where many of USAF’s most valuable assets operate.

Brian Woo, a former State Department foreign service officer now serving as Carlisle’s foreign policy advisor, said when he first joined PACAF’s command staff in 2007, he heard from officials across Asia that the US was “too interested in what was going on” in the region.

“We got the impression we were told to chill out and relax,” Woo said. “But in the last six years, the changes have been dramatic.”

PACAF officials said they’ve worked hard to expand traditional bilateral collaborations into more nuanced multilateral efforts (as with Guam’s Cope North), with special attention to improving communications and quick reaction military forces. KC-135s from Kadena AB, Japan, dragged Japan’s F-15Js and South Korea’s F-15Ks to Alaska for Exercise Red Flag 13-3, the first time South Korean and Japanese air forces trained together.

In addition to the historic fighter collaboration, Carlisle noted the exercise hosted three airborne command and control platforms simultaneously: Australia’s E-7 Wedgetail, USAF’s E-3 AWACS, and Japan’s E-767. The event emphasized the importance of coalition C2 operations.

“We had only done that once before,” he pointed out. “But practicing command and control in a battle environment like



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*Left: A security forces airman spots simulated approaching opposition forces during a readiness exercise at Osan AB, South Korea. Below: US paratroopers and their Bangladeshi counterparts jump together from a USAF C-130 during the bilateral exercise Cope South in November. Bottom l-r: Lt. Col. Jeff Menasco, USMC Col. Brian Cavanaugh, Brig. Gen. James Hecker, and CMSgt. Baird Stiefel visit Clark AB, Philippines, to thank airmen and marines for providing humanitarian relief to the populace in the wake of a super-typhoon that devastated the country in November.*

that is critical.” To successfully “put three C2 assets in the air, build the same battle picture, and have an effective fight, you have to practice it.”

Officials said theater security cooperation underpins US strategy in the Pacific. Relationships among allies and emerging partners aren’t simply diplomatic pleasantries; they are critical to asserting the interests of the US and its allies in such a massive theater, speakers said. If the US leaves a void in this regard, others will capitalize.

Carlisle frequently includes Russia’s military power in his briefings because there is a “significant amount” of Russian

contributions to Operation Damayan and Joint Task Force 505, providing humanitarian relief in conjunction with the Philippine armed forces and the US Agency for International Development.

Col. Marc Caudill, PACAF’s chief of exercises and readiness, said there are 19 PACOM-level exercise engagements that USAF forces in the Pacific support every year, one of them Exercise Balikatan in the Philippines.

“We do that every year, [and] it has really helped us propel to success” in Operation Damayan. “Without it, we would have been starting at ... zero,” he asserted.



USAF photo by Capt. Raymond Geoffroy



USAF photo

influence in the Pacific, from long-range strategic bomber operations around Japan’s northern islands to building ties with other Asian militaries. While some may observe a bipolar competition emerging between the US and China, Carlisle said Russia is putting much more emphasis on political and military relationships in Asia as well. The topic of Russian influence in the Pacific, and “how we will deal with it,” is a frequent topic of conversation between Carlisle, US Air Forces in Europe’s Gen. Frank Gorenc, and Supreme Allied Commander Europe Gen. Philip M. Breedlove, Carlisle said.

The importance of presence and regular training with allies was highlighted repeatedly during the symposium by multiple speakers who mentioned PACAF’s

Carlisle said the US relief effort was quick—participation wound down in late November.

The ability to live in the Pacific, to go forward to train from Japan to Indonesia, and then execute promptly when called on will make the difference in the coming years, just as it did in the Philippines, Carlisle insisted.

In the aftermath of Typhoon Haiyan, the US response demonstrated American involvement and staying power in the region to other potential partners that may be worried about US commitment there.

“Our rebalance is working, but it’s an uphill battle,” Carlisle said. “It will work if we figure out a way to take care of these airmen and give them the tools to do the job we’ve given them.” ■



# *The Tanker* *Nears* **TAKEOFF**

By John A. Tirpak, Executive Editor

After more than a decade of fits and stops,  
USAF's next tanker is almost here.

*A Boeing artist's illustration of a KC-46A refuelling a B-2 bomber.*

Boeing illustration



**T**his month, what will be the first new-build Air Force strategic tanker in 25 years will roll out of Boeing's Everett, Wash., plant: the first of four aircraft that will comprise the KC-46 test force. While USAF's 12-year journey to the milestone has been politically harrowing, so far the technical program is making solid progress and is expected to deliver the urgently needed aircraft at the time and price promised.

"We think Boeing has a greater than 90 percent probability of meeting RAA—which is required assets available—18 aircraft by August of '17," said Maj. Gen. John F. Thompson, USAF's program executive officer for tanker programs, in an October interview. The schedule risk assessment, he said, was made in May. Since then, the KC-46 passed its biggest preflight test milestone: the critical design review. It passed with flying colors, he reported.

The KC-46 program is now 35 months along, following several abortive attempts at tanker recapitalization since 2001. At the time, then-Air Force Secretary James G. Roche suggested leasing Boeing KC-767s, examples of which have since joined air forces in Italy and Japan. After Congress nixed the idea of a lease or sole-source buy, a competition was held and an Airbus A330 tanker derivative dubbed KC-45 was chosen. That award was thrown out after a heated protest, and Boeing won a second competition with its 767-based tanker, named KC-46 by USAF.

Boeing has to achieve nine key performance parameters and five key system attributes—KPPs and KSAs—to fulfill its KC-46 obligations, and "we're projecting that Boeing will meet or exceed all of those," Thompson said. Development of the new

tanker/airliner is now 45 percent complete, he noted, with some milestones accomplished early. The critical design review (CDR), for example, closed out in August, "about a month ahead of the contractual requirement."

There were "about 20" issues to resolve at the end of the CDR, he said, six deemed critical. Of those, Thompson described four as "paperwork kind of issues." Two were design refinements. One had to do with "max-power takeoff capabilities" and the other with the aircraft self-diagnostic reporting system. The issues were resolved and CDR was officially concluded. Completion of the CDR and the approval of better than 93 percent of the drawings gave Boeing the green light to begin heavy fabrication efforts. Some four months later, the first aircraft emerged.

This first airplane is not yet a KC-46, however. Its technical designation is 767-2C—a new variant of the venerable 767 airliner/freighter line, featuring the 787's glass cockpit and best-of-elements from other Boeing aircraft. It is provisioned with all the wiring, plumbing, structural elements, cargo doors, and other features that will allow it to be configured later into an all-up aerial tanker/airliner. To meet FAA and other government rules regarding new variants of commercial aircraft, however, it must first earn civil airworthiness certificates.



**Maj. Gen. John Thompson, USAF's program executive officer for the upcoming tanker, is bullish on the progress made so far.**

USAF photo by SrA Steele C. G. Britton





Boeing illustrations

*An artist's illustration of a US Navy F/A-18's cockpit view during refueling from a KC-46. A requirement for the tanker is the ability to refuel both boom and drogue-type aircraft on a single sortie, but not simultaneously,*



*A mock-up of a KC-46 cockpit. The KC-46 borrows many "best of" components from various Boeing aircraft.*

All KC-46s will be produced in the 2C configuration from the Boeing production line in Everett that also produces commercial 747s, 767s, and 787s. After that, it's on to a finishing center where all the tanker-specific gear will be installed.

This is a different approach than in previous programs, where the Air Force made use of off-the-shelf commercial aircraft designs, Thompson said in a September speech at the Air Force Association's Air & Space Conference.

In previous programs, USAF would typically buy a stock commercial aircraft body, fly it to a modification location where "we ... disassembled it—tore it apart to turn it into whatever we were trying to build at the end," Thompson said. The new approach saves the teardown step, avoiding unnecessary rework, considerable cost, and stress on the aircraft, Thompson said.

To save time and money, Boeing and the Air Force have designed a "test once" approach with the KC-46: testing multiple attributes for different regulatory entities

simultaneously on each flight of the four test aircraft, instead of waiting to do them in a sequential fashion.

"It's essentially a risk reduction effort," Thompson explained in the interview. "Each flight will maximize the amount of data collected to satisfy the requirements of multiple agencies." These

include the FAA, the developmental and operational test communities, the Air Force Operational Test and Evaluation Center, Air Mobility Command, and others. Performance will be verified "to the maximum extent possible on flights where each one of these major stakeholders have equities in that flight," he said.

"We think that represents a true cost savings to the program, and in fact, we absolutely need to do it if we're going to stay on schedule," Thompson said, adding, "if we tried to meet everybody's requirements in a serial fashion, ... we'd never make it."

Though the 412th Test Wing at Edwards AFB, Calif., will have responsibility for the test program, most test flights will be flown out of Everett. Facilities are being built there to accommodate the various entities involved.

The four Engineering and Manufacturing Development aircraft will be of two configurations initially, explained Charles L. Johnson III, Boeing vice president for Air Force mobility, C3 networks, and support systems.

"EMD aircraft No. 1 and 3, they'll start out in a 2C configuration" and go directly to flight test, he said, while Nos. 2 and 4 will be built as 2Cs, and then immediately be fitted with all the airlift and aerial tanking systems, such as the boom and probe, and military-unique systems and avionics. They will then begin tests as tankers. The 2C needs to get an amended



type certificate, “then the next step is to get a supplemental type certificate, ... that it’s now a KC-46. That’s why two of [each]” are being built, he said.

The two provisioned freighter 767-2Cs will be modified into full-up tankers after about six to eight months and rejoin the test fleet as KC-46s. Later, they will become operational aircraft.

The goal is to build 179 KC-46s by 2027. Low-rate initial production gets going with seven airplanes in Fiscal 2015, followed by 12 in Fiscal 2016. From Fiscal 2017 until program conclusion, the annual rate will be 15 airplanes. Thompson said Boeing can up the rate if there are foreign sales of the aircraft. He said there have already been some international inquiries, but the program is only now setting up an office to manage foreign military sales.

## First Flight

The first all-up KC-46 is scheduled to be rolled out less than a year from now, in late 2014. The first conversions will be done at Boeing Field, near Seattle, but the finishing center will move to Everett to save the need to fly the aircraft 30 miles from their initial assembly point. Once that transition takes place, they will simply be towed from one facility to another, Johnson said. First flight of the first fully configured KC-46 is slated for early 2015.

The formal CDR was about a weeklong affair in July, Johnson said, but was the culmination of more than a year’s worth of workup reviews on every subsystem of the aircraft, when more than 100 action items were identified and cleared. The actual CDR was more of a pro forma event recognizing that all major issues had been resolved.

After the CDR, Johnson attended a briefing for Pentagon acquisition, technology, and logistics chief Frank Kendall, who Johnson said was “just kind of astonished” the CDR had been so clean, with “no major issues.”

The purpose of the CDR, Johnson said, was to verify that the design does, in fact, meet requirements.

“And that was 100 percent confirmed, that the design would meet all the KPPs and KSAs and then some,” he asserted.

By contract, the KC-46 has to meet some 392 specific requirements. The KPPs include the ability to refuel both boom and drogue-type aircraft on a single sortie, as well as refueling multiple aircraft at the same time; range and fuel offload; ability to function in the world air traffic control environment; cargo, passenger, and aeromedical evacuation capabilities; the ability to receive fuel from another airplane; ability to function in a chemical/biological weapons environment; ability to function as part of a USAF network; defensive systems, including an armored cockpit and missile warning/countermeasures; and capability for night vision systems.

The “extent of the government liability” on the fixed-price development effort is \$4.9 billion, Thompson said. Boeing’s own “estimate at completion,” however, is about \$5.2 billion, while the Air Force’s estimate is \$5.7 billion, he said. That means Boeing is set to take between a \$300 million and \$900 million loss on development if the numbers don’t improve.

Johnson acknowledged that Boeing’s loss-leader bid was “aggressive,” but he said the company has rigorously managed costs—a quarterly review is conducted by the company’s chief operating officer—and is laboring to find efficiencies wherever it can. Moreover, Boeing has scrutinized costs “down to the smallest parts” and got vendors to offer their best prices for the competition, as well.

“We picked the best of the best” in personnel and vendors, and the corporate mantra “One Boeing” means the program can call on any other part of the company for help if it needs assistance, he maintained. The key is to be “as lean and as efficient as you

can.” Part of that will be to carefully manage manpower, a “big cost” that can be kept efficient by “making sure your manpower is moved to another project” as soon as a particular task is completed.

Johnson declined to say at what point Boeing believes the KC-46 would become profitable. However, he pointed out that costs are being tracked “day to day, week to week,” and the company’s best minds are working to close the gap between the expected cost and the contract price.

The C-17 program was initially a fixed-price development contract, but the program failed in its early years and needed a cash bailout before it got back on track and wound up producing a high-quality product that met cost and schedule. Johnson—once USAF’s C-17 program manager—said he was acutely aware of this and that Boeing had taken the lesson to heart.

Boeing has weathered criticism that it was drawing heavily on program management reserves in the past year and that its burn rate of development funds was unsustainable. Johnson likened the management reserve to a bank account. Rather than have it sit there—until a crisis occurs—“you can make the appropriate withdrawals from the management reserve early on and apply it to reducing your risk,” he said. Boeing has done this by creating a number of System Integration Laboratories, or SILs, to thoroughly wring out subsystems such as fuel management—called wet labs—and make sure they have no integration issues when it’s time to put them in the airplane.

Since the advent of SILs, though, Johnson said Boeing has been “making deposits” in the management reserve and building it back up—a fact he informed Kendall of in the fall.

Asked how risky the financial situation is, Thompson said, “They are executing according to the contract currently. They’ve met all the milestones and contractual obligations to date, and the government expects that performance to continue.”

## No Specific Cost Concerns

“The fixed-price nature of the contract provides what we think is a really significant incentive for Boeing to deliver on time,” Thompson said. In the immediate wake of the CDR, he said he doesn’t see “a specific cost risk that I can point to that I am particularly concerned about.”

Software, the critical bugaboo in most major weapon systems, is not viewed as a heavy risk on the KC-46. “About 85 percent of our software is commercial, off-the-shelf software,” he said, “and most of that is in the reuse category,” meaning 85 percent of the KC-46’s software is already flying on other aircraft. Johnson suggested this was one of the areas that made Boeing’s proposal a lower risk. The 15 percent remaining has to do with “military-unique avionics or for our refueling system,” Thompson explained. SILs are expected to produce a largely bug-free systems for them. Software is well in hand, he said, adding that he won’t be “laser-focused” on it to the detriment of the overall system.

There are other risks to the program, Thompson said. Software is one of five, he said, the others being flight-test execution, production schedules, the refueling system, and aircraft weight.

“We like what we see in those areas” so far, Thompson said—Boeing has “done a commendable job on managing the empty weight,” for example—but they all bear constant vigilance. He also told the AFA audience that because the KC-46 will be assembled from parts made around the world, weather that could interfere with shipment of large assemblies and overseas labor turmoil might also be risks to watch.

Thompson told the AFA audience he gets asked frequently if the KC-46 will use the same batteries as the 787, whose lithium-ion batteries caused fires that grabbed headlines early last year. The



**Major sections of what will be the first KC-46 are joined at Boeing's plant in Everett, Wash.**

KC-46 will use nickel-cadmium batteries, he said—"completely different" from those on the 787.

One of the key undecided variables about the KC-46 program is how the Air Force will support it long term. While USAF requires the ability to organically maintain its aircraft at domestic and overseas bases, the KC-46 could tap a global network of parts suppliers and repair capabilities, as there are more than 1,000 commercial 767s flying and more are still coming off the line. Moreover, many of the parts on the KC-46—from landing gear to hydraulics parts and even tires—are common to Boeing's other aircraft, such as the 747 and 787. The flat-screen panel displays on the 787, for example, are identical to those to be used on the KC-46.

"We're not going to be a 'CLS [contracted logistics support] for life' program," Thompson said. Boeing will provide CLS for the first five years. After that, the nature of support will await the results of a study now ongoing, called the sustainment feasibility demonstration, he explained. It will try to determine "the best method for maximizing the use of commercial practices and procedures for our long-term support." To be decided is whether KC-46 will have a unique, common, or hybrid parts pool. The FAA will play a role in making that choice.

### Right Size Tanker

Johnson said the sustainment issue may depend in part "on how we do" in those first five years of supporting the KC-46, but the potential for cost savings by tapping the existing 767 support infrastructure "is huge."

Thompson praised the teamwork and communication between Boeing and the government on the program so far. It has been "exceptional" in the buildup to the CDR and first flight. "Issues that can't be resolved at the lower levels are elevated in a timely manner," he said, and "don't seem to linger. ... If we have a risk and we need a mitigation plan, we get those mitigation plans established and then we monitor them through to resolution."

It's not all "collegial," though, he said.

The cooperation so far "doesn't mean we don't have our fair share of spirited conversations on specific issues," but he characterizes these disputes as "people looking out for the equities of their organization, and sometimes those crucial conversations are required."

During the budget sequester of the last fiscal year, the Air Force and the Department of Defense "took very, very good care" of the KC-46 when its funding was problematic, Thompson said. Money was found and paid at the right times to ensure there were

no breaks in the program that would derail its schedule, and other agencies supplied "extra bodies" when the bulk of his engineers were furloughed during the CDR. By late October, however, he did not know how the program would fare with continued sequester, except to say it would remain a Pentagon priority.

The KC-46's capabilities are "impressively larger" than those of the KC-135's, Thompson told the AFA crowd. The new aircraft "is about 15 to 20 percent larger" and can carry "three times as many" cargo pallets as a KC-135, "two times the passengers and a lot more patients"—even more than the KC-10—all while delivering triple the fuel to thirsty aircraft at a faster rate.

It should be noted the KC-46 "is a widebody" compared to the KC-135, Johnson said. He suggested the aircraft will be "a game changer" because it will be able to do so much more than the KC-135, even though it is only slightly longer and wider. For a foretaste of just how much more capable it will be, he said, it's useful to remember that the outsize C-17 replaced the C-141 while occupying roughly the same amount of runway real estate.

"It's like having two [C-]141 tubes back there," he said of the C-17. Time will show that the Air Force made a good call in picking "the right-size jet" for the tanker, he predicted.

"Why are FedEx and UPS buying 67s and not 47s?" he asked rhetorically. Both have the larger airplane, but decided the 767 was efficiently sized for the times and the workload. The Air Force similarly needs an aircraft not only fuel-efficient but "also for getting the combat mission done."

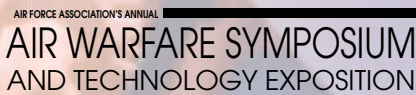
The success of the KC-46 so far hinges largely on the fact that there have been no changes to the requirements since the contract was drawn. "That stability ... enables us to get the schedule execution we've had thus far," Thompson told the AFA crowd. "We need to continue that. We need to continue to ensure that the program is adequately funded and that we keep requirements absolutely stable."

The fact that there is no improvement program yet contemplated "speaks volumes for the design we have now," Johnson asserted. "It's phenomenal that there's really nothing there that screams, 'Hey, improve me.' The technologies that have been inserted into the 67 are pretty advanced." It's unlikely the design will be altered "until after the Air Mobility Command guys get the jet and actually work with it a while." ■



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# FINDING GRUENTH

An F-16 crash was neither the beginning nor the end of this story.

**M**AJ. Lucas F. Gruenther always wanted to be a fighter pilot. When he spoke at his old high school, he said the movie “Top Gun” inspired him, but his mother thinks he was kidding because that’s the sort of joke he would have made. His uncle flew F-15s and his great-grandfather Alfred M. Gruenther was a four-star Army general. Military service was a family tradition.

In many ways, Gruenther was flying at an early age. He flung himself at soccer balls. He flung himself up rock-climbing routes. He flung himself off ski slopes and bungee jumps and into schoolwork and student government. He flung himself into life.

“Whatever you do, don’t suck. Kick butt,” Gruenther told students when he returned to Tuolumne, Calif.’s, Summerville High School. “Get out there and try hard at everything you do.”

After JROTC and the US Air Force Academy, Gruenther ended up at Aviano AB, Italy, in the 555th Fighter Squadron, the “Triple Nickel.” He was flight lead and served as chief of flight safety for the 31st Fighter Wing. Squadron mates said his enthusiasm was infectious. He taught them to climb, backpack, run, and speak Italian. He pushed them to drop candy bars and eat fresh vegetables for lunch. He’d thank the lowest ranking airman, by name, for keeping the squadron’s F-16s in the air.

On Jan. 28, 2013, Gruenther went missing over the Adriatic Sea during a four-ship night training mission in bad weather. The Italian Coast Guard led a massive search in terrible conditions. At the end of the second day, they found a debris field. On the afternoon of the third day, they found his body.

A thousand people came to Gruenther’s memorial service at Aviano. Among them were his many Italian friends and US Army soldiers he’d supported in combat in Afghanistan. Lt. Col. John Peterson, the 555th FS commander, told them Gruenther knew he was set to start as a flight commander on Feb. 1. What he did not know was he was also going to enter the instructor upgrade program.



# LUC HER

By Peter Grier

All photos on these two pages are via a video from Maj. Lucas Gruenther's memorial website: [www.lucasgruenther.com](http://www.lucasgruenther.com).

"Even though 'Gaza' [his call sign] did not become an instructor pilot in the Triple Nickel, he sure did teach us a lot," said Peterson. "Even though he didn't become or hold the title of flight commander in the Triple Nickel, I think the way he led his life, ... he was a flight commander of life. That's why we're here today."

Life in the Air Force can be dangerous. Gruenther exemplifies the men and women willing to run the risks of flying and maintaining high performance jet aircraft to defend the United States, Chief of Staff Gen. Mark A. Welsh III told the 2013 Air Force Association Air Warfare symposium in Orlando, Fla. Welsh talked about Gruenther's life and death and well-attended memorial service. He talked about Gruenther's mother waving goodbye as the No. 3 aircraft pulled up and away out of the missing man formation. He talked about Gruenther's wife, Cassy, who gave birth to their daughter, Serene, the day after the Aviano service.

Serene will never meet her father, but she will know all about him, said Welsh. And she will always be the daughter of an American airman. "So the line goes on. So many of you stand in it, and I'm so honored to stand with you," said Welsh.

Like many who join the military, Gruenther was an athlete as a kid. He loved taekwondo, soccer, and basketball. Partly this was because he also loved his maternal grandfather, Bob Mathias. Mathias twice won the Olympic gold medal in decathlon before becoming an actor and later a US congressman from California. "Luc made lots of lists of things he wanted to do before he died, and on one of his early lists he said he did want to be an Olympic decathlon winner," said his mother, Romel Mathias.

"Fighter pilot" appeared on Gruenther's list at an early age as well. He had posters of jets and model airplanes in his room. "He always wanted to be a pilot," his mother recalled.

His biggest challenge was sitting still. He'd get up early and want to go out and do something.







Reuters photo by Giorgio Benvenuti

She said he'd cut her off. He said he hadn't noticed and apologized. He offered to pump her gas. "They ended up shaking hands and talking almost as friends," said his mother.

Gruenther planned for an Air Force career as thoroughly as he planned to be a better goaltender. He later joked it had to work because he couldn't think of a Plan B. He joined JROTC his junior year at Summerville High and then landed a recommendation from his local congressman for a spot at the Air Force Academy. His aunt, Megan Mathias, lives in Colorado Springs and dropped him off at the start of his first year.

She remembered worrying that he was too free-spirited to adapt to cadet life. "I was hesitant to see him go, and he said, 'Auntie M, I'm fine,' and he just walked up those stairs. He was so excited to start that adventure," she remembered.

At the academy he joined the Wings of Blue parachute team and climbed Colorado's mountains during his free time. He graduated with distinction, and he and wife, Cassy—his high school sweetheart—ended up in Wichita Falls, Tex., where he served as a T-37 primary flight instructor for three years. When he graduated from F-16 training in Ohio, he rolled the dice and put Aviano down as his first choice.

*Gruenther (l) and fellow pilot Capt. Sean Hoeltje at a forward operating base in Afghanistan in 2011. An avid outdoorsman, Gruenther tried to start a recycling program in the combat zone. It was not a raging success.*

**Italian Coast Guard Rear Adm. Francesco Saverio Ferrara points at a map showing the search coordinates for Gruenther's F-16. The Italian Coast Guard led the search for Gruenther, whose body was not recovered for three days due to terrible weather conditions.**

And when he did something, he did it all the way. A big, rangy kid, he was a natural goalie. But he got books on goaltending and studied them and then went to a goaltending camp held in the summer in Colorado Springs, Colo., on the Air Force Academy grounds.

He pursued rock climbing with the same passion. By eighth grade, he and friends were going out after school and climbing local crags two or three days a week. He was a committed evangelist for the sport as well. "He was always enthusiastic about getting other people into it," said childhood friend and climbing buddy David Twining.

Sometimes Gruenther's desire to pass along his enthusiasm went pretty far. As an adult he told his mother he wanted to try base jumping. She thought jumping off a cliff with a parachute sounded way too dangerous and tried to talk him out of it. She went so far as to offer to pay for him to travel to Spain if he'd change his mind.

He called her the next day and said he knew she was really upset, but he'd

researched base jumping completely, purchased all the requisite safety gear, and was going with someone who knew what they were doing. "I'm an adult, and I want to do this, and, Mom, I want you to come with me," he said. So she did.

### Off to Aviano

Gruenther's family and friends remember him as a listener, someone who was always interested in the other person's point of view. Once he was driving along when suddenly another driver glared and flipped him off and then turned into a gas station. Gruenther followed her in, parked, and went up to her. He apologized and asked if he had offended her.

Photo via Cassy Gruenther



Cassy said she still remembers the day he found out that was where they were headed. "He was jumping around, going, 'We got Italy! We got Italy!'" she said.

Aviano sits near the foothills of the Alps, in northeastern Italy. Gruenther taught his squadron mates the names of the mountains they flew by and their most famous climbing routes. He had a passion for other cultures and languages and worked hard on his Italian.

Cassy said one of his proudest moments was when he went into a local bakery and ordered bread from a woman whose back was to him. When she turned around she was expecting to see a native. She did a double take on seeing that her customer was an American.

Gruenther had a number of good Italian friends, many of them fellow climbers or ultramarathon runners. He and Cassy traveled deeper into the country and around Europe whenever they could. "He loved all of it," she said of their time in Italy.

His fellow pilots remember him as a guy who met new arrivals at the airplane and would throw himself into cleaning the dirty dog crates that had carried their pets.

When the Triple Nickel deployed to Afghanistan in 2011 he tried to start a recycling program in a combat zone. Results were mediocre.

His results in combat were better. In Afghanistan Gruenther's squadron operated out of Bagram Airfield for six months. While deployed he flew 369 combat hours over the course of 17 missions. Gruenther fired 200 rounds of 20 mm ammunition and dropped 10 Joint Direct Attack Munitions in support of coalition troops in combat situations. He eliminated two enemy fighting positions, one cave, and eight enemy fighters.

In one mission Gruenther came to the aid of a US convoy ambushed and stopped by Taliban insurgents. The team was isolated on a dangerous curve in a rural road and taking fire from three directions. Gruenther blew over the firefight with afterburners on to get everybody's attention. That paused the firing but it soon resumed again. So he dropped a 500-pound bomb on a nearby ridge, and the Taliban decided it might be better to melt away.

Days later, he did something his colleagues would call "Gazaesque": He visited the tiny forward operating base of the Army soldiers he'd helped. He

was not sure they had ever met a fighter pilot. "They practically tackled me just to shake my hand and thank me for saving their lives. It was really cool," Gruenther told Summerville High students when he returned to speak in 2012. He said it was the best day of his war.

As a flight safety officer at Aviano, Gruenther spearheaded the implementation of a new safety action program. Ultimately this led to Aviano winning US Air Forces in Europe's 2012 Flight Safety Achievement for Combat Aircraft award. He himself was named the 31st Fighter Wing's staff agencies' 2012 Company Grade Officer of the Year.

### I Like People

Late in 2012, Peterson, the 555th commander, was talking with Gruenther in his office and asked him what some of his short-term goals were. Gruenther responded that he really wanted to be a flight commander. "In that uber-confident, almost childlike innocent way, with that big smile, he was like, 'I like people and I like helping people and that's what flight commanders do,'" said Peterson at the memorial service.

Peterson replied that he had no doubt Gruenther would be great at the job, and events were set in motion for him to become a flight commander. Early in January 2013, Peterson told Gruenther that he'd take over as a flight commander in a few weeks. "He was super pumped, super happy," said Peterson. "What I didn't tell him was I was also

*Below: Cassy Gruenther embraces her husband, Luc, on the flight line at Aviano after a deployment in 2011. Bottom, l-r: Gruenther's younger brother, Chance Hildreth, mother, Romel Mathias, wife, Cassy, Cassy's mother, Kerry Williams, and Cassy's sister, Janelle Williams, smile during a video at the memorial service for Gruenther at Aviano AB, Italy.*



USAF photo



USAF photo by A1C Matthew Lotz

going to put him in the instructor upgrade program. I was going to make him an IP. I was saving that one."

On Jan. 28, 2013, at about 7 p.m., local time, Gruenther and three other F-16 pilots departed Aviano on a nighttime opposed surface attack tactics (called OPSAT) training mission. Planned mission tasks included a run against ground

targets and threat actions against simulated surface-to-air missiles.

The pilots were wearing night vision goggles. Weather was not good. According to Gruenther's family, he and other pilots expressed some concerns about the conditions. Eventually they found a spot where they felt visibility was good enough to make their runs.





At about 7:48 p.m., Gruenther began his threat reaction against a simulated SAM threat. This was to include a “last ditch” maneuver, where a pilot attempts to avoid the incoming missile by visually acquiring it, then maneuvering the aircraft aggressively nose up or nose down, with altitude changes. At 7:49 p.m., Gruenther indicated he was executing his “last ditch” effort. He rolled his F-16 to the right and pulled the nose down, according to the US Air Force Aircraft Accident Investigation Board Report. For the next 10 seconds he maintained the nose-low attitude while continuing to roll to the right.

Gruenther accelerated through 400 knots (460 mph) as his altitude decreased to 17,700 feet. At 7:49 p.m. and 10 seconds his wingman indicated that his reaction against the simulated missile had been successful. Three seconds later, Gruenther replied, “Knock it off, I’m spatial D.”

Gruenther recognized that he had become spatially disoriented. He tried to maneuver to level flight, but seven seconds later he was at 10,000 feet with a descent rate of 57,500 feet per minute. At approximately 7:49 p.m. and 25 seconds he ejected, according to the accident board report. The F-16 was traveling at 655 mph and Gruenther would have been buffeted by extreme winds. The seat twisted when it came out of the aircraft and his helmet came off. He suffered fatal injuries during the ejection.

Accident board president Brig. Gen. Derek P. Rydholm concluded that the

mishap was caused by spatial disorientation, due to a combination of weather conditions, the pilot’s use of night vision goggles, the aircraft’s attitude and high rate of speed, and the pilot’s breakdown in visual scan.

Gruenther’s family said they believe he did everything he could in the circumstances. He was a highly rated pilot who faced a split-second life-and-death decision while warning lights and alarms went off as his aircraft plummeted toward the sea.

#### A Final Lesson

His mother said Gruenther, being the safety officer, would want others to learn from what happened to him. She said the pilots had discussed the lack of a visible horizon at length but eventually flew anyway. If they had listened to themselves a little more, perhaps they would have turned around and gone home. “Sometimes these guys get so caught up in it, they like to fly, they want to fly. But it might not be worth it to do so,” she said.

Gruenther was posthumously promoted to major. One thing his family members agree on is that he would have stayed in and continued to make the Air Force his career. Cassy said that when he was a T-37 instructor pilot he had a great touch with students, never talking down to them, always encouraging. “I

*One of Aviano’s F-16s, painted to reflect Gruenther’s posthumous rank of major, was put on display during the memorial service in a large hangar on the base. Some 1,000 people attended.*

think he would have been an amazing leader,” she said.

Besides climbing, photography was one of his hobbies. He left behind hundreds of shots of mountains, rivers, races, and rocks, and of Cassy and his friends.

“If you want to be ambitious like Gaza was ambitious, then just look at some of his photos and go out there and do what he was doing,” said the 555th’s Maj. Travis Winslow at Gruenther’s Aviano service.

Since his death, the family has created the Maj. Lucas Gruenther Memorial Fund. Friends have participated in all sorts of charitable outdoor activities, from mud runs to marathons, in an effort to raise money.

“Our goal is to pay for educational scholarships, maybe for kids who want to go to soccer camp, maybe for kids that want to rock climb,” said Cassy. “It’s that ‘I’m not going to give up, I’m going to get what I want’ attitude. We really want to be able to help people like that.” ■

*Peter Grier, a Washington, D.C., editor for the Christian Science Monitor, is a long-time defense correspondent and a contributing editor to Air Force Magazine. His most recent article, “The Aerodrome Fraud,” appeared in the December 2013 issue.*



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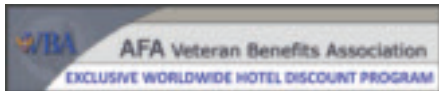


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# How Many Aircrew?

By Rebecca Grant

RATED AIRCREW MANAGEMENT IS A CONSTANT STRUGGLE, WITH EVER-SHIFTING VARIABLES.

**I**nsatiable... and growing. That's how the Air Staff describes demand for experienced aviators.

Yet some of the most experienced aviators are exiting the Air Force faster than planned. As of Oct. 31, 2013, only 162 of 250 experienced fighter pilots took a nine-year, \$225,000 bonus offered to them to keep experienced aviators in the Air Force. The Air Force is also short of pilots for its remotely piloted aircraft.

Producing experienced aviators—especially fighter pilots—is complicated. So complicated, in fact, the Air Force convenes a four-star summit every year to keep the process on track. It's called rated management and it's one of the black arts of airpower.

The delicate balance of rated management has been a struggle for the Air Force ever since the first big force structure cuts of the post-Cold War era. The shrinking USAF force structure is largely to blame.

"You need airplanes to fly to produce valid, credible warriors in the air," said Thomas Winslow, an Air Staff rated management program analyst.

Over the last 10 years, the transition to a much smaller fleet with diverse taskings has turned rated management into a roller coaster whose ups and downs affect the force for years to come.



USAF photo by Josh Plueger



USAF photo by SSgt. Jorge Intriago

*Above: Maj. Ryan Corrigan in the cockpit of an F-16 at McEntire JNGB, S.C., before a readiness evaluation. Left: Maj. James Podany (l) and Maj. Michael Bosiljevac move an E-4B into position to be refueled by a KC-135 during a training mission. Rated management experts will track mobility airmen carefully as flying hours decrease after the drawdown in Afghanistan.*

## Rated 101

The objective of aircrew management is to meet near-term operational requirements while building leaders for tomorrow. Done right, rated force management yields a healthy aircrew force that is combat-ready to support current and future missions.

Pilots, combat systems officers, remotely piloted aircraft pilots, and air battle managers make up the rated officer force. Career enlisted aviators fall under the rated heading, too.

Rated airmen do much more than fly. Officers fill management duties at the wing level and above. Experienced aviators are those with more than 500 hours in their weapon systems. These airmen are coveted for staff billets at major commands, combatant commands, the Joint Staff, and the Pentagon, and of course, the Headquarters USAF staff.

C. J. Ingram, John Wigle, and Winslow work rated management issues in the Air Force's A3/5 headquarters division. This trio of experts described the process to *Air Force Magazine*.

Their main focus is the officer force of lieutenants through lieutenant colonels. Rated management has two major parts.

First is pilot production and absorption. The process begins as young officers enter undergraduate pilot training. Yearly pilot

production goals are set by authority of the Chief of Staff, and after graduation the newly minted aviators move on to flying training units to learn the ins and outs of the F-16, C-130, or other aircraft. Pilots complete a syllabus of flying training specific to their aircraft then transfer to their operational units. The key to making it all work is absorption: how fast the squadron can take new pilots in, while still ensuring all fly enough hours to gain experience and maintain unit readiness.

Here the teetering begins. Squadrons must maintain a constant ratio of 45 percent new and 55 percent experienced aviators. (Right now, readiness depends on having enough experienced pilots to complete missions.) Having a ready force five or 10 years hence depends on training the new cadres.

The experienced pilots are also tapped as supervisors, for safety and staff functions. Thus you need greater than half of the force experienced to fill the management positions.

On the other hand, if you have too few inexperienced in the squadron you aren't absorbing as many as you could. Fill in too many lieutenants and there won't be enough instructors to fly them, and the flying hours allotted won't



feed them all. Years down the road that year group will be short of members for more senior positions.

Timing is everything. It takes about 500 hours for newly graduated pilots to become experienced aviators. The Air Force standard is to complete that process in 2.6 years.

Underfunding flying hours can throw off the whole process. At 2.6 years after a lieutenant shows up at the squadron, he should be experienced, explained the experts. If the lieutenants do not fly as many hours due to budget cuts, they won't be experienced. That causes problems in the squadron and slows the pipeline by not freeing up places for the next newbie lieutenants exiting FTU.

Of the four major rated groups, the healthiest are air battle managers and mobility pilots who fly aircraft such as the C-17s, C-5s, KC-135s, and KC-10s. "The mobility dilemma is different," explained Ingram. "You can load up multiple crews on a trip" and gain experience for all.

Higher mobility pilot production has also topped up total rated production and helped fill experienced aviator staff billets. The way planners get the total to equal is with more mobility than needed, explained the Air Staff experts. Air battle managers with their command and control proficiency have likewise taken positions in air operations centers and filled other experienced aviator billets.

However, the Air Staff experts are still concerned about the mobility pilots. Those who fly airlift and tankers fill vital missions. Over the past decade, overseas contingency operations funding has injected flying hours into the mobility pilot force, and the wrap-up in Afghanistan means the demand won't be there to fly as many sorties.

A reserve of experience is no bad thing, but the rated management experts will be tracking the mobility force

carefully. As USAF reduces flying hours, it doesn't want to strand any of them.

### Fighter Pilot Woes

Rated management would be a lot simpler except for the fighter pilots. Single-seat aircraft and tactical training place stringent demands on the seasoning process. The Air Staff experts explained why the fighter community is so difficult to manage. "Everything is done in pairs in the fighter community," commented Wigle. "You have a wingman and a flight lead. You can have half your cockpits be inexperienced, but the other half must be experienced."

Not too many years ago USAF had a surfeit of fighter pilots—or so it appeared. In the early 1990s, Chief of Staff Gen. Merrill A. McPeak cut back more than 1,500 active component pilots in Fiscal 1989 and Fiscal 1990, to around 500 starting in Fiscal 1994.

Initially, "the fighter pilot shortage was masked because we had F-4 weapon systems officers available in large numbers to fill fighter requirements," explained Wigle. More



*Right: Maj. Erin Kelley performs a preflight check on a C-130H. Below: Maj. Edward King completes his checklist on a JSTARS surveillance aircraft before engine start at Robins AFB, Ga. Rated management is a delicate operation, and even minor adjustments to training numbers can swing the operations pendulum wildly.*



than 2,600 two-seat F-4 Phantoms were delivered to USAF between 1963 and 1979. Training F-4 crews created a prime force of experienced aviators seasoned in conflicts from Vietnam to Operation Desert Storm, and some F-4 weapon systems officers later became pilots. Others had the combat and operational experience to fill aviator slots on staffs and at major commands.

Retirement of the last manned F-4s in 1996 ended the years of plenty.

By then, a shortage was looming and the combat experience was lodged in specific year groups. The Air Force held its first rated management summit in the fall of 1996, where then-Lt. Gen. John P. Jumper presented a plan to restore production—especially in the fighter community.

Chief of Staff Gen. Ronald R. Fogleman set the dial for pilot production at 1,100 pilots per year. Within that, USAF set a goal of 370 fighter pilots per year—a number that ended up changing every year or two, and the Air Force seldom filled the quota. However, the overall goal of 1,100 pilots per year remained pegged until 2007.



USAF photo by MSGT. Ben Bloker

Part of the rationale was to overcorrect for problems caused by the quick drawdown of the early 1990s. Increasing utilization rate for aircraft might allow the USAF to fly its way out of the problem. Over time, fighter pilots evolve from two-ship tacticians to planners of large-force exercises and gain the maximum exposure in how to execute air campaigns. Seasoned fighter pilots are USAF's single largest group of keepers of the operational art of airpower in joint campaigns. That skill set remains in demand for squadron and wing leadership and at numbered air forces, major commands, joint staffs, and beyond.

More summits followed in 1999 and 2001. The April 1999 summit raised the unit experience level from 50 percent to 55 percent.

Still, the problem persisted. Rated management turned out to be so delicate that one correction bred another problem. Increased pilot production in the late 1990s led the Air Force to shuffle pilots off to units that had room to train them—not necessarily to where they were most needed.

The flow diluted training for all. By the year 2000, the Combat Air Forces started to see signs of degradation in training and readiness at operational units from accepting too many new pilots. The problem got the name “Pope syndrome” when the supply of new pilots to the A-10 exceeded requirements for three years straight. Only 56 new pilots out of UPT were needed for the A-10, but USAF sent out a total of 80 in Fiscal 1999. Readiness and training levels actually began to retrograde, recalled the Air Staff experts.

Before long, the pendulum swung the other way. The fighter drawdown also began to pinch production of experienced aviators. “The Air Force faces an increasing demand for personnel with pilot skills,” wrote the authors of a RAND study, covering 2005 to 2008, entitled “Fighter Drawdown Dynamics: Effects on Aircrew Inventories.” “With fewer aircraft, it is difficult for all pilots to fly enough to maintain their combat skills, and it is particularly difficult for new pilots to gain enough experience in their first flying tour to be prepared for follow-on nonflying and flying positions.”

RAND recommended draconian cuts so that the Air Force would produce less than 200 new pilots per year by 2016. The RAND team feared that failing to reduce the flow of new pilots would “damage the combat capability of fighter units.”

That wasn't quite the solution either. Fighter pilot production indeed slowed from the 370 objective of the late 1990s to 330 in 1999 and down to 297 per year in 2005. Concentrating on not introducing too many lieutenants created new dangers. Experience levels crept up to 70 percent in some fighter squadrons. While overexperience was not a problem in itself, it signaled a long-term trough in the overall inventory for pilots entering the system in those years. This left a permanent mark on the shape of the force.

Then came the deep force structure cuts of 2009 and 2010. Soon there was no way to dig out of it, as the Air Staff team put it.

“You need airplanes to fly to produce valid, credible warriors in the air,” Winslow said. “We don't have the resources, infrastructure, or airplanes to create as many fighter pilots.”

Rated management was again at an inflection point. Chief of Staff Gen. Norton A. Schwartz convened a daylong rated management summit in September 2011 that reset the fighter pilot production goal at 278 per year. Other solutions included sending more aviators through reserve component FTUs or shifting more of the training syllabus to operational units. For example, a new pilot might simply be familiar with a task, rather than proficient in it.

Air Force leaders also decided to hold the rated and aircrew summits every year to monitor the situation. These meetings now take place the day after the Air Force Association's National Convention.

Of course, the annual summits did not plan on sequestration. “The biggest problem was in the UPT environment,” said Wigle. Simulator and contractor maintenance were both cut. The FTUs fared better because most of their maintenance is performed by Active Duty airmen.

### Manning for the Unmanned

Meanwhile, remotely piloted aircraft entered the rated management mix. Rapid wartime production of Predators and Reapers also increased demands for experienced aviators to fly the unmanned airplanes.

“The RPA pilot career field hovered around the 50-person level in the late 1990s but now exceeds 1,300 and is growing to approximately 1,650 by Fiscal Year (FY) 17,” wrote Col. Bradley T. Hoagland in a 2013 Brookings Institute report, “Manning the Next Unmanned Air Force: Developing RPA Pilots of the Future.”

The Air Force consciously sent top aviators to fledgling Predator units in the mid-1990s. Consequently, experienced pilots



from the F-15, F-16, and other weapons systems made up the first cadre of RPA pilots. Operationally, it worked. Predator mission success soared.

And here came another wrinkle in rated management. Loaning rated officers out to be RPA pilots drained off experienced aviators. “The current requirement that UAS [unmanned aerial systems] operators who are fighter pilots must be able to return to a fighter unit is unmanageable—there are not enough fighter aircraft to allow it,” the RAND report stated bluntly.

The solution was to treat RPA pilots as a distinct career field. A novel step was routing some UPT graduates directly to RPA units. Air Staff managers reckon there are now close to 300 RPA pilots who are rated for unmanned but not for manned aircraft. That number will take over a larger share, Air Staff officials said, and UPT graduates lent to the RPA field will get sent back to manned aircraft.

The RPA community is now confronting its own rated management hurdles. In his Brookings report, Hoagland cited “significant institutional issues,” including inadequate prescreening, high washout rates, and limited educational opportunities contributing to low promotion rates to the rank of major.

Fixes are in order. “A robust RPA community begins with a more deliberate accessions process and carries through to a continuum of education and training opportunities later in an officer’s career,” wrote Hoagland. That advice would apply across all of rated management.

One thing is certain: RPA aviators will be tracked and managed like their manned counterparts. Rated is rated, the Air Staff experts confirmed. RPA pilots are a part of it. The new 18X cadres are still young, not yet experienced enough for joint staff assignments.

### Future With F-22 and F-35

The Air Force’s newest fighters are creating fresh challenges for rated management. The biggest problems with F-22 management are fleet sizes and FTU composition. Originally the F-22 training unit at Tyndall AFB, Fla., was sized for a high utilization rate, but the F-22s aren’t flying that.

Training for the F-22 was derived from the F-15C mission. As it turned out, F-22 pilots needed a much larger syllabus focusing well beyond the air-to-air specialization of the F-15C. “The way the F-22 is used involves more large-force capabilities,” noted Wigle. F-15Cs work often as two-ships while F-22s more frequently employ as four-ship formations.

Initial F-22 training takes place at Tyndall. However, the Tyndall F-22s don’t have the latest software modifications. Prime Block 30 and Block 35 F-22s reside at JB Langley-Eustis, Va., and JB



*Capt. Jake Morgan, a C-130H navigator, monitors radio traffic during a multinational humanitarian mission to the Philippines. Of the major rated groups, mobility airmen are the “healthiest,” say experts, because several crews can fly on each mission.*

Elmendorf-Richardson, Alaska, where they are ready to meet combat tasking. As a result, experts are looking at a significant reduction in the F-22 syllabus at Tyndall. More training hours would shift to line F-22 units at Langley, Elmendorf, and JB Pearl Harbor-Hickam, Hawaii.

One fix already in place is to rely on T-38s to help train Raptor pilots. The Air Force placed T-38 programs at Tyndall and Langley so T-38s can fill out formations or perform the role of adversaries. “They play targets for F-22s,” said Winslow.

T-38 pilots at Langley embrace it. “You know going out the door that there’s

a pretty good chance you’re gonna die,” Lt. Col. Derek Wyler told the *Daily Press* of Hampton Roads, Va., in April 2012. Wyler was an F-15 pilot before coming to the adversary mission. The use of T-38s saves Raptor flying hours and enables Raptor pilots to concentrate their F-22 sorties on honing their skill as killers against multiple aircraft. Participants say the T-38s bring an advantage of dissimilar training types. The F-22s were flying against themselves too much, noted the Air Staff rated management team. Too much fifth generation versus fifth generation was not good as a realistic training environment. The T-38s “can put up a whole bunch of numbers, which gives them a tactical problem they have to solve—at a very economical price,” added Wyler.

As the Air Force’s newest fighter, the F-35 will open a new era in rated management. Details are still in the works, but several elements are already taking shape.

F-35 training at Luke AFB, Ariz., will mingle aircraft and pilots from the Air Force and other partner nations flying the F-35A, or the conventional takeoff and landing version. Allies will bring their F-35s into the FTU after acceptance from the production line. Each nation will get a set number of hours—say 3,000—per year for every aircraft allocated to the unit. With those hours, allies will do everything from initial training to upgrades and cross-training of pilots from the Tornado, F-16s, and other aircraft.

What’s unique is that the F-35 training squadrons of 24 primary aircraft authorized will be managed without regard to the nationality of the jet’s owners. “When you step, you don’t know if you are going to fly a USAF jet or partner aircraft. You fly whatever jet necessary,” as an Air Staff expert described it.

That’s the theory, for now. The challenge, as it has been for years, lies in making it work. The F-35 will add one more variable to the delicate balance of production, absorption, and experience of the rated force. ■

*Rebecca Grant is president of IRIS Independent Research. Her most recent article for Air Force Magazine was “The Growth at Guam” in the December issue.*

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# Building the Pilot Force

Photography by Jim Haseltine

Randolph's 12th Flying Training Wing keeps the Air Force stocked with capable pilots.





*A trio of T-6 Texan IIs from the 559th Flying Training Squadron practice formation flying during a mission from JBSA-Randolph, Tex. The single-engine prop T-6 supplanted the twin-jet T-37 Tweet in Air Force training squadrons over the last 12 years.*



**J**BSA-Randolph, Tex., serves as home to both Air Education and Training Command and the 12th Flying Training Wing. The unit provides basic and advanced pilot training, along with combat systems officer training. The Randolph flight line hosts three types of trainers: the Raytheon T-6A Texan II that all student pilots start out with; the T-1 Jayhawk, flown by students headed for tankers and transports; and the Northrop T-38C, for pilots headed to fighters and bombers. The T-6A joined the fleet in the early 2000s, the product of the joint primary aircraft training system (JPATS) program with the Navy, which also uses it to train pilots and backseaters. The Jayhawk was introduced in the early 1990s, when USAF began specialized undergraduate pilot training, and the venerable T-38 recently celebrated its 52nd anniversary with USAF.





**11** A T-38C takes off on a mission from Randolph. The C upgrade, completed a few years ago, updated the vintage "White Rocket" with cockpit amenities more similar to those modern fighter pilots enjoy, such as a head-up display and updated navigation, plus engine improvements. Distinguishing the A and B models from the C are the latter's straight air inlets. **12** A pair of T-6s of the 559th Flying Training Squadron in the break. **13** Randolph's iconic "Taj Mahal" tower overlooks the "Missing Man" monument dedicated to fliers lost in Southeast Asia. **14** Maj. David Braun (on the wing) and Lt. Col. Christopher Westin of the 99th FTS preflight a T-1. **15** (l-r) Lt. Col. Joseph Mirarchi, Lt. Col. Michael Simon, Maj. Thomas Young, and Capt. Christopher Williams head back for a debrief of their T-38 sortie. **16** A retired T-38A rests on a pedestal in one of Randolph's parks.



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111 The T-38s gave up their white paint for a more “operational” scheme, in keeping with their mission of combat preparation. Formation has always been a key skill for fighter pilots. Here three T-38s keep it tight. 121 A T-38C over Texas. Forward visibility for the instructor, in the elevated backseat, is excellent. 131 Maj. Cameron Williams and Capt. Matthew Roberson of the 560th FTS strap into their T-38. 141 A T-38C taxis out for a mission. 151 Lt. Col. Curtis Johnson preflights a T-6 under a sun shelter on the Randolph flight line. The shelters reduce wear and tear on the aircraft as well as on the airmen working on them in the sometimes brutal Texas heat.







*111 Roberson preflights his T-38. 121 Three 560th FTS jets fly formation. 131 Capt. Eric Reichert checks out a T-6 before a mission. Though some complained that going from the jet T-37 to the turboprop T-6 was a step backward, the T-6 in many ways outperforms its predecessor. 141 A T-38 taxis past T-1s of the 99th FTS at Randolph. 151 A T-6 banks during a mission. Dark blue areas on the aircraft are not just decorative, but they tend to be where soot and dirt accumulate, allowing the aircraft to look better between washings.*







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111 T-38s pull a formation right turn. Formation flying is crucial in fighters, not just to hold combat formations but also because fighters must routinely practice aerial refueling, requiring precise station-keeping relative to another aircraft. 121 Maj. Anthony Straw checks out the gear of a T-38 during a preflight. 131 The upgrade to the T-38C was called the Pacer Classic program. 141 Maj. Cameron Williams signals ground handlers to watch out as he gets ready to test the control surfaces. 151 A three-ship of T-38s awaits clearance to taxi. The T-38 has trained some 60,000 USAF pilots as well as thousands more from allied countries.



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111 The T-38 was developed in parallel with Northrop's export fighter, the F-5, and both served in USAF, Navy, and Marine Corps as "aggressor" adversary aircraft. 121 Though it has served brilliantly, the Air Force says the T-38 must soon be replaced, and planning has begun for a new trainer, the T-X. Here, Dominicio Delafuente and Javier Chavez prepare to reinstall a T-38's tail after engine service. 131 A T-6 of the 559th FTS touches down after a training flight. 141 Lt. Col. Eric Moraes, Maj. Cameron Williams, Lt. Col. Kristen Kent, and Roberson (l-r) walk back to the 560th FTS after a mission. ■



By Robert S. Dudley

## Strangelove Strategy

"I don't think it's [US-Iran war] inevitable, but I think if you have to hit Iran, you don't do it with boots on the ground. You do it with tactical nuclear devices and you set them back a decade or two or three. I think that's the way to do it, with a massive aerial bombardment campaign."—*Rep. Duncan D. Hunter (R-Calif.), House Armed Services Committee, interview on C-Span, Dec. 4.*

## Eternal Life, Found

"There is one great numerical advantage the US has against potential adversaries. ... That is the size of our defense bureaucracy. While the fighting forces have steadily shrunk by more than half since the early 1990s, the civilian and uniformed bureaucracy has more than doubled. ... There are currently more than 1,500,000 full-time civilian employees in the Defense Department—800,000 civil servants and 700,000 contract employees. Today, more than half of our Active Duty servicemen and women serve in offices on staffs. ... The constant growth of the bureaucracy has resulted from reform initiatives from Congress and by executive order, each of which established a new office or expanded an existing one. These new layers have accumulated every year since the founding of the Department of Defense in 1947. ... Each expansion of the bureaucracy is, to paraphrase President Reagan, the nearest thing to eternal life to be found on Earth."—*Former Secretary of the Navy John F. Lehman Jr., op-ed in the Wall Street Journal, Dec. 9*

## The China Syndrome

"We ... are deeply concerned by the attempt to unilaterally change the status quo in the East China Sea. This action has raised regional tensions and increased the risk of accidents and miscalculation."—*Vice President Joe Biden on China's new air defense identification zone, remarks in Tokyo, Dec. 3.*

## ... Or Its Purpose

"We know there will be an Army in 2030. But we don't know its composition or size."—*Rickey Smith, director of the Army Capabilities Integration Center, NationalDefenseMagazine.org, Dec. 1.*

## Eye on the Prize

"We don't exist to fight a counter-insurgency fight. We can help in that,

but major air forces exist to fight a full-spectrum conflict against a well-armed, well-trained, determined foe. And if we can't do that for the nation, then I don't think we're doing our job."—*Gen. Mark A. Welsh III, USAF Chief of Staff, Defense Writers Group in Washington, D.C., Nov. 13.*

## Our Fair Academy

"It was like a spy movie. I worked on dozens of cases, did a lot of good, and when it all hit the fan, they didn't know me anymore."—*Eric Thomas, Air Force Academy cadet ordered to inform on fellow cadets but later expelled for actions required to do so, Colorado Springs Gazette, Dec. 1.*

## Best-Laid Plans

"I'm all for a short, brief, precise, limited, controlled conflict, ... but we should certainly have the depth available in the Active [Duty force], Guard, and Reserve in order to account for the very good possibility that we won't be able to control it. ... There is hubris in the belief that war can be controlled. War punishes hubris."—*Army Gen. Martin E. Dempsey, Chairman of Joint Chiefs of Staff, at Reagan Library Defense Forum, Simi Valley, Calif., Nov. 16.*

## Substandard Policy

"We clearly have degraded readiness in the military right now. What we've done is greatly raise the deductible. If you never have to make a claim, you won't notice it. If you have to make a claim, if there is a major contingency operation, I think we will regret what we've had to do."—*Pentagon comptroller Robert F. Hale, remarks to the Defense One Summit in Washington, D.C., Defense News, Nov. 20.*

## Through the Looking Glass

"Morale was low at times—very low. ... We all acknowledge their importance [nuclear weapons], but at the same time we really don't think the mission is that critical. ... We practice for all-out nuclear war, but we know that isn't going to happen."—*Andrew Neal, former Minuteman III launch officer at F. E. Warren AFB, Wyo., Associated Press, Nov. 12.*

## Huge Malevolence

"I think terror is up worldwide. The statistics indicate that. The fatalities are way up. The numbers are way up. There are new bombs, very big bombs. ... There are bombs that go through magnetom-

eters. ... There are more groups than ever. And there is huge malevolence out there."—*Sen. Dianne Feinstein (D-Calif.), Senate Intelligence Committee, interview on CNN, Dec. 1.*

## Cough It Up, Iran

"We must avoid an outcome in which Iran, freed from an onerous sanctions regime, emerges as a de facto nuclear power leading an Islamist camp. ... We should be open to the possibility of pursuing an agenda of long-term cooperation. But not without Iran dismantling or mothballing a strategically significant portion of its nuclear infrastructure."—*Henry A. Kissinger and George P. Shultz, former Secretaries of State, Wall Street Journal, Dec. 2.*

## Don't Be Late

"If we're not ready for all possible scenarios, then we're accepting the notion that it's OK to get to the fight late. We're accepting the notion that the joint team may take longer to win, and we're accepting the notion that our warfighters will be placed at greater risk. We should never accept those notions."—*Gen. Mark A. Welsh III, USAF Chief of Staff, testimony before Senate Armed Services Committee, Nov. 7.*

## Pluses and Minuses

"Morale is really as bad as I've seen it—on the civilian side and the uniformed side. But it is better than you think it is, and better than we deserve it to be."—*Acting Air Force Secretary Eric Fanning, remarks to the Defense One Summit in Washington, D.C., Nov. 14.*

## Revenge of the Nerds

"The ratio of 'checkers' to 'doers' in this department is way too high. You can't have a management environment where there are more people looking over the shoulders of people doing real work than there are people doing real work."—*Former Deputy Defense Secretary Ashton B. Carter, Wall Street Journal, Nov. 29.*

## Cockroaches, Ahoy!

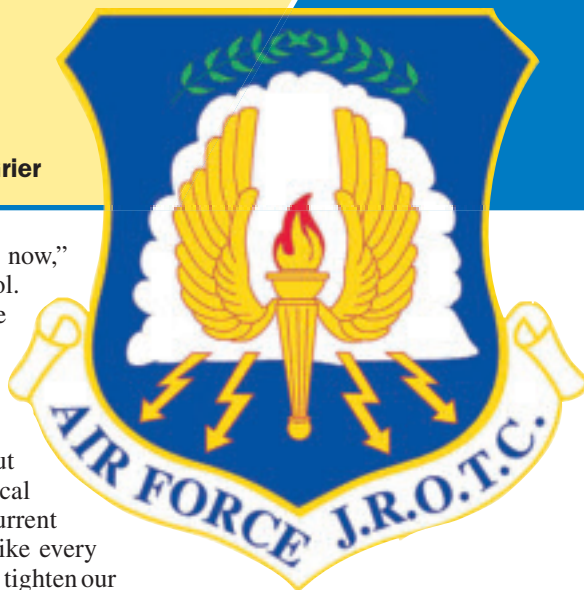
"It's like finding a couple of cockroaches in the kitchen when you turn on the light. This suggests that this area of contracting is infested with problems."—*Charles Tiefer, former member of commission on defense contracting, on recent bribery scandals in the Navy's ship supply network, New York Times, Nov. 29.*

# AFJROTC

## in a Holding Pattern

**In recent years, the Air Force-inspired high school citizenship program saw more students, instructors, and units than ever. But plans for growth are falling victim to shrinking budgets.**

By Peter Grier



**A**ir Force Junior Reserve Officer Training Corps is increasingly popular with its high school participants and congressional authorizers—but with this comes growing pains.

AFJROTC provides high school students with leadership training and science-oriented classroom instruction, plus the opportunity to engage in a wide variety of services to local communities. JROTC units carry the colors at football games. They march in local parades and raise money for schoolmates affected by illness. They host dances for veterans and compete against each other in athletic challenges.

All those activities have combined into a package that's proved increasingly attractive to teenagers in recent years. Enrollment in AFJROTC has risen steadily from some 101,000 cadets in the 2008 school year, and was projected to reach 121,000 in 2013.

But expansion is now on hold. Along with other programs in the Department of Defense, Air Force JROTC headquarters faces budget sequestration issues, which has sliced into its plans for the future.

"We are at a pause right now," said AFJROTC Director Col. Cameron L. Gilbert. "We are trying to grow," but even as the number of cadets increased, the program's funding declined. AFJROTC sustained a \$12.5 million cut in program funding from Fiscal 2011 to 2014, leaving its current budget at \$48.5 million. "Like every other organization we have to tighten our belts a little bit," said Gilbert.

Of course JROTC has experienced cutbacks before, particularly in the aftermath of major conflicts when the US military shrank and the civilian population wanted to focus on more overtly peacetime pursuits.

AFJROTC's goal is to develop young American citizens with a sense of responsibility and accomplishment. While some cadets do eventually join the ranks of the military, it is not intended as a recruitment tool, and students do not incur any obligation to the Air Force.

### State Units

In the United States the idea of organized training for a young cadet corps

goes back more than 100 years. In 1911, Army Lieutenant Edgar Z. Steever was serving as an inspector-instructor for military units in Wyoming when he suggested a noncompulsory cadet corps composed of high school students. They would learn self-control and service to their community.

In 1916, with US involvement in World War I looming, Congress passed a National Defense Act authorizing both senior ROTC for college students and a junior version of the same program for high schools. The Army provided cadets with uniforms, equipment, and instructors. The senior ROTC units got Active Duty military members as lead-



ers, while junior ROTC units received a mix of some Active and some retired military personnel. At the time successful JROTC graduates could earn a commission in the reserves when they reached the age of 21.

In 1963 Secretary of Defense Robert S. McNamara, in search of budget cuts, slashed JROTC funds and converted some units to a cheaper rival program, the National Defense Cadet Corps, funded largely by schools themselves. This was not well-received by many civic leaders, who saw JROTC as a means to fight delinquency and build local spirit. Congress moved to revive the program by passing the ROTC Revitalization Act of 1964, expanding senior and junior ROTC and authorizing all branches of the military to offer their own JROTC programs. The bill also provided financial incentives for high schools that hired military retirees as instructors, setting up a partnership structure that remains in place today.

The Air Force launched its JROTC effort in 1966 with 20 units. In 1972, the service opened JROTC to females; they now constitute 37 percent of the cadet corps. Today there are 847 units located in the continental US and 17 overseas. An authorized headquarters staff of 32 oversees these units and approximately 1,900 instructors.

A typical high school unit has one retired officer instructor, one retired noncommissioned officer instructor, and some 125 cadets. In terms of comparing the Air Force program to those of the other services, the distribution of JROTC units reflects the relative size of military branches. Thus the Army is entitled to 47 percent of all JROTC squads, since it is 47 percent of the entire US military's manpower. Today the Army has more than 1,700 programs. The Air Force is next in size, with 27 percent of authorized JROTC units. The Navy has an allocation of 20 percent, and the Marine Corps has six percent.

AFJROTC officials say they would like to increase the program's presence in states where it is underrepresented. In the 1960s, when the Air Force program was just taking off, many of the schools requesting units were located in southeastern states, generally more conservative and with more of a military tradition than states in the northern or West Coast regions. Officials at the time

Photo via La Quinta High School AFJROTC



**AFJROTC cadets from La Quinta High School, La Quinta, Calif., participate in tug-of-war as part of a fitness challenge event.**

approved many of these applications to get AFJROTC off to a good start.

Since then Congress has voted to urge the services to maintain a "fair and equitable distribution" of JROTC units among the states, similar to the way they are equitably distributed among the services themselves. Due to this, AFJROTC's ultimate goal is for each state's share of units to reflect that state's share of the total number of US high schools.

Some states are oversubscribed. Given its number of high schools, Georgia should have 21 AFJROTC units, for instance. It currently has 63. Texas should have 65, but has 102.

The problem for JROTC leadership is that demand for new units is strongest in such states. Right now there are some 220 schools on a waiting list to open new AFJROTC programs, but many are from Georgia, Texas, Florida, and South Carolina.

"It is very difficult for a new school in an overrepresented state to receive an offer to open an AFJROTC unit," stated AFJROTC's 2013 annual report.

The flip side of this coin is that requests from underrepresented states get a boost up the list. Among those high on the corps' wish list are California, Pennsylvania, New Jersey, and Iowa. For example, California's "fair share" of units would be 106, but the state has only 60.

### **Life Skills and Leadership**

"But right now our top order state would be Idaho. That would be the No. 1 unit we could open," said Gilbert of AFJROTC. Idaho earns this spot because it is one of only two states—the other is

Montana—having no AFJROTC presence at all.

The point of AFJROTC is not to provide recruiters a stream of youngsters prepared for military service, say its leaders. "It is a citizenship development program, from the Air Force perspective," said Gilbert. The steady increase in numbers shows that this approach has appeal, he said. "A lot of young men and women enrolled right now see the benefits of the program."

These cadets wear uniforms supplied by the Air Force. They take leadership education that includes lessons in uniform wear and drill, communications skills, and financial management. Aerospace science classes teach the history of aviation and the principles of flight and navigation, among other things.

Color guard is perhaps the extracurricular AFJROTC activity that draws the most attention. These units present the flag at athletic events and assemblies in many schools. But marksmanship, model rocketry, and outdoors events such as orienteering are big draws for cadets as well. For cadets interested in becoming pilots, AFJROTC, in some areas, partners with the Civil Air Patrol to offer a flight orientation program. Many JROTC classrooms have PC-based flight simulators.

Instructors do introduce cadets to military basics but they also discuss advantages and opportunities for many civilian careers. For example, many units participate in the Air Force Association's popular CyberPatriot cyber defense competition, where they learn valuable computer skills.

"Air Force JROTC is really teaching these young men and women life skills,



Photo by Susan White

**Cadets Sydney White (l) and Kortny Brothers from the North Point High School, Waldorf, Md., AFJROTC unit. In addition to the 48 states with an AFJROTC presence, units are also based in Puerto Rico, Italy, Germany, Belgium, Netherlands, the UK, Japan, South Korea, and Guam.**

basic things they will need to survive and succeed as they move past high school,” said Gilbert.

JROTC is particularly popular in rural and inner city areas where it can provide structure and examples of leadership that may otherwise be hard to come by. For those without mentors or many positive adult role models, the program can encourage students to do more than society expects, said program officials.

Ninety-one percent of principals whose schools have AFJROTC units strongly agreed that the program boosted graduation rates, according to a 2012 survey. Eighty-five percent agreed it led to better attendance. Seventy-six percent agreed that it led to lower suspension rates.

AFJROTC’s diversity is one of its other strengths. African-Americans constitute 28 percent of cadets, as opposed to a 16 percent share of high school students overall; 11 percent of cadets are multi-racial, and 11 percent Hispanic. Forty-three percent are Caucasian. “We do a very good job of bringing in a diverse population,” said Gilbert.

The program also portrays the Air Force in a positive light for kids who might not have any idea what the military is about. “It creates a popular picture of the Air Force. ... It may entice a kid who sees it,” said Gilbert.

While AFJROTC may not be intended as a recruiting tool, it does at least spark some interest in national service. There is little doubt that a number of participants join the military because of their high school JROTC experience.

In 2012, about 13 percent of Air Force first-time enlistees had some experience

with JROTC, for example. About four percent had been in AFJROTC in particular. About 10 percent, or 104 cadets, of the Air Force Academy’s 2012 freshman class had experience in AFJROTC units. Some 4.5 percent of officer graduates who earned a commission at the end of basic officer training reported having joined AFJROTC in high school.

### **Congressional Favor**

Some of this results from incentives offered to JROTC youngsters. A student who completes two years of the program is entitled to the grade of E-2 following completion of basic military training. A three-year JROTC veteran can join up as an E-3 airman first class. In addition, each service academy sets aside 20 appointments for JROTC cadets.

AFJROTC instructors are retired members of the armed forces. They wear Air Force uniforms and teach an Air Force-designed curriculum. Even so, they are employees of the schools they teach in, not the US military. By law they make at least as much in pay and allowances as they would if they were still on Active Duty. To bring their compensation to this level, school districts and JROTC headquarters split the amount between their retired and Active pay 50-50. That is just the floor for pay, however. Some 85 percent of schools pay JROTC instructors more than the legal requirement.

Instructors are a huge budget item for JROTC. More than 91 percent of the amount of money the program re-

ceives for operations and maintenance goes to instructor salaries. Despite the financial incentives, finding enough qualified instructors was a problem in the past. AFJROTC officials said this is no longer the case, as they now have a 98 percent fill rate and more than 1,000 applicants on file.

“We don’t hire for the schools,” said Gilbert. “We present applicants to the schools and the schools hire them.”

But money became a challenge for JROTC even before budget sequestration kicked in last year.

“Over the last three years the funding made available to us has significantly decreased,” said AFJROTC Deputy Director Greg Winn. “But even as that funding has decreased, cadet enrollment and what instructors have been able to do has increased, which is a testament to the quality of instruction.”

This is why no new units are in the works at the moment. There are not enough resources to set them up. In fact, the number of units has regressed from a high of 884 in 2010.

Some schools, hard-pressed themselves, have canceled their AFJROTC units to save money. In the short term, program leaders are aiming to maintain stability at the level of some 870 units, per a directive from the Office of the Secretary of Defense.

“As we proceed we already have the congressional favor. It’s a matter of matching that with the funding so the program can move forward and we can reach out to more kids and have a positive impact,” said Gilbert. ■

*Peter Grier, a Washington, D.C., editor for the Christian Science Monitor, is a long-time contributor to Air Force Magazine. His most recent article, “The Aerodrome Fraud,” appeared in December.*





# WARBIRDS

By Frederick A. Johnsen



*P-40 Tomahawk AK295 on an early morning flight over New Zealand in 2011.*

Photo by Gavin Conroy via Lewis Energy Group

**Restoring vintage aircraft to like-new condition takes time, money, expertise—and lots of TLC.**

**T**HE scarcity of some World War II airframes today drives a small industry that can take what can only be described as airplane DNA and deliver a restored, flying aircraft. Restoration technology now makes it feasible to resurrect historic aircraft from little more than dented scraps of metal.

A striking example of this artistry is one Curtiss P-40C Tomahawk that survived a crash landing in 1942 to emerge as an award-winning restoration indistinguishable from the day it rolled off the Curtiss assembly line in 1941. The restoration shunned the iconic, but now ubiquitous, “Flying Tiger” shark’s mouth paint scheme to create instead a rugged-looking US Army Air Corps fighter of the type that rose to meet Japanese warplanes over Pearl Harbor on Dec. 7, 1941.

The Tomahawk’s odyssey began when it was earmarked for the British Royal Air Force and then transferred to the Soviet Union in December 1941. Identified with the RAF number AK295, it was technically a Tomahawk IIB—essentially equivalent to the USAAC’s P-40C.

### **Russians Ran Them Hot**

Some Soviet veteran aviators of World War II expressed high regard for the Tomahawk, revealing how they boosted its performance by stripping excess equipment and running hotter throttle settings to make their early P-40s more aggressive against German fighters. If ignoring US flight manual procedures trashed engines, it may also have contributed to the longevity of airframes by making the Curtiss fighters serious adversaries.

But longevity was not in the cards for AK295. In February 1942, it crash-landed in Siberia—where it remained reasonably intact for decades.

How and when this aircraft was found, recovered, and brought back to life is subject to considerable debate, however, and the true story was lost as AK295 changed hands repeatedly over the past 20 years.

It may have been first spotted by satellite imagery. It may have been recovered from the ground in 1990, 1993, 1994, 1996—or another year. It may have been damaged by exploding ordnance during the initial recover, but probably wasn’t. In fact, AK295’s history from the early 1990s to the mid-2000s is extraordinarily muddled, with each





*A formation of P-40s train near Moore Field in Texas in 1943.*

new source seemingly contradicting previous bits of information.

And yet, this is not unusual in the warbird restoration business. This is a fast-moving, free-wheeling industry in which aircraft frequently change hands, few long-term records are kept, and aircraft are quickly out of sight and out of mind—leaving participants to mentally reconstruct events from many years before.

What is known for certain is that by the early 1990s, AK295 and another Soviet Tomahawk were earmarked for recovery.

The respected British warbird organization, The Fighter Collection of Duxford, commissioned a Russian salvage operation to recover the Tomahawk.

“We understand that one [P-40C] was thought to have a drop tank attached under the aircraft during its recovery by helicopter,” a spokesperson for The Fighter Collection said. Unfortunately it turned out to be a bomb that exploded during the hoist, severely damaging the P-40 and causing the crash of the helicopter. This P-40’s exploded wreckage was abandoned and subse-

quently recovered by others, the TFC spokesperson said.

Tomahawk AK295 was said to be the bomb-damaged fighter, but Tom Wilson, a P-40 restorer who received the airframe at his Griffin, Ga., shop and rebuilt its fuselage in the 1990s, is skeptical of the live-ordnance story.

“If a bomb went off under it, there’d be nothing left of it,” Wilson opined. He also wonders how a bomb could stay beneath the airplane during a crash landing without separating.

Regardless, Wilson’s Tomahawk was the worse for wear. “It was pretty bad, but it was definitely a rebuilder,” Wilson said.

As often happens with downed aircraft, this wreck was hacked into, over the years, with parts removed for other uses. As a result, the skins were “junk,” Wilson said. He rebuilt the fuselage, using as much of the underlying frames and stringers as he could keep, with new aluminum skin binding the airframe together—just as when it first emerged from Curtiss’ factory. Much of the original wing structure was usable; Wilson estimates the finished project is about 70 percent original.

“It’s no different than rebuilding a Category 3 or 4 airplane during the war,” Wilson modestly said, referring to wartime aircraft damage assessment categories.

The project was shipped in 2004 to an Ardmore, New Zealand, restoration shop, Avspecs, for completion. The task—undertaken by Wilson and then Avspecs—was daunting but not impossible.

The Tomahawk and its early model P-40 brethren used a fuselage cross-section a bit stouter than later P-40s, because the Tomahawk evolved from the radial-engine P-36, a prewar fighter with greater girth to match that of its power plant. And Tomahawk blueprints weren’t available in many cases. Some prototype XP-40 drawings offered clues to the curved engine cowlings,



*A bright red gasoline cap and a bright yellow oil cap—both tanks accessed through the P-40C’s aft cockpit glazing—were faithfully restored on AK295.*



*P-40s (these painted with the iconic “Flying Tiger” shark mouths) at a base in China in 1943.*

Wilson said, but they were different in important ways from the P-40C.

This is why the custom warbird reconstruction scene is such a remarkable organism. Wilson initially studied the aircraft sheet metal trade under the mentorship of a metal master who still had the tools he used when he helped create the original XP-40 in 1938. Wilson’s knowledge of the P-40 was bolstered by his experience with the former Curtiss craftsman. “I was a P-40 nut since I was a kid,” Wilson admitted. Even as a nine-year-old watching television reruns of the 1942 John Wayne movie “Flying Tigers,” Wilson said he could spot the fake Hollywood mock-up P-40s.

### Tools of the Trade

With restorers using one part common sense and one part reverse engineering, the recovered P-40C blossomed. Some pieces, such as engine cowling panels with compound curves, were best fabricated the old way, on an English wheel, a metal forming tool that can make a sports car fender or a warbird panel—if the operator has sufficient artistry to do the task by hand.

Other pieces were fabricated using machine tools unheard of seven



*AK295 on the ramp at EAA AirVenture 2012, an air show in Oshkosh, Wis. The restoration is not only cosmetic—even parts not seen by the public are restored.*

decades ago. Computer Numerical Control, or CNC, machining makes it possible to replicate some three-dimensional metal parts without the expense of specialized tooling; short production runs for warbird restorations can provide fittings, brackets, and even whole wing spars that would have brought restorations to a grinding halt a few years ago. This process is not cheap, but is accessible.

And that’s where a sea change is occurring among warbird owners and operators. Gone are the days when restoration consisted largely of replacing missing pieces with surplus parts and leaving basket-case airframes out behind the hangar as useless junk.

Today, unrestored airframes are rare, and that commands a much higher ante to get in the game. Warbird restorations can easily top a million dollars for a





*AK295 in flight over New Zealand just after the meticulous refurbishment was completed in 2011.*

finished product. And the process is not for the faint of heart—or wallet. It is impossible to precisely calculate the cost of a project as unique as a vintage warbird reconstruction. The cost will vary depending on hours of labor and the difficulty of finding or fabricating parts.

If wealthy philanthropists of an earlier era funded libraries and art museums for the public good, there's a cadre of warbird enthusiasts who are using their considerable fortunes to do the same with scarce warplanes. Some are on show in publicly accessible museums.

Others, like the Tomahawk AK295, now in the Texas collection of Rod Lewis, are flown to air shows in various parts of the country each year—helping spectators capture the exponential value of seeing and hearing a real warbird from the past.

True to its factory design, this P-40C includes quirky and sometimes inconvenient features in the name of authenticity, like the circular holes in the aft cockpit Plexiglas to access fuel and oil filler caps. Such attention to detail earned this restoration the 2012 Reserve Grand Champion Award for World War II aircraft at the prestigious Experimental Aircraft Association's AirVenture event in Oshkosh, Wis.

Oshkosh has become the premier conclave of warbirds each summer, showcasing hundreds of privately owned ex-military aircraft ranging from pristine salon pieces to gritty working machines. The judges at Oshkosh also appropriately conferred a Phoenix Award on Lewis' Tomahawk, in recognition of its rebirth from a half-century of repose in Siberia.

Photo by Frederick A. Johnsen



*P-40C AK295 (foreground) in its olive and gray paint scheme lines up with two more-commonly seen P-40Es, painted as Flying Tigers, at the Oshkosh air show.*

With early model warbird resurrections such as this P-40C, there can be regression in flying characteristics. Later P-40s used a newer Allison engine design that shortened the length to the propeller. Warbird pilot Steve Hinton, who has years of experience flying these rare assets, said he found the P-40C a bit less stable than later P-40s because of the longer distance to the prop and shorter distance to the tail on the C model. Curtiss redesigned the fuselage, and ultimately the late-model P-40N had a noticeable stretch to the tail.

Hinton received AK295 when it returned to the US in 2011 after final restoration and test flights in New Zealand. Hinton's company, Fighter Rebuilders, reassembled the C model at Chino, Calif., and Hinton completed its first flight since the rare bird returned from New Zealand.



USAF photo

*Nets partially camouflage a P-40 under repair at Kunming, China, in 1941.*



Jose Flores, based in the mountain town of Tehachapi, Calif., was central to the rebuilding of the early Allison C series engine in the P-40. Flores is the shop foreman and vice president of an engine rebuilding firm called Vintage V-12s. The co-owner is Mike Nixon.

Nixon's name has become synonymous with warbird engine rebuilding and maintenance, another rarified warbird industry. The warbird community relies on old engines properly rebuilt and serviced to keep its treasures airworthy and safe.

After World War II, a surfeit of Allison engines sold for as little as \$200. Today, according to Flores, a freshly rebuilt Allison can cost \$200,000. The scarce long-nose variant in the P-40C resulted from the combination of two of the early power plants, plus additional parts, to make one good engine. Flores figures the early Allisons have about 50-50 commonality with the later more readily available versions, so with the touch of Vintage V-12s' craftsmen, the early engine—an amalgamation of about 7,000 individual parts—came to life again in time to power Lewis' fighter.

The process was "a little tricky," Flores said. "You have to know your parts. It's a fun engine. It's unique." The timing sequence for this Allison is opposite from that on later models, and it took Flores a bit of sleuthing to figure it out. The propeller and crankshaft rotate in the same direction on early Allisons. Later models used a different gearing that had the crankshaft and the propeller shaft turning in opposite directions.

The P-40C's restoration is more than skin deep—Flores and his team at





*Flug Werk produced some 20 full-size "kits" of the World War II Focke-Wulf Fw 190. This one was repainted in the colors of German ace Erich Rudorffer for the Finnish film "Tali-Ihantala 1944."*

Vintage V-12s installed the engine's gun synchronizer mechanisms that keep the nose-mounted machine guns from running afoul of passing propeller blades, even though it no longer needs these fire interruptors and they are not seen by the public.

Few people pack around so much knowledge about World War II liquid-cooled engines as Flores. It's all part of the recipe for thorough warbird reconstruction.

### Prolonging Engine Life

The ability of Flores and the others at Vintage V-12s to keep rebuilding engines relies on access to parts. Tons of engines and spares were produced to feed the voracious logistical needs of the Army Air Forces seven decades ago. The Vintage V-12s team is always on the lookout for parts they can acquire and store for future rebuilds. Flores said the prospect of manufacturing new V-12s is not economically feasible, so it is up to the finite supply of existing engines.

With long-nose Allison engines so scarce, Flores is still optimistic. Museum-quality P-40s get anywhere from 10 to 25 flight hours per year, he said. That compares to as many as 100 flight hours for some of the more prevalent P-51 Mustangs on the warbird circuit.

When an engine leaves overhaul at Vintage V-12s, the battle is upkeep versus wear-and-tear. A freshly rebuilt Allison out of Tehachapi may clock 500 to 600 hours before it needs its first overhaul. Thereafter, Flores said, "the wear is starting to increase quickly."

He advises operators to change the oil after only 25 hours of flying, regardless of how clean the lubricant appears. When an overhaul of a customer's engine comes due, it can start at \$75,000.

The price, availability, and desirability of the current iteration of masterful restorations affects their sale and migration in the warbird community. Mark Clark, whose Courtesy Aircraft

Sales company is known for its sales lists of million-dollar warbirds, said rare ones such as the early P-40C tend to appeal to a collector of several aircraft; the one-warbird owner-pilot is likelier to want one of the favored icons: a P-51D Mustang or even a later P-40E variant. With a limited number of high-quality, award-winning warbird restoration shops extant, prices can sometimes be affected by availability. "The good shops are booked with a long lead time, and buyers are willing to pay more to get something sooner," Clark explained.

The wizardry of specialized warbird restoration and fabrication shops has reached a level of sophistication permitting the construction of completely replicated versions of classic fighters.

The German company Flug Werk produced about 20 full-size kits of the fearsome World War II Focke-Wulf Fw 190 fighter, using an available Soviet-designed radial engine to stand in for the German power plant.

Flug Werk's new-build 190s use original Fw 190 tail wheel assemblies. An interesting concession is the use of modern jetliner nose wheels for the main gear. A Flug Werk spokesperson described them as "affordable, readily available, and the only tire which will safely withstand the stress and strains of operating this aircraft from hard-covered runways." This is important, since wartime films often show that German fighters took off from vast grass campuses instead of paved runways.

The Flug Werk team made a few alterations, notably to correct an oil cooling issue found on some early original Fw 190s during the war, and changed some bracketry to accommo-

date modern and available systems in the airframe. But they pronounce their Fw 190 airframes as 98 percent similar to the originals.

Flug Werk is also moving into the Mustang business, marketing an aircraft kit they call the AP-51 Palomino to distinguish it from an authentic P-51 Mustang. They tout the ability of modern computerized CNC milling to create crucial fittings from a billet of forged metal instead of using casting methods. The CNC machining is said to give a repeatable measuring tolerance of 1/100th of an inch, without any warping sometimes found in the cooling of castings.

Today, warbirds are even replacing old metal with new. Some aircraft items, such as perishable rubber tires, hoses, fabric control surfaces, and plastic cockpit glazing, have long been considered consumables that need periodic replacement. Now, whole airframes can be substituted. This has led to choices in restoration methodology, as some warbirds emerge from the shop with anything damaged being replaced outright. Others use parts that have evidence of aluminum skin patches, executed as they would have been during World War II, to preserve as much of the original structure as safely possible.

Warbird restorers and exhibitors, mindful of the impact their iconic aircraft have on the public, have increasingly gone to detailed, almost arcane, lengths to make their aircraft period correct. Hardware has been stamped with the same kind of inspectors' marks used during wartime production. Minute instructional stenciling is being replicated, even on hidden access panels. The personalized artwork adorning some restorations has been hand-painted with colors and brushes that would have been available during the war, giving a slightly scruffy cachet of authenticity to the result.

The uptick in restoration perfection coincides with the unfortunate accelerating loss of World War II veterans. A greater burden is now being placed on the aircraft of that era to be the witnesses to history, outliving the people who flew these machines so many years ago. ■

*Frederick A. Johnsen retired as director of the Air Force Flight Test Museum at Edwards AFB, Calif., to pursue museum, writing, and video projects. He is completing a major study of the interface between the U.S. Air Force and German aerospace technology from the 1930s into the postwar era. His most recent article for Air Force Magazine, "Flight Test Transformation," appeared in the October 2012 issue.*

# THE FEEDER FORCE

By John T. Correll



**W**HEN Andrew John Mungenast was a boy, he rode his bicycle 15 miles to Lambert Field near St. Louis to watch the airplanes. His father knew the famous aviators Charles Lindbergh and Jimmy Doolittle. Andy was 17 when World War II began, but he wanted to be in it and he wanted to be a pilot.

His best shot at it was the Civilian Pilot Training program offered by his hometown Jefferson College in Hillsboro, Mo., in cooperation with the Civil Aeronautics Administration. By the time Andy started in September 1942, the program had a new name—

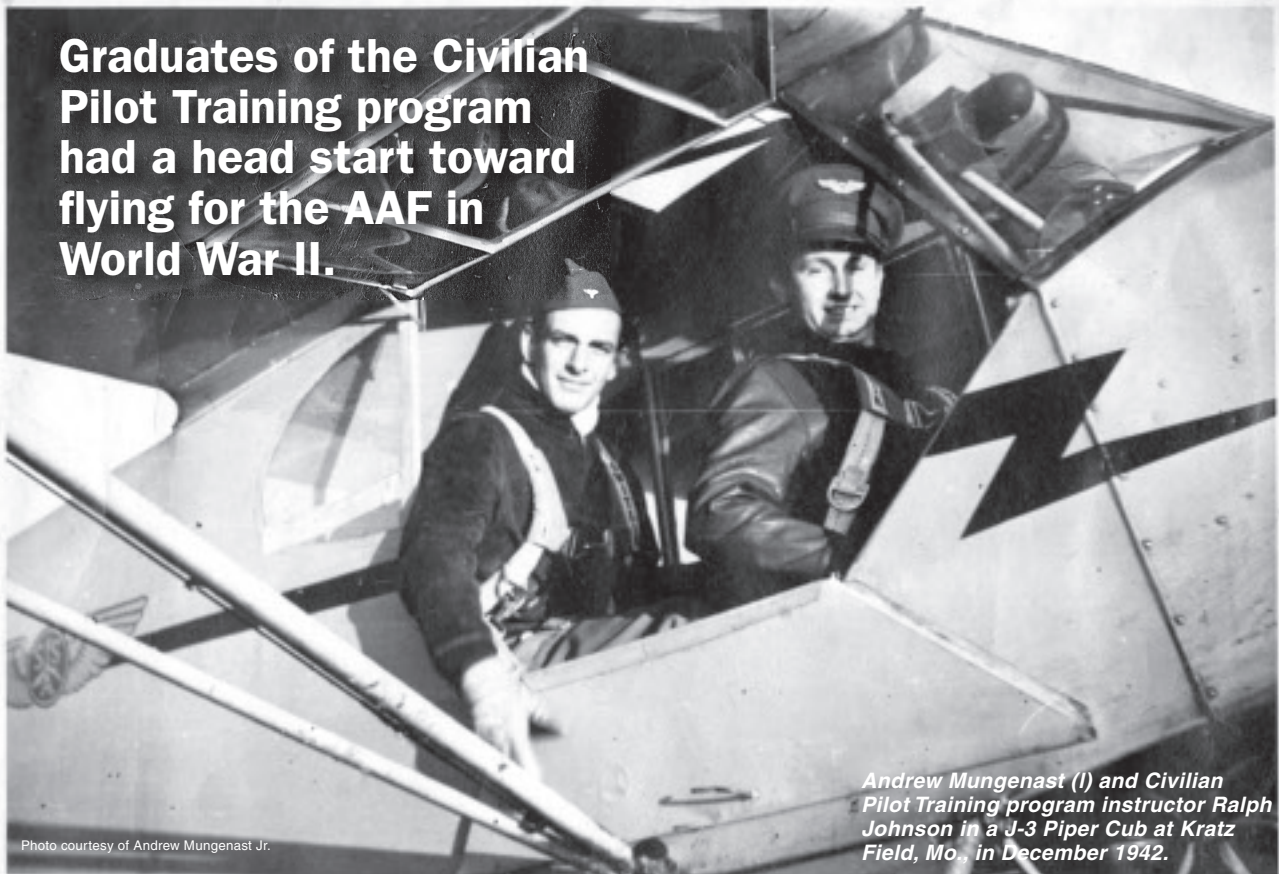
the War Training Service—and it was affiliated with the Army Air Forces. As he progressed from primary flight training to secondary to cross-country, he had a dual status: He was a college student but also a member of the Army Air Corps Enlisted Reserve.

Finishing college could wait. He went on Active Duty in 1943, completed basic training, and entered the Aviation Cadets. He earned his wings and his commission in the Army Air Forces in February 1944 and was in transition training for B-17s when the war ended. But his 30-year career in the Air Force was just beginning.

Today, the Civilian Pilot Training program and the War Training Service are almost forgotten, but under their banner almost half a million young Americans learned to fly. Among them was Richard I. Bong, who earned his pilot's license in a Piper Cub in CPT at Superior State Teachers College in Wisconsin in 1940. He went on to receive the Medal of Honor in World War II and become the Air Force's all-time leading ace, with 40 aerial victories.

Another CPT graduate was John Glenn, who went through the program at Muskingum College in Ohio in 1941. In 1962, astronaut Glenn became the

**Graduates of the Civilian Pilot Training program had a head start toward flying for the AAF in World War II.**



*Andrew Mungenast (l) and Civilian Pilot Training program instructor Ralph Johnson in a J-3 Piper Cub at Kratz Field, Mo., in December 1942.*

Photo courtesy of Andrew Mungenast Jr.





*The publicity poster for "20,000 Men a Year." The 1939 movie about the Civilian Pilot Training program starred heartthrob Randolph Scott as a flying instructor.*

Photo via Aaron Church

mind ed" and teach thousands of them to fly.

Hinckley was a dedicated New Dealer. Wartime mobilization was not his motivation. CPT was not only intended as an economic pump-primer for the private aviation industry but also as a vocational training program for American youth. The United States had only 7,400 civilian pilots, including those flying for the airlines. The Army had fewer than 5,000, of whom fewer than half were on Active Duty.

In December 1938, President Franklin D. Roosevelt announced an experimental program in which 330 pilots would be trained at 13 partici-

pating colleges and universities. In time, he said, 20,000 college students a year would be trained as pilots. Hinckley, promoted to chairman of CAA, was to make it happen.

In a Gallup public opinion poll, 87 percent supported the plan and an expanded program was soon authorized. Everett M. Dirksen, then a young Congressman from Illinois, added a far-reaching provision to the enabling legislation: CPT training would not be denied to anyone on account of race, creed, or color.

By the fall of 1939, 116 colleges and universities, including Harvard, were participating in CPT. Eventually, 1,132 colleges and 1,460 associated flying schools would be part of it. That October, "20,000 Men a Year" appeared in the movie theaters. Randolph Scott played the role of a flying school operator whose fortunes improved when he threw in with CPT. There were spectacular scenes of Stearman biplanes over the Grand Canyon.

Training was open to anyone between the ages of 18 and 25. Students were charged a \$40 fee, which covered life insurance and a physical examination. For each student accepted, the government paid the college \$20 and its flying school partner \$290.

The Embry-Riddle Flying School— forerunner of today's Embry-Riddle

first American to orbit the Earth and subsequently served in the US Senate.

CPT was originally designed to increase the number of civilian pilots in the United States and give a boost to the Depression-ravaged private aviation industry. During the war it functioned as a screening and feeder service for Army and Navy flight training.

The relationship with the Army Air Forces was never smooth. CPT officials believed the AAF discounted their contributions. The AAF thought that CPT officials wanted to move in and take over the training program. Both sides had valid grounds for their suspicions.

In the end, many CPT graduates went into the Aviation Cadets and became Air Force combat pilots. Some, who could not meet physical standards or other requirements, flew as ferry, liaison, or service pilots. CPT/WTS output effectively stopped in 1944 and it was finally disbanded in 1946 after a seven-year run.

### Hinckley's Big Idea

CPT was the handiwork of Robert H. Hinckley, who was appointed to the Civil Aeronautics Authority when it was founded in 1938. Hinckley interpreted the CAA's charter to "promote aeronautics" as the authority to launch a program to make American youth "air



Aeronautical University—owed its early survival to CPT. In 1939, it had only two airplanes, one flight instructor, and one maintenance man. Embry-Riddle partnered with the University of Miami for CPT, was chosen for the AAF contract training program when that came along, and grew from there.

In May 1940, Roosevelt requested increased funding for CPT and called for the training of 50,000 volunteer pilots a year. Hinckley said the program could easily produce that number. Roosevelt also reorganized the Civil Aeronautics Authority, splitting it into the Civil Aeronautics Board and the Civil Aeronautics Administration, with the latter to keep CPT and to be headed by Hinckley.

### Conversion to War

In the 1930s, the Army Air Corps had only one base, Randolph Field at San Antonio, for primary and basic pilot training. The third phase, advanced training, took place across town at Kelly and Brooks Fields. These bases could handle only a few hundred students a year.





**Civil Air Patrol J-3s used for Army Air Corps training await their next mission at an airfield in Lansing, Mich., in 1942.**

In 1939, the Air Corps contracted with nine civilian flying schools to conduct primary flight training. Eventually, there would be 99 schools on such contracts to the AAF. Some published accounts confuse this program with CPT, but that was an entirely different proposition. The Army and Navy were wary of CPT.

In congressional hearings, assistant Air Corps chief Brig. Gen. Barton K. Yount was asked whether the Air Corps would commission CPT graduates. He said no. The flying was more difficult in the Air Corps, he said, the training and requirements were different, and officers had to have a military discipline not instilled by the CAA courses. However, he acknowledged that “preliminary training” in the CAA schools might expedite “final training” of selected candidates. Through March 1941, the CPT program had produced 37,000 pilots and almost 5,000 of them had volunteered and had been accepted for further training by the Army and Navy.

Everything changed with the attack on Pearl Harbor and US entry into World War II. Roosevelt declared that the CAA’s pilot training facilities were

to be “exclusively devoted” to preparing men for military duty. CTP was renamed the War Training Service.

CTP/WTS graduates were asked to make good on their pledge, required

since 1940, to enroll in Army or Navy aviation programs if they were qualified and needed. Many did so. Details in the historical record are sketchy, but 19.5 percent of the students in Air Corps primary pilot training in 1941 and early 1942 were CPT graduates. The washout rate for them was less than 12 percent, compared to almost 45 percent washouts for those who had not been though CPT.

Despite the name change to War Training Service, “CPT” continued in frequent usage—sometimes by the CAA itself—for years thereafter. The student wings awarded to Mungenast when he soloed in December 1942 were embossed with “CPT” and “Enlisted Reserve.”

### Opening Doors

The Civilian Pilot Training program, mandated as nondiscriminatory by the Dirksen amendment, opened the way to aviation and military flying for women and, on a much larger scale, for African-Americans.

About 2,500 women had completed CPT before it was converted to a war-time mode in 1941. Many of them flew as Women Airforce Service Pilots, or WASPs. More than 40 percent of the future WASPs earned their wings in CPT, according to historian Katherine Sharp Landdeck, who has interviewed many of the former WASPs and who



**WASPs Dorothea Moorman (l) and Dora Dougherty both completed civilian pilot training and were recruited by then-Lt. Col. Paul Tibbets (second from right) to fly the B-29. At right is Dean Hudson, a Civil Aeronautics Authority check pilot.**





**Air Force Magazine Associate Editor Aaron Church's grandfather, Hubert Church, in the cockpit of a Piper J-3 during initial flight training in Lansing, Mich.**

has analyzed letters, diaries, and other sources of information.

An outstanding example was Dora Dougherty Strother McKeowan, who earned her pilot's certificate through CPT and went on to become one of the first women in the US to earn an airline transport pilot license. She held several world helicopter records and was twice honored by the Air University Gathering of Eagles.

The B-29 bomber was new in 1944, and some pilots were reluctant to fly it, regarding it as too dangerous. Col. Paul W. Tibbets, who later led the atomic bomb mission against Hiroshima, recruited WASPs Dora Dougherty and Dorothea Moorman and taught them to fly the B-29. Their demonstration flight—Dougherty as the pilot in command with Moorman, also a CPT graduate, as copilot—effectively shamed the men and put the B-29 training program back on track.

One of the first schools to sign up for participation in CPT was the Tuskegee Institute, a college in eastern Alabama for black students. The first class graduated in May 1940 and received private pilot licenses.

In 1941, the Army Air Forces opened a school at Tuskegee and began training aviation cadets there. Over the next several years, Tuskegee continued the CPT courses while the AAF program proceeded at another airfield a few miles away. Daniel James Jr. completed CPT at Tuskegee, was briefly a civilian

instructor in the Army program, and then entered the Aviation Cadets himself and earned his commission. In time, "Chappie" James would become the first black four-star general in the Air Force.

The Tuskegee Airmen gained lasting historic fame in combat in World War II. One of the first of them, Robert W. Deiz, had learned to fly in CPT at the University of Oregon before coming to Tuskegee. He shot down two enemy airplanes over Italy in World War II



**Daniel "Chappie" James completed Civilian Pilot Training at Tuskegee before entering the Army Aviation Cadets and earning his commission. His is pictured in front of his Mustang in Korea.**

and further distinguished himself as a test pilot and in other assignments.

At Tuskegee and elsewhere, CPT trained about 2,000 black pilots in all.

### **Hinckley and Hap**

Hinckley and Maj. Gen. H. H. "Hap" Arnold, Chief of the Army Air Corps, took an intense dislike to each other. Arnold insisted that the Army must have "complete and unqualified jurisdiction" over its training and believed that instruction in the CPT schools was inferior. Hinckley upheld the quality of CPT training and thought the Air Corps should accept the graduates instead of setting up more flying schools for itself.

The Air Corps regarded the 99 selected schools it had on contract as a wartime expediency and thought they left much to be desired. Arnold was not about to welcome aboard the 1,500 local operators of varying caliber in the CAA network.

When a stridently pro-CTP article came out in the *St. Louis Post-Dispatch*, Arnold told the writer that he was "being misled by Hinckley and that political gang over there who are trying their best to horn in on the military program."

Roosevelt's executive order had directed the conversion of CAA pilot training to military purposes. Arnold investigated the possibility of transferring CAA functions to the War Department, which enraged Hinckley.



He called in the press and said he would “be in favor of the Army taking us over if we thought that would win the war a minute sooner.” He told an emissary from the Air Corps that he refused to have “someone who knows nothing about it tell me what to do.”

In April 1942, the Air Corps created the Enlisted Reserve to hold the backlog of qualified applicants waiting to begin training as aviation cadets. Then and in his memoirs, Hinckley criticized it as a waste that “thousands of men marked time until places could be found for them in the Army’s own air schools. On government pay, they walked the streets or lounged in hotel lobbies.”

Hinckley resigned in July 1942 and went to work for the Sperry Corp. because the military was “supreme” and the “civilian agencies were pushed aside.” The cudgel was taken up by Sen. Patrick A. McCarran (D-Nev.), the congressional champion of the private flying schools, who complained that the Army was using only 100 schools to train combat and service pilots while CAA training facilities went unused.

### The Odd Couple

Nevertheless, the Air Corps signed agreements with the CAA in July 1942 and January 1943 for preliminary training of pilot candidates through the WTS program. *The New York Times* described it as “a compromise in the long-standing feud between the Army and the CAA.”

Under the agreements, WTS was to train a total of 3,152 enlisted reservists in various regiments, specified as elementary, secondary, cross-country, Link instrument, instructor, and flight officer courses.

There were several follow-on tracks for graduates. Some, like Andrew Mungenast, went to regular Air Corps flight training in the Aviation Cadets. Others, with extra training as required, became service pilots or instructors in assignments where the requirements were somewhat less stringent than for combat duty.

One part of the agreements was a source of continuing discord. In 1943, the Air Corps set up the Aircrew College Training Program. “The college program, to put it bluntly, came into existence not so much to meet an educational need as to hold a backlog of aircrew candidates,” reads the official AAF history of World War II. “The AAF had found it advisable in 1942

### The Lifelong Pilot

Andrew Mungenast always retained fond memories of CPT and WTS. Most of his Air Force assignments were in aircraft maintenance, but he never stopped flying and earned his command pilot wings. He transitioned to jets in 1957.

He finally got around to completing his college education at Southern Colorado State in the 1960s, later adding a master’s degree from George Washington University and an MBA from Auburn University. When he retired as a colonel in 1973, he was a tenured professor of economics at the Air War College.

Andrew and Norma Mungenast had five boys go into the armed forces. All were involved in aviation except for one: retired USAF Brig. Gen. James A. Mungenast, who went into intelligence instead. He is currently president of the Air Force Association’s South Central Region. Two of Andrew Mungenast’s sons and two sons-in-law are pilots.

In retirement, Mungenast continued flying as a private pilot. He logged a total of 8,137.2 hours in 147 different aircraft, including a replica of *Spirit of St. Louis*, owned by the Experimental Aircraft Association. On his last flight, several months before he died in 2009, he shot instrument landing system approaches into the Montgomery, Ala., airport in his Cessna C-77B Cardinal, accompanied by a check pilot.

The exhibit on the Civilian Pilot Training program at the National Museum of the United States Air Force in Dayton, Ohio, focuses on Mungenast. The display includes the pilot rating book he used in cross-country training in 1943 and his Enlisted Reserve CPT wings.

to recruit aviation cadets in excess of its immediate needs and hold them in an inactive reserve until needed. ... The pool of idle manpower received increasing notice from selective service boards and the War Manpower Commission.”

The curriculum lasted about five months and “all aircrew candidates were to be assigned from basic training centers to the colleges unless they could pass a special educational test,” the official history reads. “The relatively few who passed this test were sent directly to preflight schools.” Mungenast spent several months in this program at the University of Arkansas until an opening in the Aviation Cadets came up for him.

The college program included 10 hours of “flight indoctrination” conducted by the CAA. It consisted of familiarization operations and simple maneuvers under dual control by the instructor and the student. The Air Corps did not want this “indoctrination” and complained that students were “merely riding around for 10 hours.”

In 1944, with the end of the war approaching and air supremacy established in all theaters, the requirement for more pilots was reduced and thousands of men who had been waiting

for flight training were released. Air Corps contracts with the private flying schools were terminated, and both the Army and the Navy ended their agreements with the WTS. Some CAA instructors with at least 1,000 hours and experience in high-performance aircraft were given an opportunity to join an AAF flight program.

CPT/WTS provided a head start to flying for the armed forces for many. Between June 1939 and June 1942, according to Dominick A. Pisano in *To Fill the Skies With Pilots*, 42,026 graduates of CPT enlisted in the Army or the Navy for further flight training. WTS trained another 55,348 Air Corps enlisted reservists for various specialties and 105,000 aviation students for the Navy.

McCarran, urged by the flight schools and aviation trade associations, managed to revive CPT in June 1944 and persuade Congress to extend it for two years. Among those testifying in its support was Hinckley, although he was no longer associated with the program. He said that instead of being dismantled, CPT ought to be expanded to include high school students. Although authorized, the renewed CPT was never funded and a bid by McCarran to extend it again in 1946 did not pass Congress. ■

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*John T. Correll was editor in chief of Air Force Magazine for 18 years and is now a contributor. His most recent article, “Doctrine Next,” appeared in the December issue.*



By Frances McKenney, Assistant Managing Editor



## Emerging Leaders

The Air Force Association began an Emerging Leaders Program in 2013 as an avenue to secure AFA's future.

Emerging Leaders volunteer for a year. With guidance from a mentor, they participate on a national-level council, attend

national leader orientations, and serve as National Convention delegates. Emerging Leaders will be profiled here in the coming months. Here's the third one.

### Capt. E. Miranda Hernandez

**Home State:** Texas.

**Chapter:** Baltimore-Ft. Meade.

**Joined AFA:** 2008.

**AFA Offices:** Maryland State President and Central East Region Executive VP. Was Maryland State VP and Baltimore Chapter President.

**AFA Awards:** National-level and Maryland Medals of Merit.

**Military Service:** 10 years, beginning as a communications computer systems control technician in the California Air National Guard. Now an Active Duty flight commander and cyberspace operations officer, Ft. George G. Meade, Md.

**Education:** AAS, Community College of the Air Force; B.A., University of California, San Diego. Working on an M.A., University of Oklahoma.

**Social Media:** Find the Baltimore-Ft. Meade Chapter at Facebook.com/afa160 and E. Miranda Hernandez on LinkedIn.

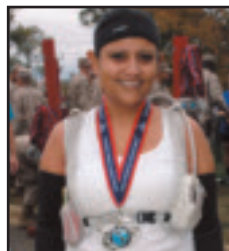


## Q&A

**What have you learned on AFA's Membership Committee?** I like the fact that we're looking at ... how we're relevant to and supporting different parts of the community. We really are relevant to everyone—and not just the people in uniform.

**How did you first learn about AFA?** When I was a cadet in San Diego. ...The local chapter there was very interested in getting us involved.

**How can AFA increase membership?** I joined AFA as a cadet because I could see the value of the organization in my life and in my future career. ... New initiatives like the Wounded Airman and transition programs and the new option for e-membership are going to go a long way towards increasing our relevancy.



*With less than a month's training, Hernandez ran the 2012 Marine Corps Marathon—her second—in six hours, eight minutes. The finisher's medal around her neck weighs a quarter-pound.*



Family members snap photos of World War II P-47 pilots and maintainers standing next to an F-35.

## The Old and The New

As part of their 34th reunion, eight World War II veterans of the 86th Fighter-Bomber Group toured Eglin AFB, Fla., in September. At least half of them came from AFA chapters from four states.

In the photo left to right are P-47 aircrew members John R. Dolny of the **Tucson Chapter** in Arizona; Wallis Hurlbutt from the **Carl Vinson Memorial Chapter**, Georgia; Ralph Frith; John Senneff of the **L. D. Bell Niagara-Frontier Chapter**, New York; John Botten; William B. Colgan from Florida's **Eglin Chapter**; Roy Brown; and James Bowman.

The number of actual 86th FBG veterans may have been small, but their reunion group was big enough to need a bus to get around. This is because Senneff, for one, brought 11 family members to the reunion, including his children, grandchildren, and in-laws.

Their base visit included a docent-led tour of the Air Force Armament Museum, where a P-47 is on display, and a stop at the 33rd Fighter Wing's Lightning II training center. A maintenance team had prepared the Air Force's newest fighter, an F-35, for static display for the group, and an aircrew flight equipment team showed them the strike fighter's life support equipment.

F-35 pilot and Eglin Chapter member Lt. Col. Bradley E. Turner spoke to the vets for an hour, describing the base's operations today and its forecasted growth.

"It was an honor and a privilege to get to present the wing's mission brief," Turner said afterward.

## Showing Off the Guns

**Green Mountain Chapter** members and a contingent from the Vermont Air National Guard toured the Army's Camp Ethan Allen Training Site in Jericho, Vt., in October, hosted by defense contractor General Dynamics.

Camp Ethan Allen is home to the Army Mountain Warfare School and a firing range. General Dynamics has tested weapons at a range complex there since 1952.

GD Senior Director Keith R. Stearns presented briefings to the visitors, covering the site's history and the testing of

Photo by Mark Kulaw, courtesy of Northwest Florida Daily News



*The Thomas W. Anthony Chapter sponsored a luncheon at JB Andrews, Md., for USAF's Wounded Warriors sitting volleyball team (l-r): TSgt. Jason Caswell, retired SSgt. Kevin Taylor, retired TSgt. Monica Figueroa, MSgt. Christopher Aguilera, retired TSgt. Corey Carter, and retired TSgt. Byron Ballard. The team later played the Marines, at the Pentagon Athletic Club, for the joint services championship Nov. 21 (at right). The Marines (in red) won the top trophy.*



particular interest to his Air Force guests: the four-barreled gun system used by the three F-35 strike fighter variants. In fact, Chapter President Raymond Tanguay reported that his group observed a live firing—done on a test stand—of the external GAU-22A system for an F-35B, the short takeoff and vertical landing version. The Navy and Marine Corps will use it.

The AFA contingent included Guardsmen from the 158th Fighter Wing, based at Burlington Airport, invited by chapter member Col. Patrick M. Guinee. He is the wing's maintenance group commander. Having aircraft maintainers who between them have served in four wars made for lively talk all afternoon about aircraft weapon systems, wrote Chapter Membership and Communications VP Richard F. Lorenz.

## Partners With One Goal

AFA's goal has been to provide the aerospace industry with a strong sense of value as a result of their participation with us and the opportunities we provide. As we look to the future, AFA is pleased to announce its Corporate Membership Program. This program provides a variety of opportunities for industry to put its products and programs in front of decision-makers at every level.

### Some of the benefits of AFA's new Corporate Membership Program include:

- Invitations to monthly briefing programs conducted by senior Air Force leaders (planned 10 times per year) and periodic policy discussions about topical issues and emerging trends
- A CEO gathering with senior Air Force and DOD leaders held in conjunction with the AFA Annual Conference in September
- Invitations to meet senior leaders from foreign air forces at numerous events, including AFA's Annual Air Attache Reception and official foreign air chief visits

### Corporate Membership also comes with:

- Exclusive access to exhibiting and sponsorship opportunities at AFA's conferences
- Up to 50 AFA individual memberships



### For more information contact:

Dennis Sharland, CEM  
 Manager, Industry Relations  
 & Expositions

(703) 247-5838  
 dsharland@afa.org





*The Green Mountain Chapter visited the General Dynamics firing range at Camp Ethan Allen in Vermont and learned about the F-35's gun system.*

**A Full Evening**

Some 50 people turned out for the **Northeast Texas Chapter's** October dinner in Greenville, Tex., to learn about ongoing projects.

The evening's program featured retired USAF Lt. Gen. John C. Koziol. Before retiring in 2012, he was deputy undersecretary of defense (intelligence) for joint and coalition warfighter support and also the director of the DOD Intelligence, Surveillance, and Reconnaissance Task Force.

Communications VP Vance Clarke reported that Texas A&M University-Commerce students also presented a program to the group that evening. They explained their "War and Memory" project of veterans' oral histories. Clarke said the students have compiled more than 120 stories and that the chapter has donated funds for the effort.

Local Civil Air Patrol members spoke to the chapter about how they've used AFA funds for glider and flight academies and field trips.

**Rejoin**

For the second time in three years, a University of Washington AFROTC



*The Lewis E. Lyle Chapter in Arkansas awarded a Civil Air Patrol grant to a local squadron for a flight simulator computer. Here, Chapter President Larry Loudon and his CAP cadet grandson Christian Loudon "fly" a simulator.*



*Ricky Williams (at the podium), VP of Texas North, conducted the induction ceremony for Northeast Texas Chapter's new leaders (l-r): Joseph Gauthier, SMSgt. Gregory Hamilton, SMSgt. Curtis Chism, and Trey Johnson.*



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Promoting Air Force Airpower



*Retired Maj. Charles Taylor, Piscataway (N.J.) High School, displays his State Teacher of the Year award. Sal Capriglione Chapter President Joseph Capriglione (front left) and Secretary-Treasurer Martin Capriglione (front right) presented the award. With them are Principal Elaine Davis and Taylor's CyberPatriot team. The AFJROTC cadets placed first in the state, All-Service Division, in CP-V.*

Photo by Donia Plauman



*At the Harry S. Truman Chapter's fundraiser, AFJROTC cadets tell the audience what they learned at leadership camp. Through this annual dinner and silent auction, the Missouri chapter raises money to send the cadets to leadership training.*

cadet in Seattle has been selected for AFA's \$15,000 Michael Wilson Scholarship.

Taylor R. Applegate received the award in October from **Greater Seattle Chapter** President Lance Bleakley, who presented it as part of the university's homecoming events at Det. 910. Applegate is majoring in political science and law, societies, and justice. She aims for an assignment to the Air Force Office of Special Investigations.

UW senior Alexander Shuler had been one of the scholarship's first two recipients in 2011. Major League Baseball pitcher Brian P. Wilson established the award that year in the name of his Air Force veteran father.

Washington's AFROTC unit—headed by Chapter VP Col. Kevin P. Mastin—nicknamed its part of homecoming as "Rejoin" and invited ROTC graduates, former instructors, and AFA members to campus. So the chapter, including Bleakley and Communications Director Helen F. McGregor, conducted a meeting in conjunction with Rejoin events. Along with the Wilson scholarship, they awarded a \$500 scholarship funded by Chapter Secretary Robert A. Coe.

Chapter members took part in a detachment open house and recep-

*Below: The South Alabama Chapter organized a Maxwell AFB, Ala., tour. Maj. Gen. Walter Givhan (center), then the doctrine center commander, hosted this visit.*



*Greater Seattle Chapter President Lance Bleakley presents cadet Taylor Applegate with the Michael Wilson Scholarship.*

tion afterward and, later that weekend, attended a tailgate party outside the university's stadium. ■

## reunions@afa.org Reunions

**91st Bomb Group.** May 21-25 in San Francisco. **Contact:** Mick Hanou (925-425-3220) (mhanou@comcast.net).

**55th Strategic Reconnaissance Wg/55th Wg/55th Wg Assn,** including former members and Active Duty. April 9-13 at the LaVista Embassy Suites in Omaha, NE. **Contact:** Max Moore (402-291-8272) (maxmoore55@aol.com).

**475th Fighter Group.** May 1-4 in Chino Hills, CA. **Contact:** P. J. Dahl (813) 265-1133.

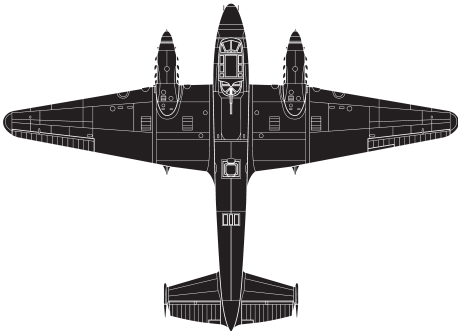
**Air Force Public Affairs Alumni Assn.,** including associated personnel. May 8-11 at La Quinta Inn & Suites, San Antonio Convention Center. **Contact:** John Terino (703-239-2704) (john-terino@afpaaa.org).

**Pilot Training Class 56-M.** April 23-27 in Branson, MO. **Contact:** John Mitchell (703-264-9609) (mitchelljf@yahoo.com). ■

Email unit reunion notices four months ahead of the event to [reunions@afa.org](mailto:reunions@afa.org), or mail notices to "Unit Reunions," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information. We reserve the right to condense notices.



## Pe-2



The Pe-2 dive-bomber was, by all accounts, one of World War II's best attack aircraft—fast, rugged, maneuverable, and deadly. The aircraft was designed by engineer Vladimir M. Petlyakov during his stay in a Soviet prison. He was a victim of Stalin's paranoia, arrested in 1937 on trumped-up charges of sabotaging the new ANT-42 bomber. Still, when given the task, Petlyakov delivered. The Pe-2 was so fast that it frequently eluded German interceptors.

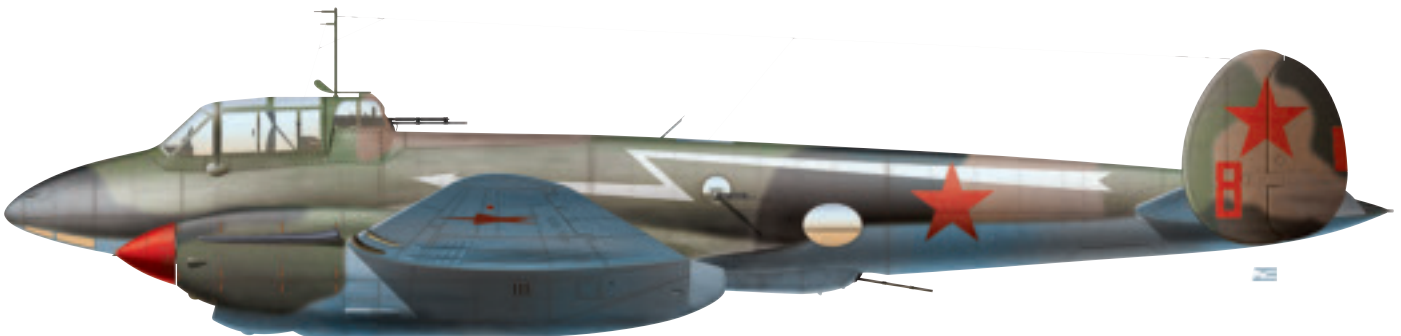
The aircraft that became the Pe-2 began life as the VI-100, a highly advanced bomber escort that flew in late 1939. Impressed by Luftwaffe dive-bombing success, however, Stalin ordered Petlyakov to redesign his fighter into a dive-bomber. Petlyakov complied—in a mere 45 days. The resulting all-metal, low-wing Pe-2 was lighter

than its nearest counterpart, the RAF Mosquito. Stalin put it into serial production in late 1940, and it thus was ready for combat when, in June 1941, Germany invaded. The aircraft showed excellent dive-bombing and ground-attack performance. Born fast, the Pe-2 became faster as it acquired more-powerful engines.

The aircraft was versatile, enjoying great success in roles of attack, reconnaissance, and night fighting. Aircrews developed deadly "sniper" accuracy for their dive-bombing sorties. The Soviet Air Force also developed so-called "carousel" tactics, in which bombers 1,500 feet apart would circle a target and then pounce, diving at angles of up to 70 degrees onto a ground target. After the war, a few Eastern Bloc air forces flew the Pe-2, known to NATO as "Buck." It went out of service in 1954.

—Walter J. Boyne

**This aircraft:** Soviet Air Force Pe-2 Bort 8 Red as it appeared in August 1945 when assigned to 34th Bomber Air Regiment in Nikolayevka.



### In Brief

Designed by Vladimir Petlyakov ★ built at Kazan Aviation Plant ★ first flight Dec. 15, 1940 ★ crew of three—pilot, navigator-bombardier, gunner-radio operator ★ number built 11,400 ★ two Klimov M-105 liquid-cooled V-12 engines ★ armament two forward-firing and two rearward-firing 7.62 mm ShKAS machine guns (later, 12.7 mm guns) ★ ordnance load up to 3,250 lb of bombs ★ max speed 335 mph ★ cruise speed 265 mph ★ max range 930 mi ★ weight (loaded) 18,780 lb ★ span 56 ft 3 in ★ length 41 ft 6 in ★ height 13 ft 1 in.

### Famous Fliers

**Notables:** Maria Dolina, Nadezhda Fedutenko, Klavdia Fomicheva, Alexei Khripkov, Valentin Markov, V. E. Nestertsev, I. S. Polbin, Pyotr Stefanovski, A. Tsurtsulin. **Test pilots:** Georgy Baydukov, N. Fedorov.

### Interesting Facts

Flown by unusually large number of women pilots ★ took the life of Petlyakov in 1942 crash ★ built in 17 variants ★ used against Soviets by Finns flying captured models (supplied by Germany) ★ nicknamed "Peshka"—"Pawn"—by Soviet pilots ★ made conspicuous contributions in battles for Moscow, Stalingrad, Kursk, and Berlin ★ assigned initially to front-line ground units ★ stalled at high angles of attack ★ equipped with ShKAS machine gun that could easily jam.



Pe-2 bombers on a mission over the Karelian Isthmus in the summer of 1944.

TASS photo by G. Chernov

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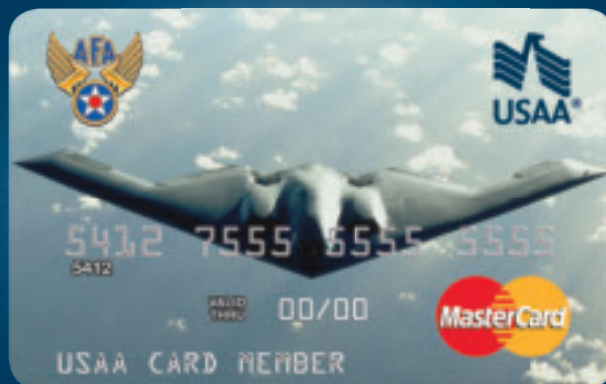
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